

NUCLEAR RISK MANAGEMENT COORDINATING COMMITTEE

STRATEGIC PLAN



Member Organizations:

**American Nuclear Society
American Society of Mechanical Engineers
Institute of Electrical and Electronic Engineers
U. S. Nuclear Regulatory Commission
U. S. Department of Energy
Nuclear Energy Institute
Electric Power Research Institute**

Revision 6, September 2005

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CHARTER of the COMMITTEE

A nuclear risk management coordinating committee (NRMCC or “Committee”) has been established by the American Nuclear Society and the American Society of Mechanical Engineers.

The Committee coordinates the development and maintenance of codes and standards that address risk management and risk-informed decision making for nuclear power plants and other nuclear facilities, and the transportation and storage of spent nuclear fuel in order to avoid redundancy and facilitate utilization of the resulting codes and standards.

The objective of the Committee is to ensure:

- Development of a plan designed to facilitate the implementation and use of nuclear risk-related standards required to meet the identified needs of the user community.
- Determination of the relative priority of individual standards to guide when their development should be initiated.
- Determination of the standards development organization (SDO) that should assume responsibility for the development of each standard with due consideration of the SDO’s scope of responsibility related experience, resource availability, closely related standards, and other ongoing risk-related standards work.

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KEY INITIATIVES/ISSUES TO BE ADDRESSED

PRA Standards

1. Assure that current and emerging standards are developed and maintained to meet the needs of the user and are consistent and compatible so they can be readily applied.

Action Plan:

- The NRMCC provides a forum for coordinating, exchanging technology and information with organizations that are using or are developing Risk-Informed Codes and Standards.
- The NRMCC will ensure that these organizations are aware of the activities of the NRMCC and that they receive invitations to all NRMCC meetings. Liaisons will be identified and assigned.
- Specific Interfaces are:
 - ASME Board on Nuclear Codes and Standards
 - ANS Standards Board
 - Institute of Electrical and Electronic Engineers
 - U. S. Nuclear Regulatory Commission
 - U. S. Department of Energy
 - Nuclear Energy Institute
 - Owners/ Operators
 - EPRI
 - Universities
 - Owners Groups
- 2. Integrate the risk-informed methodology set forth in PRA standards into other application-specific codes and standards, as appropriate.

Action Plan:

- The table on pages 9 and 10, entitled “Risk Management Development Areas” identifies the Risk Management applications that are being developed, the responsible organization, and the status of each of these applications.

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3. Development of a plan designed to facilitate the implementation and use of nuclear risk-related standards required to meet the identified needs of the user community.

Action Plan:

- On September 9, 2004 the Nuclear Risk Management Coordinating Committee approved a motion that a “joint consensus committee” be designated to develop a new standard that would incorporate the requirements for a level 1 PRA (CDF) supplemented by a LERF calculation for three plant operating conditions (power, low power, and shutdown), and for accidents initiated by internal events (including internal fire), and external events (including flooding, seismic events, and wind). The assignment of this work was made the responsibility of the chairmen of the two consensus committees involved, ANS RISC and ASME CNRM. These two chairmen met on September 14 and decided to assign the responsibility for the requirements standard to ASME CNRM.
4. Evaluate alternatives and recommend actions intended to optimize the number and mix of separate standards necessary to implement a full scope of risk-informed application in order to avoid redundancy and permit utilization.

Action Plan:

- This initiative is addressed by the “Action Plan” for initiative number 3, above.
5. Work with the Nuclear Regulatory Commission in the development of its plans to implement the Plan for Stabilizing the PRA Quality Expectations and Requirements.

Action Plan:

- Assist the NRC in developing a process that makes these standards coherent and user-friendly.
- Assist the NRC in establishing priorities with respect to Risk Management activities.

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- Identify and assign any additional codes, standards and activities (e. g., “Implementation Standards”) that need to be addressed and make assignments to the proper organization for development.
6. Work with the Nuclear Regulatory Commission in the development of its plans to implement 10CFR50.69 and future plans for risk-informed regulation of the nuclear power industry.

