



# Spent Fuel Transportation Regulatory Issues

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## **Regulatory Issues with Technical Nature (from last year)**

- **Current Generic Transportation Issues**
  - High Burnup Fuels
  - Additional Burnup Credit (for PWR)
- **Additional Issues for Certifying Storage Systems for Transportation**
  - Effect of fuel gaps
  - Aging Management
  - Acceptance and maintenance tests

## **Regulatory Issues with Technical Nature (accomplishments since last year)**

- Issuance of data on “Ductile-to-Brittle Transition Temperature for High-Burnup Cladding Alloys Exposed to Simulated Drying Storage Conditions”
- Issuance of final Interim Staff Guidance 8, Rev. 3 on full Burnup Credit for PWR spent nuclear fuel was issued in October 2012

## **Regulatory Issues with Technical Nature (accomplishments since last year)**

- **Issues for Certifying Storage Systems for Transportation**
  - Secondary impact from fuel gaps has been placed in NRC Generic Issue process
  - Identification of issues such as potential Stress Corrosion Cracking for storage canisters

## **Current Focus Area**

- Certification of High-Burnup Spent Fuel for Transport
- Criteria for Qualifying Canister as an Important-to-Safety Component for Transport
- Planning for Guidance on Burnup Credit for BWR spent fuel for transport

## **Transport of High-Burnup Spent Fuel (Regulatory Requirement)**

- **10 CFR 71.55(d)(2)**
  - Under Normal conditions of transport, the geometric form of the package contents would not be substantially altered
- **10 71.55(e)(1)**
  - Under Hypothetical accident conditions, the fissile material in the most reactive credible configuration

## **Transport of High-Burnup Spent Fuel (Research Effort)**

- Vibration and bending tests of high-burnup fuel will be performed at ORNL to simulate normal conditions of transport
- Studies to quantify the high-burnup fuel reconfiguration consequences are being performed

## **Transport of High-Burnup Spent Fuel (Interim Certification Approach)**

- Address thermal, containment, shielding, and criticality safety requirement given the fuel geometry can not be maintained under normal and accident conditions
- Address loading/unloading safety requirements and procedures based on fuel conditions



## **Canister Qualification for Transport Interim Certification Strategy**

- Appropriate aging management and tests of canisters if relied on as a component important to safety
- Conservative assumptions with respect to canister behavior under accident conditions

## Summary

- Tests and analyses on high-burnup fuel are on-going
- Interim certification strategy with respect to fuel should be compliance with Part 71 requirements given if fuel geometry is lost
- Appropriate aging management and tests of canister relied on as a component important to safety