

Overview of the Nuclear Industry's Risk-Informed Activities

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Risk Assessment

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Overview

- Risk Informed Applications
- PRA improvements
- PRA Challenges
- Research Activities
- NRC Task Force on Risk-Informed Framework
- Outlook

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Risk-Informed Applications

- Maintenance Rule
 - Improvements underway for end of 2013 implementation
 - Risk management for equipment out of service to include consideration of fire risk
- Reactor Oversight Process
 - Risk informed reactor inspection and performance indicators
 - Increasingly complex but provides focus on safety

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Risk-Informed Applications

- Risk-informed technical specification improvements
 - Risk-informed surveillance intervals widely implemented
 - Risk-informed completion times are available for implementation
- Risk-informed inservice inspection
 - Template for PRA adequacy approved
 - Supports Code Case allowing streamlined approval

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Risk-Informed Applications (cont.)

- Vogtle Units 1 and 2 moving forward to implement:
 - Risk-informed scope of special treatment requirements (10 CFR 50.69)
 - Technical Specifications completion times
- Good progress so far
 - Procedure and PRA model development
 - NRC observation of plant processes and PRA peer review
 - Industry support

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Risk-Informed Applications (cont.)

- Risk-Informed approach for closure of PWR sump strainer issues
 - Progressing well
 - Provides risk-insights to support wider resolution
- Risk-informed fire protection
 - Has led to safety improvements
 - Process improvements could lead to more timely and efficient implementation

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PRA Model Improvements

- Plant PRA models undergoing continual updating and improvements
 - Driven by applications, increasing expectations
 - Most plant internal events at power models achieving Regulatory Guide 1.200 technical adequacy
 - Fire PRA under development at most plants, whether transitioning to FPA 805 or not

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PRA Model Challenges

- Fire PRA
 - Achieving better realism
 - Improved fire database nearing completion
 - Modeling methods improvements
- Seismic PRA
 - Achieving clear standard and guidance with full plant pilot and NRC agreement
 - Infrastructure to support model development, meet potential schedules

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Research Activities

- NRC State of the Art Reactor Consequence Analysis (SOARCA)
 - Updated analysis on consequences of reactor accidents
 - Two plants analyzed
 - Source terms and timing were significantly reduced from earlier estimates
 - Minimal health effects
 - Demonstrated effectiveness of post 911 safety enhancements
 - Provides useful information to inform regulatory decisionmaking

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Research Activities

- NRC Level 3 study
 - Industry supportive of comprehensive risk study to update NUREG 1150
 - Advances in plant operation and safety
 - Advances in state of knowledge and analytical techniques
- Plant identified – Vogtle Units 1 and 2
- Schedule and budget may be optimistic

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NRC Task Force on Risk-Informed Framework

- Long Term Effort
 - Industry provided input to public comment request
 - Opportunity for improvements to framework
 - Many insights from past and existing efforts
 - Informs Fukushima Task Force Item 1

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Outlook

- Operating plants have made great progress in use of risk approaches
- Risk-informed approach provides integrated approach to safety
- Insights should inform post-Fukushima activities
- Challenges with respect to infrastructure

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