



NUREG-1927, Rev. 1
Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel

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Storage Renewal Requirements

- Renewal of Independent Spent Fuel Storage Installation (ISFSI) licenses and storage cask designs for a period not to exceed 40 years (10 CFR §72.42 and §72.240)
- Time-limited aging analyses (TLAAs)
- Description of the Aging Management Programs (AMPs)
- Design bases information as documented in the most recently updated final safety analysis report
- NUREG-1927, Rev. 0 issued in March 2011

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Experience since Rev. 0

- Staff renewal review experience from 5 applications:
 - Fort St. Vrain – renewal issued 07/2011
 - Calvert Cliffs – renewal issued 10/2014
 - Prairie Island – ongoing (hearing)
 - Energy Solutions VSC-24 (CoC) – ongoing
 - AREVA TN NUHOMS® (CoC) – ongoing
- Review experience indicated need for expanded guidance
- 15 expected renewal applications from 2015 to 2025

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**Revision 1:
Updated Renewal Framework**



• Intra-Agency Team created in December 2013

- Staff members from NMSS, NRR/DLR, RES, and OGC
- Discussed lessons learned from storage renewal reviews
- Leveraged from reactor license renewal framework and operating experience
- Identified 40+ issues to resolve

• Updated our Storage Renewal Framework:

- Aging management
 - Operations-Focused
 - Learning, proactive and responsive
- Stable, predictable and efficient
- Clear, transparent, & reliable expectations

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**Revision 1:
Updated Renewal Framework**



• Developed Example Aging Management Programs

• Extensive Stakeholder Engagement:

- Held over 20 NRC Public Meetings on renewal topics
- Participated in numerous conferences, workshops, and meetings
- Focused on improving knowledge, capabilities, and assessments for addressing aging effects

• Incorporated feedback from stakeholders into revised guidance

• Included discussion of NEI 14-03, "Guidance for Operations-Based Aging Management for Dry Cask Storage"

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**Revision 1:
Upfront and General Information**



• Updated terminology and definitions:

- Added/clarified existing definitions; made consistent with 10 CFR §72.3, NUREG-1536 and NUREG-1567

• Expanded guidance on application content, particularly for CoC renewals

• Added section on timely renewal

• Added reviewer guidance for:

- Amendment applications submitted during renewal reviews and after the renewal is issued
- Use of conditions for ensuring AMPs remain effective during the renewal period

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**Revision 1:
Scoping Evaluation**



• Scoping evaluation identifies SSCs reviewed for aging mechanisms and effects

• Clarified sources of information that may be used to support the evaluation

• Expanded guidance for:

- Review of SSC subcomponents
- Scoping of fuel internals
- Identifying SSCs within the scope of renewal

• Clarified reviewer guidance for ensuring exclusions from the scope of renewal are justified

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**Revision 1:
Aging Management Review**



• AMR assesses proposed aging management activities for SSCs within the scope of renewal.

• Expanded guidance on environmental data and identification of aging effects and mechanisms:

- Use of maintenance records, operating experience specific to material/service environment (site-specific, industry-wide)
- Use of consensus codes/standards
- Other applicable NRC guidance or reports

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**Revision 1:
Aging Management Review**



• Added discussion on aging management of fuel internals

• Revised TLAA section:

- ensure consistency with 10 CFR §72.3
- provide guidance for review of calculations/analyses not part of approved design bases

• Expanded discussion on each of ten AMP elements

• Provided new guidance on learning AMPs and use of operating experience

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**Revision 1:
Aging Management Review**



• Included discussion of specifics NEI 14-03 concepts:

- Use of “tollgates” or periodic assessments of operating experience/confirmatory research
- Aggregation and dissemination of operating experience

• Deleted Retrievability section

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**Revision 1:
Appendices**



• Deleted appendices that added minimal value to the review process

• Added new appendices:

- Example AMPs
- Lead system inspections
- Use of a demonstration program as a surveillance tool for HBU fuel performance (per ISG-24)
- Special considerations for CoC renewals
- Storage terms (period that a DSS has been loaded)

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Appendix B: Example AMPs



• Example AMPs:

- Localized Corrosion and Stress Corrosion Cracking of Welded Stainless Steel Dry Storage Canisters
- Reinforced Concrete Structures
- HBU Fuel Monitoring Program

• Inspect or monitor system(s) based on susceptibility to the specific aging mechanisms

• Use consensus codes and standards where practicable for the examination methods, equipment calibration, acceptance criteria, and personnel qualifications

• Use achievable and actionable acceptance criteria

• Rely on licensee QA and CA programs for further evaluation, characterization, and other actions as needed to preserve the SSC intended functions

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Appendix C: Lead System Inspection(s) 

- Expanded guidance for Lead System Inspection(s)
 - Purpose of the Lead System Inspection
 - Selecting System(s) for Inspection:
 - Inspection of multiple systems may be necessary to capture variations in designs, environments, materials, loadings, and applicable aging effects
 - Guidelines for the Lead System Inspection
 - Use of Surrogate Inspections
 - Special Considerations for Lead System Inspections for CoC Renewals

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Path Forward 

- Schedule:
 - Draft guidance publicly available in ADAMS (for ACRS coordination)
 - Publish NUREG-1927 for public comment (Summer 2015)
 - Resolve comments and publish as final (Summer 2016)
- Continue stakeholder engagement:
 - Public meetings
 - Engagement on NEI 14-03
- Further guidance development
- Continue to develop a stable, predictable, & efficient renewal regulatory framework with clear, transparent, & reliable expectations

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Acronyms 

- ACRS: Advisory Committee on Reactor Safeguards
- ADAMS: Agencywide Documents Access and Management System
- AMP: Aging Management Program
- AMR: Aging Management Review
- CA: Corrective Action
- CFR: Code of Federal Regulations
- CoC: Certificate of Compliance
- DLR: Division of License Renewal
- DSS: Dry Storage System
- HBU: High Burnup
- ISFSI: Independent Spent Fuel Storage Installation
- ISG: Interim Staff Guidance
- NEI: Nuclear Energy Institute
- NMSS: Office of Nuclear Material Safety and Safeguards
- NRR: Office of Nuclear Reactor Regulation
- OGC: Office of the General Counsel
- QA: Quality Control
- RES: Office of Nuclear Regulatory Research
- SSC: Structure, System or Component
- TLAA: Time-Limited Aging Analysis
- VSC: Ventilated Storage Cask

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