Regulatory Perspectives on Spent Fuel Management

Allison M. Macfarlane, Chairman
U.S. Nuclear Regulatory Commission
PUTTING IT INTO CONTEXT

- Waste Confidence
- Yucca Mountain License Process
- Decommissioning Reactors
- Changes in national policy
- No permanent disposal solution
  - Continual need for integrated focus on storage, transportation, and disposal activities
NRC’S REGULATORY PROGRAM

U.S. Independent Spent Fuel Storage Installations

Legend:
- 54 Operating General Licensed ISFIs at Reactor Sites
- 11 Reactor Sites Pursuing a General Licensed ISFSI
- 15 Specific Licensed ISFIs (As or Away from Reactor Sites)
  (No known sites are pursuing a future Specific Licensed ISFSI)
- 3 Reactor sites have not announced intentions regarding ISFSI
- 34 States have at least one ISFSI

Disclaimer: This map provides only general and approximate locations regarding current and potential ISFSI licenses. The map will be updated when changes occur.
SPENT FUEL STORAGE REGULATION

Storage at Oyster Creek (welded canister)

Storage at Prairie Island (bolted-lid)
EXTENDED STORAGE

• Aging Management Issues
  • Stress Corrosion Cracking
  • Long-Term Concrete Degradation
  • Cask Inspection Methods
  • Residual Moisture in Canisters
  • Developing Realistic Thermal Models

Atmospheric Salt Testing on U-Bend Steel Specimens (Southwest Research Institute)
HIGH BURNUP FUEL

- Technical Issues
  - Ductile to Brittle Transition Phenomena
  - Vibration Fatigue during Transport
  - Realistic Temperature Modeling
  - Long-Term Demonstration Program (DOE)

Cladding hydride examination (ANL)

Ductile to Brittle Transition Temperatures (ANL)
CURRENT REGULATORY INITIATIVES

- Storage and Transportation Compatibility
  - NRC policies for retrievability and cladding integrity of spent fuel
  - Long-term aging and subsequent transport
- Regulating Stand-alone Sites
WHERE DO WE GO FROM HERE?

- Prepare for a variety of scenarios
- Consider integrated approaches
- Coordinate with DOE and industry
- Engage the Public