ADDENDUM

to

MEMORANDUM OF UNDERSTANDING

between

U.S. NUCLEAR REGULATORY COMMISSION

and

ELECTRIC POWER RESEARCH INSTITUTE, INC.

on

COOPERATIVE NUCLEAR SAFETY RESEARCH

for

PROBABILISTIC RISK ASSESSMENT (PRA)

I. Introduction

This Addendum to Memorandum of Understanding (the "Addendum") is entered into by and between the U.S. Nuclear Regulatory Commission (the "NRC") and the Electric Power Research Institute, Inc. ("EPRI"), 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 Memorandum of Understanding on Cooperative Nuclear Safety Research, dated March 14, 2007 (the "MOU"). Pursuant to that MOU, the parties agreed to encourage cooperation in nuclear safety research, which provides benefits for NRC, the nuclear power industry (the "Industry"), and the public.

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

This Addendum describes a cooperative research and development (R&D) program in the area of nuclear power plant (NPP) probabilistic risk assessment (PRA) to be undertaken cooperatively by EPRI and the NRC's Office of Nuclear Regulatory Research (NRC/RES).

II. Objectives

The objective of this collaborative effort on PRA is to enable and expedite the development of PRA methods, tools, data, as well as technical information that is useful to both the regulator and industry, and to avoid unnecessary replication of research tasks between industry, the NRC and NRC contractors.

The NRC and EPRI are supporting a number of initiatives aimed at improving the scope and quality of PRAs. Initial cooperative efforts will be associated with the following activities:

- Support system initiating event analysis,
- Treatment of loss of offsite power in PRAs,
- Initiating event guideline development,
- Treatment of uncertainty in risk analyses,
- Aggregation of risk metrics,
- Standard approach for injection following containment failure (Boiling Water Reactors),
- Standard approach for containment sump recirculation during small and very small loss of coolant accident (LOCAs),
- Human reliability analysis,
- Digital Instrumentation and Control (I&C) risk methods,
- Advanced PRA methods, and
- Advanced reactor PRA methods.

This cooperative program has the following specific objectives:

1. Ensure the timely exchange of information (e.g., objectives, milestones) on planned and ongoing research activities.
2. Ensure the sharing of technical data needed by the NRC/RES and EPRI R&D programs.
3. Develop PRA methods, tools, and/or data needed to support risk-informed applications.
4. Ensure the timely sharing of R&D results and tools.
5. Assess the capabilities of current and advanced PRA methods and tools.

III. Scope and Plan

This program may include a variety of collaborative activities (including information exchange meetings, support of expert panels, and jointly sponsored projects and research) aimed at achieving the preceding objectives. The program elements are as follows:

1. Consensus Guidance for PRA Methodology Application Issues. Both parties will participate in a cooperative R&D program to develop practicable and technically sound consensus guidance for PRA methodology applications for the issues identified in Section II (above). In addition, EPRI and the NRC will solicit participation of other nuclear industry groups in this effort.

2. Programmatic Information Exchange. Both parties will exchange information concerning the objectives, milestones, and planned approaches for their ongoing activities.

3. Technical Information Exchange. Both parties will facilitate the exchange of technical information between researchers and project managers. This technical exchange is particularly important in cases where, to avoid unnecessary duplication of research, EPRI and NRC/RES agree to a division of effort on the basis of complete exchange of research results. It also includes support of working meetings between researchers (on an agreed upon as-needed basis).

4. Seminars/Workshops. EPRI has been conducting seminars/workshops for nuclear power industry engineers. These seminars have focused on PRA scope and quality and have been attended by engineers from nuclear power plants and the NRC.

   The NRC/RES will support EPRI in conducting seminars/workshops on PRA scope and quality issues identified in Section II (above). The seminars/workshops will convey to industry practitioners the consensus guidance on PRA methodology applications developed by the NRC/RES, EPRI, and other participating industry groups.

5. Other Parties. Recommendations concerning the participation of other parties (whether domestic or international) will be jointly developed and reviewed with NRC/RES and EPRI management.

   All technical interactions will be managed through a designated point of contact for each party. All EPRI data and materials subject to commercial or other use restrictions will submitted to the NRC under a general affidavit addressing all documents, data, and materials to be shared with the NRC pursuant to this Addendum and requesting that such documents, data, and materials be withheld from disclosure to the public pursuant to Title 10, Section 2.390, of the *Code of Federal Regulations* (10 C.F.R. 2.390), as provided in the MOU. Should the NRC reject EPRI's request to withhold such documents, data, and materials from public disclosure, the project will not proceed.

IV. Period of Performance

The initial period of performance will be from the Effective Date through December 31, 2009, to be extended in writing if mutually agreeable to EPRI and the NRC.

V. Project Direction and Coordination

All technical interactions will be managed through a designated point of contact for each party (the "Project Contacts"). Technical meetings to coordinate this effort and discuss project progress will be arranged through the respective Project Contacts, as follows:

NRC:	EPRI:
Peter L. Appignani SPAR Model Development, Level 1 Project Manager U.S. Nuclear Regulatory Commission 11545 Rockville Pike, MS T9F39 Rockville, MD 20852 (301) 415-6857 PLA@nrc.gov Erasmia Lois Senior Reliability and Risk Analyst U.S. Nuclear Regulatory Commission 11545 Rockville Pike, MS T10E50 Rockville, MD 20852 (301) 415-6560 EXL1@nrc.gov	Kenneth Canavan Program Manager, Risk and Asset Management Electric Power Research Institute, Inc. 1300 West W.T. Harris Blvd. Charlotte, NC 28262 (704) 595-2237 kcanavan@epri.com

VI. Costs and Schedule

This Addendum does not create any binding obligation or enforceable right of action of any kind on the part of either party. This Agreement does not obligate any funds and is subject to the availability of appropriated funds.

The costs of this cooperative program (above and beyond the costs of the existing PRA scope and quality programs of both parties) are associated with supporting (1) working meetings among researchers, and (2) management review meetings.

EPRI and the NRC are responsible for their respective costs in implementing this Addendum.

There are no specific key milestones for this program. Technical information exchange meetings will be held on an "as-needed" basis.

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 such a dispute cannot be settled by the Project Contacts, the dispute shall be submitted to the Senior Management Contacts (as defined in the MOU) for resolution.

AGREEMENT

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Brian W. Sheron, Director	David J. Modeen
Office of Nuclear Regulatory Research	Vice President, Nuclear Power and
U.S. Nuclear Regulatory Commission	Chief Nuclear Officer
	Electric Power Research Institute, Inc.
_____	_____
Date	Date