



**U.S. NRC**

UNITED STATES NUCLEAR REGULATORY COMMISSION

*Protecting People and the Environment*

**U.S. NRC PRA Research Activities  
CSNI / WGRisk 8<sup>th</sup> Annual Meeting  
April 18 - 20, 2007**

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# Overview

- NRC's PRA research program supports agency efforts in risk-informed decision-making for reactors, materials, and waste
- Areas of research include technical basis development, quality standards, applications, methods, tools, and data

# Reactors

- Digital instrumentation and control systems
- Steam generator tube rupture
- Fire protection
- Risk-derived and performance-based framework for future plant licensing
- Risk-informed / performance-based alternative to Part 50
- PRA methods, tools, and data for advanced reactors
- Treatment of uncertainties and alternative methods in decision-making



## PRA Quality Standards

- Phased approach to PRA quality
- All events (internal and external) and all operating states (full-power, low-power, and shutdown)
- Consensus standards being developed by ASME and ANS
- NRC Reg Guide 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities”
- Peer review guidance

## Human Reliability Analysis

- Human Event Repository and Analysis System (NUREG/CR-6903)
- Benchmarking methods at Halden
- ATHEANA (NUREG-1624)
- Fire manual actions

## Materials and Waste

- MOX license application risk-informed guidance
- HRA-informed training for aspects of materials licensees
- Dry cask storage pilot PRA
- Semi-quantitative HRA for fuel handling operations