Action Plan:

- **Assist the NRC in the implementation of their action plan for Stabilizing the PRA Quality Expectations and Requirements.**
- **Assist the NRC in the development and implementation of a Technology Neutral Framework for new reactors.**

Communication and Training

7. Define appropriate training and qualification initiatives for users of risk-informed standards, including Integrated Decision-Making Panels.

Action Plan:

- **Step 1:** Develop a workshop on Risk Management Standards.
Some of the significant items that would need to be addressed:
 - Benefits of the standards.
 - How to use the standards (this also needs to be addressed in a prominent place in the standards).
 - Workshop would need to be structured to get the attention of management.

8. Identify needs and priorities for training plant staff in risk-informed concepts and application.

Action Plan:

- **[TBD]**

New Reactor Developments

9. Identify needs, priorities and timing for development of new or modification of existing standard(s) to address unique PRA requirements for new reactors

Action Plan:

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- The Nuclear Risk Management Coordinating Committee has assigned a new reactor Task Group to develop recommendations in this area.

10. Determine the need for a Standard to develop a Risk-Informed Safety Classification scheme, particularly to assist the advanced and new reactor designs.

Action Plan:

- The New Reactor Task Group noted in initiative number 9, above is addressing classification, also.

CURRENT PROJECTS¹

- ASME CNRM has been assigned the overall responsibility for a new, joint consensus committee to develop a new standard that would incorporate the requirements for a level 1 PRA (CDF) supplemented by a LERF calculation for three plant operating conditions (power, low power, and shutdown), and for accidents initiated by internal events (including internal fire), and external events (including flooding, seismic events, and wind).
- Low Power Shutdown (LPSD) – ANS is preparing a LPSD PRA standard.
- Extend plant PRA to full Level 2 and Level 3. - ANS has initiated action on two new standards to address this subject.

ASME-CNRM has completed Addendum b to ASME-RA-S-2002 that addresses feedback from trial use of the standard and NRC comments.

- Risk-informed treatment of structures, systems and components (SSCs) not modeled in the PRA. ASME and ANS are cooperating on this topic in their respective areas of responsibility.
- ASME Nuclear Quality Assurance Committee (NQA) has a draft of the requirements for Risk-Informed QA; for example, treatment of Category 2 and 3 items.
- ASME has initiated an effort to develop a Generic Failure Rate Data Base.

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- NRC issued Reg. Guide 1.200 For Trial Use to address PRA quality and regulatory positions on ASME PRA Standard, and NEI Peer Review Process.
- NRC has published NUREG/CR-6823, Handbook of Parameter Estimation for Probabilistic Risk Assessment. This handbook was generated to support such documents as ASME-RA-S-2002 by providing a compendium of good practices that a PRA analyst can use to generate the parameter distributions required for quantifying PRA models.
- NRC has published Revision 1 to NUREG/CR-6595 for public review and comment. This revision expands the simplified approach for estimating Large Early Release Frequency (LERF) to address low power and shutdown conditions. Revision 1 to this NUREG/CR is intended to support the ANS low power shutdown PRA Standard.
- NRC is completing a NUREG, “Good Practices for Implementing Human Reliability Analysis”. As with the Parameter Estimation Handbook, this document is also providing a compendium of good practices that a PRA analyst can use to perform the HRA required in a PRA.
- Treatment of Uncertainties-the NRC is developing a guidance document (e.g., NUREG) to provide guidance on the treatment of uncertainties which will also include guidance on what are acceptable bounding and sensitivity analyses.
- Advanced Reactors-the NRC is developing technology-neutral framework for the licensing of future advanced reactors. This framework will provide guidance and criteria on the safety philosophy, protective strategies for public health and safety, the risk guidelines, design expectations, safety classification, treatment of uncertainties and defense-in-depth. In addition, the ASME standard is being reviewed in detail for applicability for future reactors and identification of missing (needed) guidance.
- NRC officially issued 10 CFR 50.69 (“Risk-Informed Categorization and Treatment of Structures, Systems and Components for Nuclear Power Reactors”) in the U.S. Federal Register on Nov. 22, 2004 as one of the initiatives to risk-inform regulations. Industry pilot plant efforts are underway in order to provide submittals per 10 CFR 50.69 in 2005.
- NEI has prepared a final Categorization Process Guideline, NEI 00-04.

