



Risk-Informed and Performance- Based Activities at the NRC

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Acronym Slide

EPRI	Electric Power Research Institute
FAQ	Frequently Asked Questions
HLW	High Level Waste
IAEA	International Atomic Energy Agency
MOU	Memorandum of Understanding
NEA	Nuclear Energy Agency
OECD	Organization for Economic Cooperation and Development
PRA	Probabilistic Risk Assessment
RAI	Request for Additional Information
RG	Regulatory Guide
RIPB	Risk-Informed and Performance-Based
RISC	Risk-Informed Safety Class
SRP	Standard Review Plan

Agenda

Reactor Areas

- Operating Reactors**
- New Reactors**

Materials and Waste Areas

- Materials and Low-Level Waste**
- Fuel Cycle, Storage, and High-Level Waste**

Applications Across NRC

- **Rulemakings**
- **Regulatory Analyses**
- **Generic Issues Program**
- **Events Assessment**
- **Oversight Processes**
- **License Amendments & Reviews**

Collaboration

- **Electric Power Research Institute (EPRI) Research Memorandum of Understanding (MOU)**
- **Professional Societies and Academia**
 - **University Cooperative Research**
 - **ANS, ASME**
- **International Activities**
 - **OECD/NEA**
 - **IAEA**
- **US Government Agencies**
 - **National Aeronautics and Space Administration (NASA)**
 - **Department of Energy (DOE)**

Status of RIPB Regulation

- **Two decades of RIPB Regulation**
 - **PRA Policy Statement Issued 1995**
- **RIPB is an integral piece of our regulatory programs**
- **Successful, ongoing, and planned applications**

Risk-Informed and Performance-Based Regulation for Operating Reactors

Operating Reactors

- **Successful Applications**
 - **10 CFR 50.44 (combustible gas control)**
 - **Reactor oversight process**
 - **Licensing actions**
 - **Inservice inspection**
 - **Technical specifications**
 - **Generic Issues Program**
 - **Ongoing issue screening and disposition**
- **Near-term Focus Areas**
 - **10 CFR 50.48(c) (fire protection)**
 - **10 CFR 50.36 (technical specifications)**
 - **Initiatives 4B and 5B**
 - **10 CFR 50.69 (special treatment requirements)**
- **Longer-term Activities**
 - **10 CFR 50.61(a) (pressurized thermal shock)**
 - **10 CFR 50.46(a) (emergency core cooling acceptance criteria)**
 - **Digital systems**

Operating Reactors

- **Near-term Focus Areas**
 - **50.48(c) (fire protection)**
 - **Reviewing pilot plant submittals**
 - **Establishing infrastructure**
 - **Regulatory guidance**
 - **Fire PRA acceptance guidelines**
 - **Resolving technical issues**
 - **Plant-specific RAIs**
 - **FAQ process**

Operating Reactors

- **Near-term Focus Areas**
 - **50.36 (technical specifications)**
 - **Implementing Flexible Completion Times (4B) and Risk-inform Surveillance Frequencies (5B)**
 - **Understanding extent of industry interest**
 - **Ensuring sufficient infrastructure**
 - » **Staff expertise**
 - » **Review guidance**
 - **50.69 (special treatment requirements)**
 - **Agreeing on RISC 3 (Safety-Related, Low Safety Significant) treatment**

Risk-Informed and Performance- Based Regulation for New Reactors

New Reactors

- **Successful Applications - Regulatory framework established**
 - **10 CFR Part 52**
 - **RG 1.206, Combined License Applications**
 - **SRP 19.0, PRA and Severe Accident Evaluation**
 - **Interim Staff Guidance issued**
- **Near-term Focus Areas - Ongoing reviews of applicants' PRAs**
 - **Design Certifications**
 - **Combined License Applications**

New Reactors

- **Risk insights from applicants' PRAs used to inform NRC reviews**
 - **Provided to technical review branches**
 - **Used to support issue resolution**
 - **Used to support inspection program**
- **Longer-term activities**
 - **Risk-managed technical specification applications**
 - **Risk-informed inservice inspection of piping**
 - **10 CFR 50.69 (special treatment requirements)**

Risk-Informed and Performance-Based Regulation in Materials, Fuel Cycle, and Waste

Materials and Low-Level Waste

- **Successful Applications**
 - **Materials inspection frequency and approach**
 - **Materials licensing guidance (NUREG-1556 Series)**
 - **Materials security activities including increased controls and additional security measures**
 - **Response to materials events**

Materials and Low-Level Waste

- **Applications in Process**
 - **Development of security rulemaking for materials licensees**
 - **Reviews of DOE non-HLW determinations and performance assessments**

Fuel Cycle, Storage, and High-Level Waste

- **Successful Applications**
 - **Issued guide for nuclear material and waste applications**
 - **Issued Part 70 and approved Integrated Safety Analyses**
 - **Completed dry cask storage facility PRA**
 - **Issued Part 63, Yucca Mountain Review Plan, and inspection procedures**

Fuel Cycle, Storage, and High-Level Waste

- **Applications in Process**
 - **Revise Fuel Cycle Oversight Process**
 - **Risk-inform construction inspections**
 - **Enhance dry cask Standard Review Plan and review process**
 - **Conduct Yucca Mountain licensing review**