



Office of Nuclear Regulatory Research Commission Briefing

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Outline

- **RES Mission**
- **Accomplishments**
- **Future Activities**
- **Challenges and Initiatives**
- **Summary and Conclusion**

RES Mission

- **Support licensing, inspection, and rulemaking activities**
- **Prepare for future challenges**
- **Maintain Center of Expertise**
- **Provide independent technical analyses**

RES Accomplishments (1)

- **Products supporting licensing, inspection, and rulemaking**
 - **Support for NRR, NMSS, NSIR, OCIO, and Regions**
 - **Systems/Thermal-Hydraulics**
 - **PRA/Risk**
 - **Operating experience and regulatory effectiveness**
 - **Engineering/Materials**
 - **Spent Fuel/Waste**

RES Accomplishments (2)

- **Products from anticipatory research**
 - **Emerging technologies in I&C**
 - **Burnup credit for dry cask storage (supports SFPO)**
 - **APEX and ATLATS testing to support AP1000 design certification**
 - **Improved severe accident models (MELCOR)—supports realistic severe accident and vulnerability assessments**
 - **Source term models (supports MOX review)**

RES Accomplishments (3)

- **Maintain Center of Expertise and Support Ongoing Activities**
 - **Support base includes people and facilities**
 - **Thermal-Hydraulics/Severe Accidents**
 - **Probabilistic Risk Assessment**
 - **Engineering and Materials**

RES Accomplishments (4)

- **Products that provide independent views**
 - **Phenomena Identification and Ranking Tables (PIRTs) for ACR-700**
 - **PIRT for gas-cooled reactor fuels**
 - **Expert elicitation for LOCA frequency determination**
 - **Study on grid reliability as a consequence of deregulation**
 - **Vulnerability assessment studies**
 - **Selected independent assessments, e.g., Davis-Besse**

Dissemination of RES Products

- NUREG Reports (staff and contractor)**
- Regulatory Guides—information to licensees/applicants**
- Research Information Letters (RILs)—information to other NRC offices**
- Resolution of Generic Safety Issues**
- Development and maintenance of analytical models (SPAR, TRACE, MELCOR, etc.)**
- Operating experience databases and reviews**
- Independent technical analyses**

Future Activities (1)

- **Major technical products scheduled to be completed in 2004 and 2005**
 - **Techniques to assess margins to aid in risk-informed decision-making**
 - **Support for risk-informing 10 CFR 50.46 (performance-based fuel criterion)**
 - **Support for advanced reactor reviews (infrastructure, PIRTs, technology-neutral framework)**
 - **Planning for Package Performance Study**

Future Activities (2)

- **Development of robust materials program**
 - **Draft research plan developed**
 - **Enhance capabilities/tools to evaluate radiation protection issues**
 - **Enhance maintenance of models/codes to assess health effects**
 - **Reliance on in-house capabilities to maintain robust program at modest cost**

Future Activities (3)

- **Security issues**
 - **Ongoing need for assessments**
- **Potential policy/technical issues**
 - **Non-LWR design/review issues**
 - **Advanced reactor licensing framework**
 - **ACR-700 confirmatory testing**

Programmatic Initiatives and Challenges (1)

- **Key business process issues**
 - **Impact of emergent work**
 - **Add/shed process**
 - **Sunsetting of activities**

Programmatic Initiatives and Challenges (2)

- **Response to IG Safety Culture survey**
 - **Self assessment to identify appropriate actions**
- **Staffing issues**
 - **Entry and Mid-Career: Attract high-quality graduates and seasoned engineers and scientists**
 - **Knowledge management: ensure that new staff take advantage of existing experience base**

Programmatic Initiatives and Challenges (3)

- **Improved effectiveness and efficiency/performance measures**
 - **Review of GSI process**
 - **Development of quality metric**
 - **Interaction with ACRS, ACNW, Standards Development Orgs.**
 - **Development of Guidelines for Regulatory Effectiveness Reviews**
 - **Improvement to Op Plan to more clearly reflect key RES activities**

Programmatic Initiatives and Challenges (4)

- **Improved communications and development of strategic communications plan**
 - **Internal/external websites**
 - **Suggestion portal/feedback forms**
 - **On-line operating experience database**
 - **Organizational values**
 - **Risk communications**
 - **Knowledge management/preservation (pilot activity on fuels set for July 2004)**

Summary and Conclusions

- **RES activities support NRC Strategic Plan**
- **Provide sound, high-quality technical basis for more realistic regulatory decision-making**
- **Prepare agency for the future**

Research Plan

- **Business Processes**
- **Communications Plan**
- **RES Strategic Plan**
- **Managerial Development**
- **RES Professionalism**

Research Products

- **Quality: Usefulness, Peer Review**
- **Quantity: Cost-Benefit**
- **Timeliness: Ownership**