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- NEI has requested that EPRI develop seismic and environmental qualification guidance for RISC-3 SSCs.

¹ Current Projects are defined as those that are key to the organization's overall Risk-Informed efforts. They do not include sub-level projects (e.g., Code Cases, specialized research projects, etc.) that have no effect on the coordination efforts of the Committee.

PROPOSED NEAR-and-LONG TERM PROJECTS

Development Projects:

- Task Group to investigate approaches for the development of a Life Cycle, Risk-Informed Nuclear Code. **[Need to identify ownership of the Task Group.]**
- Determine need for, and if appropriate, develop a Standard to develop a Risk-Informed Safety Classification scheme, particularly to assist advanced and new reactor designs.*
- Determine need for, and, if appropriate, develop standards for Qualification of RISC-3 items (Safety-Related, Low Safety Significant SSCs).*

New-Scope Projects*:

- Address PRA considerations for advanced/new reactor designs. The NRMCC has assigned a new reactor Task Force to develop recommendations in this area.
- Address PRA for other nuclear facilities, transportation and storage of nuclear materials, and related activities.
- Develop risk methodology to address terrorism threats at nuclear power plants and facilities as well as the transport and storage of nuclear materials.

* The NRMCC will evaluate and assign, delete or "Hold" these projects, as appropriate.

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Risk Management Development Areas

Risk Management Standard/Guideline Scope of Activities Risk Management Activity	Risk Management Area of Responsibility				Owning Organization Completion Schedule	
	Completed	Development Underway (In Review)	Approved & In Use	Document Number	Responsible Organization	Scheduled Year for Development
		Performing a PRA				
At-Power Internal Events Level 1	X (add. a. and b.)		X (add. a.)	ASME RA-S- 2002, Add. a. and b.		
At-Power Internal Events Level 2		X				
At-Power Internal Events Level 3		X				
Low Power/Shutdown Internal Events Level 1						
Low Power/Shutdown Internal Events Level 2						
Low Power/Shutdown Internal Events Level 3						
External Events (At-Power)	X			ANS-58.21??		
External Events (Low Power/Shutdown)						
Fire PRA		X				
Seismic PRA	X		X	ANS-58.21	ANS	
Uncertainty Analysis						
Data Analysis						
Spent Fuel Pool PRA						
Dry Cask Storage PRA						
Spent Fuel Shipping & Handling PRA						
PRA for Instrumentation						
Severe Wind PRA	X		X	ANS-58.21	ANS	
Probabilistic Threat Assessment (Security)						
Qualification of PRA Personnel						
		Maintaining a PRA				
General Update Process						
Specific Update Process						
Process for Periodic Review of PRA & PRA Applications						
PRA Software Quality Assurance						
		PRA Upgrades				
Process for Approving New Methods						

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	Completed	Development Underway (In Review)	Approved & In Use	Document Number	Responsible Organization	Scheduled Year for Development
Process for Implementation of New Methods						
		PRA Applications				
PRA Risk Ranking						
Risk Significance Categorization						
RI-IST						
RI-ISI						
BNCS Strategic Plan Initiatives		X				
RI Emergency Planning						
Work Activity Risk Assessment						
Risk Informed Technical Specifications						
Option 3 - Large Break LOCA, etc.						
Configuration Risk Management Programs						
10CFR50.69 Implementation		X (ASME)				
Risk Informed Treatment Strategies		X (ASME)				
RI-MOV Program						
RI-Procurement Program						
RI-Design Engineering Program						
Process for Risk Informing Engineering Programs						
Risk-Informed Safety Classification		X (ASME & ANS)				
		Risk Management Decision Making				
Risk Management Expert Panels		X (ASME)				
Risk Informed Working Groups						
Assessment of Aggregate Effects						
Risk Informed Organizational Decision-Making						
Generic Failure Rate Data Base		X (ASME)				
Process for Risk Informing Engineering Programs						

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