

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

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) and the nuclear power industry (Industry) each conduct research on nuclear reactor safety. The NRC's Office of Nuclear Regulatory Research (RES) conducts independent research in all areas regulated by the NRC including ongoing and potential safety issues, risk-informed and performance-based regulation, and operating experience analysis. The Electric Power Research Institute, Inc. (EPRI) is engaged in research and development in the public interest and on behalf of Industry with respect to the production, transmission, distribution, and utilization of electric power including research designed to improve the safety, reliability, and economy of nuclear power plants. While the research efforts of the NRC and EPRI may be conducted for different purposes, the underlying data and the results obtained have common value to both the NRC and EPRI. Accordingly, to conserve resources and to avoid unnecessary duplication of effort, both the NRC and EPRI agree to cooperate in selected research efforts and to share information and/or costs related to such research whenever such cooperation and cost sharing is appropriate and mutually beneficial.

This Memorandum of Understanding (MOU) is authorized pursuant to Section 31 of the Atomic Energy Act and/or Section 205 of the Energy Reorganization Act. The roles, responsibilities, terms, and conditions of this MOU should not be interpreted in a manner inconsistent with, and shall not supersede, applicable federal laws and regulations, as well as EPRI's status as a 501(c)(3) scientific research organization for the public benefit and the NRC's status as an independent regulatory agency.

This MOU describes the parameters within which cooperative research programs between the NRC and EPRI will be considered and conducted. Individual cooperative research programs are described in addenda to this document ("Cooperative Research Programs").

PRINCIPLES OF COOPERATION

Article 1 - Responsibility of the Parties

- 1.1 Organizational Accountability within the NRC and EPRI: This MOU will be implemented by RES on behalf of the NRC and by EPRI's Nuclear Power Sector (NPS) on behalf of EPRI. RES and NPS are responsible for conducting cooperative research with third parties in the field of nuclear energy for the NRC and EPRI, respectively.
- 1.2 Contacts: The NRC's Senior Management Contact shall be the Director, Office of Nuclear Regulatory Research, and EPRI's Senior Management Contact shall be its Chief Nuclear Officer (Senior Management Contacts). NRC and EPRI will each identify their respective overall coordination contacts (Overall Coordination Contacts) to serve as the primary interfaces for routine interactions between the NRC and EPRI.

1.3 Management of Cooperative Research Programs:

- a. Meetings: The Senior Management Contacts will confer, either via conference call or in meetings¹ as needed throughout the year, but will formally meet a minimum of once each year to exchange views on the strategic direction of the respective research programs and to identify opportunities to enhance cooperation. On a periodic basis, normally semiannually, the Senior Management Contacts will confer to identify areas of cooperation warranting greater management attention and to resolve any conflicts. The Senior Management Contacts shall agree on the priority, terms, and conditions of new Cooperative Research Programs and shall provide direction on ongoing work and other matters, as necessary. The Overall Coordination Contacts and appropriate Cooperative Research Program personnel may meet more frequently as necessary to manage the Cooperative Research Programs.
- b. Selection of Potential Cooperative Research Programs: The NRC and EPRI shall identify potential Cooperative Research Programs that are of benefit to the public and of interest to the NRC and the Industry. Factors to be considered when selecting potential programs shall include:
- Mutual interest in the subject matter.
 - Applicability of research results.
 - Contribution to plant safety.
 - Impact upon risk reduction.
 - Opportunity to leverage resources.
 - Timeliness.

Once an area of potential cooperative research is identified, a Cooperative Research Program may be pursued if mutual agreement is reached on the technical requirements of the project, including objectives, scope, approach and quality assurance requirements, and the roles and responsibilities of each party.

- c. Documentation of Cooperative Research Programs: Once approved by the Senior Management Contacts, each Cooperative Research Program will be documented in an Addendum to this MOU. Each Addendum shall set forth in detail the goals and objectives of the Cooperative Research Program, the scope of work to be performed or undertaken by the NRC and EPRI, and, as appropriate, specifics regarding intellectual property allocation, use rights and confidentiality, the contractors to be employed, the technical requirements, the financial responsibility and resource commitment of the NRC and EPRI, and the anticipated schedule. On an "as needed" basis, the Parties may agree to make an Addendum legally binding, with details to be set forth in the respective Addendum. In Cooperative Research Projects where proprietary information by EPRI or third parties needs to be shared with the NRC and protected by the NRC and its employees from unauthorized disclosure, the respective addendum shall also include or reference

¹ NRC published its complete policy statement on meetings open to the public in the Federal Register on May 28, 2002 (67 FR 36920-36924). In general, meetings related to Cooperative Research Programs will not be open to public attendance if the subject matter to be discussed includes discussions related to proprietary information or could result in the inappropriate disclosure and dissemination of preliminary, unverified information.

the respective affidavit(s), as applicable, in accordance with the requirements of 10 CFR §2.390, "Public inspections, exemptions, requests for withholding," that provide(s) the basis for withholding from public release EPRI reports that may be shared with the NRC in the process of performing the work associated with the specific Addendum². The affidavit(s) will generally describe the documents or information expected to be exchanged for the specific research program for each addenda.

