NRC Inspection Observations

Division of Spent Fuel Management Regulatory Conference 2018

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Inspection Themes

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- Sharing Operating Experience and Taking Preventative Corrective Actions
- Understanding the Cask Licensing Basis
- ISFSI Dependence on Reactor Programs

Operating Experience – Vertical Cask Transporter Wheel Hub Failures

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- Vertical Cask Transporter (VCT) wheel hub failure was a known issue since 2011
- Recent instance of VCT wheel hub failure in Fall 2017 during transport of a loaded cask
- Several licensees have since taken preventative corrective actions to inspect wheel hubs before use

Operating Experience – Design Issues Related to Overhead Crane Upgrades

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- Several licensees had design issues related to upgrading overhead cranes to Single-Failure Proof for use in ISFSI loading campaigns
- Inspected as part of the engineering Pre-Operational ISFSI inspections (IP 60856.1)
- Similar issues (crane support structure, crane rails, crane rail clips) found at multiple licensees, multiple violations issued by NRC
- Missed opportunity by licensees to identify issues before they occur, instead identified through inspection

Operating Experience – Taking Preventative Corrective Actions

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- "An ounce of prevention is worth a pound of cure."
  -Benjamin Franklin

- Sharing and incorporating operating experience can help licensees avoid potential safety issues

- Licensees should think broadly about operating experience!

Understanding the Cask Licensing Basis is Key for Compliance

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- Licensees and Certificate of Compliance (CoC) holders can make changes to the facility or spent fuel storage cask design under 10 CFR 72.48, “Changes, tests, and experiments”

- Changes to the facility or spent fuel storage cask design need to be made against the current licensing basis

- A thorough understanding of the cask licensing basis is required to ensure compliance with 10 CFR 72.212, “Conditions of general license issued under 72.210,” and 10 CFR 72.48

Understanding the Licensing Basis – General Licensee and CoC Holder

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- Each CoC Amendment (as listed in 10 CFR 72.214) is approved by the NRC as a standalone licensing basis

- A Final Safety Analysis Report (FSAR) was submitted to the NRC along with each CoC amendment request, and that revision of the FSAR (plus any changes or updates as part of the amendment process) is the original licensing basis FSAR for that approved CoC amendment

Understanding the Licensing Basis – 10 CFR 72.48 and Design Bases and Safety Analyses

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- The FSAR is the licensing basis for a cask system, and typically has sections dedicated to Design Bases (Chapter 2 or Chapter 4) and Safety Analyses (Chapter 12 or Chapter 15)

- **Not all design bases and safety analyses are clearly delineated as such in the FSAR**

- Design Basis and Safety Analysis Resources: Standard Review Plans (SRPs) NUREG-1536, Rev. 1 and NUREG-1567, and NRC Safety Evaluation Reports (SERs)

Understanding the Licensing Basis – Recent Issues

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- Changes made to the "time-to-boil" calculation as described in the FSAR (Chapter 4) under 10 CFR 72.48, Unresolved Item (URI) opened, violation issued by NRC → "time-to-boil" calculation is a method of evaluation (MOE) used in a safety analysis

- Two URIs opened for licensees using the latest revision of the cask FSAR, while the casks were still under the original loading CoC amendment → No specific prohibition, but must comply with 10 CFR 72.48 and 10 CFR 72.146, "Design control"

ISFSI Dependence on Reactor Programs

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- In many cases, the ISFSI depends on or takes credit for reactor programs, documentation, technical information, licensing, and/or equipment
- Understanding the relationship between the ISFSI and the reactor is especially important for reactors that are in the process, or soon plan to be in the process, of decommissioning

ISFSI Dependence on Reactor Programs – Recent Examples (Food for Thought)

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- Fuel assembly testing records (Ultrasonic, cycle chemistry, sipping, etc.) for spent fuel → when used to select fuel for loading in accordance with the CoC

- NUREG-0612, as incorporated into reactor licensing basis, and associated heavy loads program → when used in process of loading and transporting spent fuel casks

ISFSI Dependence on Reactor Programs – Recent Examples (More Food for Thought)

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- Sources of power or back-up power → when needed to maintain spent fuel in a safe and secure condition, either during loading or storage

- Spent fuel pool → when used for cask loading activities, and as required for potential cask unloading activities, in accordance with the cask licensing basis

ISFSI Dependence on Reactor Programs – Recent Examples (Even More Food for Thought)

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- Reactor fire protection program → when used to evaluate, control, and respond to fire and explosion hazards, during cask loading and storage activities

- Reactor emergency plan, procedures, and notifications → when the emergency plan is being used to declare and respond to emergencies at the ISFSI

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Thank you for your attention!

Questions?