

COMMISSION BRIEFING SLIDES/EXHIBITS

**BRIEFING ON RES PROGRAMS,
PERFORMANCE, AND PLANS**

MARCH 19, 2002



United States Nuclear Regulatory Commission

COMMISSION BRIEFING

Office of Nuclear Regulatory Research

March 19, 2002

Outline

- **State of Research**
- **Major Research Activities**
- **Summary**

Responses to Recommendations from ACRS/Expert Panel

- **Enhanced in-house capabilities**
- **Initiated research to meet future challenges**
- **Increased cooperative research**
- **Improved and expanded PRA**
- **Sunset selected projects**
- **Improved communications**

RES Management Focus

- **Infrastructure (human capital initiatives, facilities, analytical tools)**
- **Timeliness and quality of products**
- **High level priorities**
- **PBPM**

RES Technical Focus

- **Contributes to major regulatory decisions/actions**
 - **Risk-inform 10 CFR 50**
 - **Advanced reactor licensing**
 - **RPV and RCS integrity**
 - **Dry cask storage**
 - **Reactor oversight process**
 - **Nuclear waste**
 - **GSI resolution**

Risk Informed Initiatives

- **10 CFR Part 50 Technical Requirements (Option 3)**

- **50.46 ECCS**

- Fuel performance, evaluation model realism, system reliability performance**

- **50.44 Combustible Gas Control**

Risk Informed Initiatives

- **Risk Informed Decisionmaking and PRA Quality**
 - **Endorse ASME standard with exceptions**
 - **Link standard to regulatory activities and decisions**
 - **Incorporate industry peer review**

Risk Informed Initiatives

- **Pressurized Thermal Shock**
 - **Quantitative analysis with uncertainties**
 - **Risk acceptance criterion**
- **Materials regulatory framework**
 - **Safety goals, metrics, methods development**
- **PRA methods development**
 - **SPAR, fire, human reliability**

Operational Events Analysis

- **Accident Sequence Precursor program**
- **Industry trends**
- **Reactor Oversight Process support**
- **Reactor performance data collection**

Advanced Reactors

- **Pre-application review**
- **Research plan to support licensing reviews of AP-1000, PBMR, GT-MHR, and IRIS**
 - **Identification of needs**
 - **Assess state of the art**
 - **Retrieve, acquire and develop needed information**

Advanced Reactors

- **Technology Infrastructure**
 - **Regulatory framework**
 - **Probabilistic risk assessment**
 - **Fuel issues, material Issues**
 - **Analytical Tools**
- **Early consideration of waste**
- **Will inform Commission of progress and seek guidance on policy/major technical issues**

Major Activities in Waste Arena

- **Controlling release of solid material**
- **Assessing health effects from nuclear materials**
- **Cooperation on multi-media environmental models**
- **Radionuclide transport**

Dry Cask Storage

- **Renewal of dry storage site licenses being sought**
- **Cooperative research program results indicate no significant degradation**
- **Developing PRA methodology for dry cask systems**
- **Pilot PRA for specific cask/site will assess risk to public and identify dominant contributors**

Package Performance Study

- **Study initiated to validate analytical methods and support public confidence**
- **Examining response to severe impact and fire accidents**
- **Anticipate testing in Summer 2004 with program completion in late 2005**

Stress Corrosion Cracking (SSC)

- **Issues involving SSC will increase as plants age**
 - **BWR internals, SG, VHP, pipe**
- **RES is increasing focus to prepare for challenges**
 - **Mechanisms of cracking**
 - **Inspection methods and integrity**
 - **Mitigation and repair**

Summary

- **Focus on safety**
- **Ready for the present and prepare for the future – Maintain infrastructure**
- **Enhance communications**
- **Major issues/Commission interaction**