- d. Management of Cooperative Research Programs: Each Cooperative Research Program will be managed by cognizant program managers and/or a technical review group composed of NRC staff and EPRI employees.
- e. Termination of a Cooperative Research Program: Either the NRC or EPRI may elect to terminate a Cooperative Research Program due to unsatisfactory contractor performance, lack of funds, changes in priority, or other reason. To effect a termination, the Senior Management Contact of the terminating party shall provide at least 30 days written notice of the intent to terminate continued participation in the specified Cooperative Research Program to the other party's Senior Management Contact. The terminating party shall provide confirmation of termination and the effective date thereof to the other party. The non-terminating party may continue with the research that is the subject of the Cooperative Research Program and shall have sole control over and use of the results and information obtained from the Cooperative Research Program subsequent to the effective termination date. Results obtained prior to the effective date of termination are governed by Article 2.2.
- f. No Conflict with Federal Rules or Regulations: The NRC's role as an independent agency shall be maintained. Notwithstanding anything to the contrary herein or in any addendum to this Agreement, the cooperation, approval, involvement, or guidance of the NRC staff with regard to the Cooperative Research Programs shall not bind the NRC in any manner especially its rulemaking, licensing, or adjudicatory processes. The occasional use of the term "agree" or mandatory language, such as "shall" or "will" in this MOU, or any addendum hereto, is not intended to constitute a binding obligation and does not create an enforceable right of action on the part of either party. EPRI shall not function as an advisory entity to the NRC. To maintain the NRC's regulatory independence, the parties shall not jointly interpret the results or implications of the data derived from the Cooperative Research Programs. EPRI shall not claim or publish in its studies, releases, reports, or publications any statements that indicate the NRC's approval or endorsement of any Cooperative Research Program or any related study, report, or publication without the prior written approval of the NRC's Senior Management Contact.

Article 2 - Guidelines for Cooperative Research

- 2.1 The purpose of each Cooperative Research Program shall be to produce research data and results related to nuclear safety. To maintain independence and to avoid conflicts of interest, or even the appearance of any conflicts of interest, the NRC and EPRI shall not

² This is applicable only to final reports or other intellectual property that EPRI has already developed. Data acquired during the course of the subject collaborative work is considered non-public pre-decisional information and thus will be routinely withheld from release until the final report(s) on this work is/are made publicly available.

jointly derive any conclusions regarding the data or results obtained from a Cooperative Research Program or the application of such data or results to any regulation or regulatory guidance. The NRC and EPRI may cooperate in the validation and verification of data to ensure it is ready for use by decision makers. Any regulatory analysis of the data to determine applicability to and impact on existing or new regulation shall be done independently.

- 2.2 All non-proprietary data produced in a Cooperative Research Program will be shared by and between the participants of the Cooperative Research Program (as described in more detail in the respective addendum), and may be used by the parties consistent with their respective legal and contractual obligations. Data produced or used under the Cooperative Research Programs or supplied to support the conduct of the research will be handled in accordance with the applicable statutes (e.g., Freedom of Information Act – FOIA), rules, regulations, policies, and procedures of the NRC and EPRI. The Parties recognize that Federal law may require release of this data.
- 2.3 If an electronic reading room is established, the following conditions will be maintained throughout the duration of this MOU.
 - The electronic reading room will be password protected, and passwords will be assigned to staff directly involved in cooperative research on a need-to-know basis.
 - The electronic reading room will be sufficiently secure to prevent staff from printing, saving, or downloading any documents.
 - Conditions of use of the electronic reading room will be displayed on the log-in screen and will require concurrence by each user of the electronic reading room.
- 2.4 All final data or results produced by a Cooperative Research Program shall be shared by all participants, and each party shall be free to disseminate them to whomever they choose at no additional cost. Proprietary information supplied by EPRI to support conduct of the research will be marked and protected in accordance with applicable Federal laws, rules, and/or regulations including 10 CFR §2.390. The addenda to this MOU will describe the documents or information to be exchanged for the specific research program involved. In accordance with 10 CFR §2.390, and prior to or contemporaneous with such exchange, EPRI will submit an affidavit covering such material and stating the basis for withholding it from public disclosure if the information has not been described in a previous affidavit.
- 2.5 Publication of non-public data or results from Cooperative Research Programs in journals or conference proceedings, by any party or contractor, prior to its public release in the final report(s) on this work, shall require the written approval of each of the Senior Management Contacts.
- 2.6 The NRC and EPRI will determine, on a project-by-project basis, in the respective addenda of pertinent Cooperative Research Programs, if appropriate patent or copyright applications should be filed with regard to the data or results generated by a Cooperative Research Program or whether additional arrangements for intellectual property allocation, use rights or confidentiality are required due to the nature of the project.
- 2.7 Upon request, each party shall have access, contingent upon meeting any required security clearances, to the contractors' facilities, separately or jointly, and may review

