

NRC Comments on NEI 14-03, “Guidance for Operations-Based Aging Management for Dry Cask Storage”

Public Meeting with Nuclear Energy Institute

March 18, 2015

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History

- March 2011: NRC issued NUREG-1927, Rev. 0, “Standard Review Plan for Renewal of Spent Fuel Dry Cask Storage System Licenses and Certificates of Compliance”
- Review experience from 5 applications indicated the need for expanded guidance
 - Fort St. Vrain – renewal issued 07/2011
 - Calvert Cliffs – renewal issued 10/2014
 - Prairie Island – ongoing
 - Energy Solutions VSC-24 (CoC) – ongoing
 - AREVA TN NUHOMS[®] (CoC) – ongoing

History

- December 2013: NRC established Storage Renewal Team from NMSS, NRR, RES, and OGC to assess the existing storage renewal regulatory framework
- April 2014: Public meeting on NRC's plans to update the storage renewal guidance in NUREG-1927
- July 2014: Public meeting to obtain input on guidance updates and aging management programs (AMPs)
- September 2014: NEI issued NEI 14-03, Rev. 0, "Guidance for Operations-Based Aging Management for Dry Cask Storage issue (ML14266A224)"

History

- January 2015: NRC letter response to NEI with comments (ML15013A201)
- March 2015: Draft NUREG-1927, Rev. 1 provided to the ACRS in preparation for April 8 meeting (ML15068A303)
 - Provides added detail and clarity
 - Example Aging Management Programs
 - Expanded guidance for evaluating AMPs and their ability to respond to operating experience

Operations-Focused Aging Management

- NRC/NEI Consensus:
 - Operations-focused aging management
 - Learning, proactive, & responsive aging management
 - Aging management programs that consider and respond to operating experience and results of confirmatory research
- NEI Implementation Approach:
 - Sharing of Operating Experience
 - Tollgate Assessment
 - Change Control
 - Lead System Inspections

Sharing of Operating Experience

- NRC/NEI Consensus:
 - Collection, assessment, and dissemination of operating experience (OE) is a cornerstone of the operation-based aging management approach
- NEI 14-03 provides potential ways of achieving this:
 - OE clearinghouse
 - Licensee/vendor users groups
 - Designation of an aging management OE coordinator
 - OE screening guidance

Sharing of Operating Experience

- Open issue – Additional details requested on the operation of the OE clearinghouse:
 - Clearinghouse owner
 - Clearinghouse access
 - Processes and criteria that will be used to aggregate, assess, and disseminate OE

Tollgate Assessment

- NRC/NEI Consensus:
 - Tollgate concept provides a structured way to periodically assess OE to determine if modifications of AMPs and Time-Limited Aging Analyses (TLAAs) are warranted
- NEI 14-03 Tollgates:
 - Frequency is established from technical basis
 - Content includes a summary of OE, impact of findings, evaluation of adequacy of TLAAs & AMPs
 - Licensees share tollgate assessments
 - Only a high-level requirement to perform tollgates is included in the license or CoC

Tollgate Assessment

- Open issues:
 - Additional detail requested on establishing specific AMP performance criteria
 - NEI drafting guidance for reactors in NEI 14-12, “Aging Management Program Effectiveness” to provide a standard approach to self-assessment
 - Defining effectiveness
 - Performance criteria by program element
 - Tollgates may be included as a CoC or license condition if they are determined necessary to demonstrate continued AMP effectiveness

Change Control

- NEI 14-03:
 - Licenses and CoCs include only “high-level” information as conditions
 - AMP & TLAA revisions controlled via 10 CFR 72.48 process
- Open issues:
 - Conditions may be required in the specific license or CoC to ensure critical elements of the AMPs are maintained
 - These conditions are specific to information upon which the staff relied to make it’s reasonable assurance finding

Change Control

- The Part 50 practice for change control via is not directly applicable to Part 72
 - Limited operating experience for storage systems
 - Reactor aging management activities in addition to existing ASME and regulatory requirements to inspect, monitor, and test reactor components
 - Many reactor AMPs formalize maintenance activities that are already performed in current operation (Fermi – 33 AMPs are existing programs, 11 are new)
 - Many existing programs associated w/ AMPs audited by INPO (e.g., GL 89-13 – Service Water, GL 88-05 – Boric Acid Corrosion)

Lead System Inspections

- NEI 14-03 guidance includes provisions for:
 - Not performing a lead system inspection prior to submitting an application (with sufficient technical justification)
 - The potential use of surrogates for CoCs rather than inspect at each site
- Open issues:
 - A lead system inspection is expected to be performed before submittal of the application
 - Insufficient OE, at this time, to justify the use of surrogates for a specific license

Lead System Inspections

- Open issues (continued):
 - A CoC holder may consider inspections for a subset of sites that are bounding
 - One acceptable approach for ensuring that all CoC users are bounded by the chosen sites is to perform baseline inspections at each site prior to entering extended operation

Application Format and Content

- NEI 14-03 provides a general overview of the contents of an application
- Open issue: Additional detail requested (beyond what is anticipated in NUREG-1927) (ref: NEI 95-10)
 - Content of application sections
 - Level of technical justification
 - Application organization
 - Cross references to NUREG-1927 to highlight consistency
 - Application-to-application consistency in presentation of information

AMP and TLAA Discussions

- Some opportunities for clarification
 - Unclear descriptors of AMPs (“high-level”, “programmatic,” “implementation”)
 - Guidance on Time-Limited Aging Analyses
 - TLAA vs. other analyses used to determine if an aging effect is required to be managed
 - TLAA identification; examples
 - Level of technical detail needed

Conclusion

- NRC appreciates the opportunity to review and comment on NEI's effort to develop a framework for storage renewal applications
- NRC and NEI are moving towards a shared vision of creating an operations-focused approach to aging management
- Looking forward to continued engagement

Response to NRC Comments on Industry Guidance for Operations-Based Aging Management for Dry Cask Storage (NEI 14-03)

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March 18th, 2015 • Rockville, MD

Topics to Address

- Format and Content
- Sharing of Operating Experience
- Tollgates and Aging Management Effectiveness
- Change Control & Tech Spec./License Condition Content
- Lead System Inspections
- AMPs and TLAAs

Format and Content

- NRC Comment:
 - Provide additional detail
 - Description of the amount of detail and technical justification needed.
 - NEI 95-10 is an example from plant license renewal that has resulted in consistent applications.

