

Generic Concrete Aging Management Program

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Meeting to Obtain Stakeholder Input on Potential
Changes to Guidance for Renewal of Spent Fuel Dry
Cask Storage System Licenses and Certificates of
Compliance

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Basis for Development

- **Valid basis include applicable consensus codes/standards and/or NUREG guidance, e.g.:**
 - ACI 349.3R, “Evaluation of Existing Nuclear Safety-Related Concrete Structures”
 - ASME Code Section XI, Subsection IWL, “Requirements for Class CC Concrete Components of Light-Water-Cooled Plants”
 - NUREG-1801, “Generic Aging Lessons Learned (GALL) Report”

- **Applicant may propose AMPs based on alternate criteria:**
 - Exclusion of aging effects/mechanisms in the above codes/standards **should be justified** with a site-specific technical basis (e.g., engineering analysis, operational experience data).
 - Justification should demonstrate that the excluded aging mechanisms will not adversely affect the ability of the in-scope structure to perform its intended function during the license period of extended operation.

Aging Effects/Mechanisms

Mechanism	Effect
Freeze-thaw	Cracking, loss of material (spalling, scaling)
Chemical attack [Cl, SO ₄]	Cracking, loss of material (spalling, scaling)
Aggregate reactions/expansion	Cracking and loss of strength
Corrosion of embedded steel	Cracking, loss of material (spalling, scaling) and loss of bond
Leaching of Ca(OH) ₂ → CaCO ₃	Increase in porosity/permeability, loss of strength
Long-term settlement	Cracking, distortion
Gamma/neutron irradiation	Cracking, reduction in strength (change in mechanical properties)
High temperature dehydration	Cracking, reduction in strength (change in mechanical properties)

Not necessarily all-inclusive