the data developed by the other party's contractor that is associated with a specific Cooperative Research Program.

- 2.8 Either the NRC or EPRI may, at its own expense, conduct additional research beyond the scope of the Cooperative Research Program using the same contractor or facility employed with respect to a Cooperative Research Program if it so desires, or may employ such other contractors or facilities as it deems appropriate.

Article 3 - Terms of Agreement

- 3.1 The term of this MOU shall commence effective upon signing by both the NRC and EPRI Senior Management Contacts and shall expire on September 30, 2021. The addenda that were active as of September 30, 2016, remain as such until they are terminated in accordance with the requirements of this MOU. A list of addenda that were active as of September 30, 2016, is attached hereto as Exhibit A.
- 3.2 Either party may terminate this MOU at any time upon 90 days prior written notice of such termination.
- 3.3 This MOU supersedes and replaces the Memorandum of Understanding dated March 14, 2007. Addenda entered into prior to this MOU and referencing previous versions of the Memorandum of Understanding shall continue their respective terms under this umbrella MOU.

The parties hereto acknowledge that this MOU is non-binding and is solely intended to promote cooperative relationships between the parties.

/RA/

Michael F. Weber, Director of Nuclear
Regulatory Research
U.S. Nuclear Regulatory Commission

Date: 28 September 2016

/RA/

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

Date: 30 September 2016

Exhibit A

Addenda to NRC-EPRI MOU on Cooperative Nuclear Safety Research
that were active and in effect as of September 30, 2016³

Title	NRC Contact	EPRI Contact	ADAMS Accession #	Expiration Date
Acquisition and Testing of Zion Spent Fuel Pool Neutron Absorber Materials (renewal)	Eric Focht, RES/DE	Hatice Akkurt	Enclosure 2 ML16223A500	September 30, 2021
Aging, Qualification, and Condition Monitoring of Electrical Cables	Darrell Murdock, RES/DE	Andrew Mantey	Enclosure 3 ML16223A501	September 30, 2021
Cooperative Nuclear Safety Research, External Flooding Hazards	Joseph Kanney RES/DRA	Stuart Lewis	ML15321A365	September 30, 2021
Digital I&C and Human Factors	Ian Jung, RES/DE, Sean Peters, RES/DRA	Robert Austin	Enclosure 4 ML16223A502	September 30, 2021
Extremely Low Probability of Rupture	Mathew Homiack RES/DE	Craig Harrington	ML15314A237 (non-public)	December 31, 2016
Fire Risk	Mark Salley, RES/DRA	Stuart Lewis	Enclosure 5 ML16223A503	September 30, 2021
Long-Term Operations Beyond 60 Years	Amy Hull, Raj Iyengar DE	Sherry Bernhoft	Enclosure 6 of ML16223A504	September 30, 2021
Nondestructive Examination	Carol Nove, RES/DE	Greg Selby	ML14112A187 (non-public)	April 30, 2018
Primary Water Stress Corrosion Cracking - Crack Initiation Testing	Erick Focht, Greg Oberson DE	Paul Crooker, Al Ahluwalia	Enclosure 7 of ML16223A505	September 30, 2021
Primary Water Stress Corrosion Cracking Expert Panel Activities (renewal)	Greg Oberson, DE	Paul Crooker	Enclosure 8 of ML16223A506	September 30, 2021
Probabilistic Risk Assessment (renewal)	Peter Appignani, DRA	Stuart Lewis	Enclosure 9 of ML16223A507	September 30, 2021
Seismic Risk	Jon Ake, DE	John Richards	Enclosure 10 of ML16223A509	September 30, 2021
Steam Generator Tube Base Research Program	Matt Rossi, Pat Purtscher DE	James Benson	ML13357A155 (non-public)	December 31, 2019

Exhibit A

³ This listing is a one-time compilation of active Addenda as of September 30, 2016, provided for information. It does not commit the parties to future revisions of this MOU as addenda are added, revised or deleted. Subsequent updates to this list will be managed separately by the overall coordination contacts.