Format and Content

- Industry Response:
 - The format and content section was based on the VSC-24 CoC renewal application
 - Level of detail provided was intended to prevent inadvertent contradiction of the forthcoming (at the time) NUHOMS (72-1004) LR application.
 - NEI 95-10 and recent LRAs will be reviewed and consulted to the extent practical.
 - Guidance will encourage applicants to provide technical justification to address review criteria identified in NUREG-1927.
 - Commit to updating this section to provide additional detail on format and content.

Sharing of Operating Experience

- NRC Comments:
 - Sharing operating experience is the “Cornerstone of effective aging management”
 - Clarify the organization that maintains the operating experience “clearinghouse”
 - How will licensees contribute to and access information?
 - What role will CoC holders have?
 - What criteria will be used to distribute OE (to both industry and NRC)?

Sharing of Operating Experience

- Industry Response:
 - Industry is working to develop options for an improved operating experience sharing program:
 - Enhancement of cask vendors existing program to capture and disseminate OE.
 - Currently within each cask vendor – is there a way to expand to sharing between cask vendors?
 - Utilize existing plant operating experience sharing infrastructure for dry cask storage

Tollgates

- NRC Comments:
 - “Significant value in the tollgate concept”
 - Include details on establishing specific performance criteria for the 10 aging management program elements
 - Aging management effectiveness document has been developed for plant AMPs
 - Make safety assessment reports available for NRC inspection.

Tollgates

- Industry Response:
 - Performance criteria can be developed.
 - Focus has been on development of the tollgate concept. As additional technologies for inspections are matured and inspections are performed, aging management effectiveness can be more appropriately developed at that time.
 - Tollgate assessments are available for inspection by NRC (like any other plant document).

Change Control/Tech Spec Content

- NRC Comments:
 - Guidance places “undue emphasis on restricting the content of license conditions”
 - Dry Cask Storage Systems lack large base of ongoing inspections, performance monitoring activities and operating experience.
 - NRC will continue to use license and CoC conditions as necessary

Change Control/Tech Spec Content

- Industry Response:
 - NRC comment is inconsistent with PRM 72-7 and NRC risk informed framework initiative.
 - Emphasis has been on ensuring licensee/CoC holder control of dry cask storage AMPs is consistent with Part 50/54
 - To remain a “learning aging management” program need to ensure that flexibility exists to modify or update the AMPs in a timely manner.
 - Underlying QA program requires maintenance of the design basis (and restoration of the design basis).

Change Control/Tech Spec Content

- Industry Response:
 - No objection to a CoC license condition for an aging management program
 - Level of detail in recent specific renewed ISFSI licenses may hinder ability to be responsive (CoC holders do not have the ability to quickly modify the program if in the CoC).
 - Creation of new Aging Management Activities would not be in the CoC (would be addressed by corrective action program).

Lead System Inspections

- NRC Comments:
 - More detail needed for technical justification to not perform a lead system inspection prior to submitting an application
 - Guidance should provide detail on the criteria for determining acceptability of using surrogate inspections

Lead System Inspections

- Industry Response:
 - Need to clearly distinguish between a lead canister inspection (before renewal application) versus the aging management inspection.
 - CoC holder has no legal authority to require general licensees to perform inspections prior to period of extended operation.
 - Early user general licensee sites needing to perform aging management inspections need to have a grace period to factor in implementation time from date the CoC renewal is granted.
 - These initial inspections (and TLAAs) will provide operating experience basis to inform need for additional inspections at each site.
 - Forthcoming EPRI Susceptibility Report will provide criteria and ranking for use of surrogate inspections for SCC.

AMPs and TLAAAs

- NRC Comments:
 - Some portions of the guidance lead to confusion – Clarify terminology, such as “AMPs, “high-level AMPs” and “implementation AMPs”.
 - Guidance should provide information on how to identify TLAAAs, including examples, and the level of detail needed to justify their disposition.

AMPs and TLAAAs

- Industry Response:
 - With issuance of NUREG-1927, Revision 1 can update NEI 14-03 to make terminology consistent.
 - Will update guidance for identifying and using TLAAAs:
 - If existing TLAA does not extend through period of extended operation, it would be revised
 - If revised TLAA cannot extend to the end of the renewal period, then an AMP is required.

Thank you

Questions?



Abbreviations

- AMA – Aging Management Activity
- AMP – Aging Management Program
- CAP – Corrective Action Program
- CISCC – Chloride-Induced Stress Corrosion Cracking
- CoC – Certificate of Compliance
- DCS – Dry Cask Storage
- OE – Operating Experience
- RIC – Regulatory Information Conference (NRC)
- TLAA – Time-Limited Aging Analysis
- TS – Technical Specifications
- UFMC – Used Fuel Management Conference (NEI)
- (U)FSAR – Updated Final Safety Analysis Report