PUBLIC SUBMISSION

As of: 6/3/15 4:10 PM
Received: June 03, 2015
Status: Pending_Post
Tracking No. 1jz-8j7r-5ojy
Comments Due: June 04, 2015
Submission Type: Web

Docket: NRC-2015-0098
Seismic Stability Analysis for Spent Fuel Dry Cask Stack-up Configuration

Comment On: NRC-2015-0098-0001
Seismic Stability Analysis for Spent Fuel Dry Cask Stack-Up Configuration; Draft Regulatorty Issue Summary for Comment

Document: NRC-2015-0098-DRAFT-0002
Comment on FR Doc # 2015-08958

4/20/2015
80 FR 21770

1

Submitter Information

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General Comment

See attached file(s)

Attachments

Comments on NRC RIS 2015-XX

SUNSI Review Complete
Template = ADM – 013
E-RIDS= ADM-03
Add= T. Keene (JTK1)

1) Reference: The RIS states these provisions require general ISFSI licensees to, *inter alia*, address terms and conditions and specifications of each referenced CoC, to design the ISFSI consistent with applicable loads, including seismic loads, and to ensure that the cask and ISFSI activities such as loading and unloading are performed in accordance with the general licenses, the casks' terms, conditions and specifications, and the safety analysis report for the casks.

   Comment:
   a. Do the original cask FSAR and dropped load analysis address the current safety concerns of today? Will this review be completed per NUREG 1536 with the consideration of components being re-classified as safety related or important to safety?

2) Reference: The stack-up configuration refers to the condition when a transfer cask containing a canister loaded with spent fuel is resting on a storage overpack. While in the stack-up configuration, the loaded canister is lowered from the transfer cask to the storage overpack. During this transfer, when the transfer cask is not attached to a single-failure-proof crane, the stack-up is freestanding and the potential exists for the stack-up configuration to become unstable and tip-over during a seismic event.

   Comment:
   a. Why isn't the RIS covering the connection points to the MPC during canister transfer during stack-up even when connected to a single failure-proof crane (i.e. SFP crane hook to MPC connection point and its mechanical means of connection to the MPC structure? If by example, a configuration having bolts holding the MPC connection point to the MPC structure and having a SFP crane is a moot point if the bolts fail.

3) Reference: "NRC has determined that issuance of the RIS does not constitute backfitting. The RIS does not establish, recommend or suggest new safety requirements with respect to the consideration of seismic stability analysis"

   Comment:
   a. Why isn't the RIS Backfitting per 10 CFR 50.109(a)(5) for establishing new safety requirements with respect to seismic stability analysis? When the report has clearly determined there are the following:
      i. In the NRC words "When the transfer cask is not attached to a single-failure-proof crane, the stack-up is freestanding and the potential exists for the stack-up configuration to become unstable and tip-over"
      ii. When the NRC has clearly determined that evaluation of previous stability analysis have had by example, significant deficiencies, in the NRC words:

         1. Using a single time history to perform a nonlinear seismic analysis. SRP (NUREG-0800) Section 3.7.1, II, 1, B recommends a minimum of five time histories.
         2. Using time histories not derived from real earthquakes.
         3. Significantly altering the phasing of frequencies in the time histories.
         4. Using non-conservative, low safety factors for rocking and sliding response.

5. Double counting damping in rocking analyses leading to non-conservative low responses.
6. Not benchmarking finite element models against known solutions.
7. Not evaluating the stresses in the mating device.

b. With respect to public health and safety when in the building under 10 CFR Part 50 its required to have a single-failure-proof crane and a seismic stability analysis of the dry cask stack-up within the fuel building. Why are not the same expectations required for 10 CFR Part 72 where there is no facility (i.e. Building) providing adequate protection to the health and safety of the public as described in 10 CFR 50.109(a)(5).

4) Reference: Response to Region III Technical Assistance Request For FirstEnergy Operating Company Perry Nuclear Power Plant, Unit 1 Evaluation of Freestanding Stack-up Configuration DSFST Ticket Number: 201100002

NRC Staff Evaluation of the Licensee's 10 CFR 50.59 Screen and Evaluation for the Stack-up Configuration

NUREG-0612 provides guidelines for the control of heavy loads at nuclear power plants. The guidelines were developed "for all facilities to reduce the potential for the uncontrolled movement of a load or load drop..."..... The NUREG provides two paths to achieve defense-in-depth: (1) by providing redundancy (i.e., a single-failure-proof handling system) in the handling of the heavy load or (2) by providing an analysis of the heavy load drop to show that the evaluation criteria of Section 5.1 of NUREG-0612 are satisfied.

Comment

a. Why isn't the RIS clearly identifying a defense-in-depth approach with respect to NUREG-0612 as described in the above NRC response?
b. Shouldn't the same guidelines apply for 10 CFR Part 72 as described in 10 CFR Part 50 with respect to stack-up Configuration and heavy loads?
c. Does the INTENT of this RIS for Seismic Stability Analysis Methodology include a Part 50 Facility (e.g. – Cask transfer inside a fuel building, reactor building), a Part 72 Facility (e.g. – cask transfer facility, above ground cask transfer) or both? (Please reference ML 14323A935 for NRC description of the Part 50 Facility and Part 72 Facility.)

5) Reference: All holders of, and applicants for, general licenses and certificates of compliance (CoC) for an independent spent fuel storage installation (ISFSI) under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste."

Comment

a. Does the RIS apply to facilities that have been allowed to have a dry cask storage facility and granting a licenses under a 10 CFR Part 50?