

**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**