



June 26, 2015  
ES/NRC 15-008  
Docket No. 72-1007

ATTN: Document Control Desk  
Director, Division of Spent Fuel Management  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Subject: Response to Request for Additional Information for the VSC-24 CoC  
Renewal Application (TAC No. L24694)**

Reference: Letter from Dr. Pamela Longmire (NRC) to Mr. Steven Sisley (EnergySolutions),  
"Third Request for Additional Information for EnergySolutions, VSC-24 Storage  
System, Certificate of Compliance No. 1007 – Renewal Application (TAC No.  
L24694)," March 18, 2015, ADAMS Accession Number ML15078A046.

Dear Sir or Madam:

By the referenced letter, NRC requested that EnergySolutions (ES) provide additional information needed for NRC staff to complete their review of the application to renew the Certificate of Compliance (CoC) No. 1007 for the VSC-24 Storage System. ES hereby provides the additional information requested by NRC in the referenced letter, as described in Enclosure 1. Enclosure 2 contains one (1) paper copy of Revision 4 of the CoC Renewal Application for the VSC-24 Ventilated Storage Cask System (LAR 1007-007), which has been revised in response to the RAI, as described in Enclosure 1. In addition, a summary of changes included in Revision 4 of the CoC Renewal Application is provided in Attachment 1 of this letter. Enclosure 3 includes one (1) paper copy of an additional calculation package that was referenced in the RAI response.

Should you or any member of your staff have questions, please contact the undersigned at (408) 558-3509.

Sincerely,

A handwritten signature in black ink, appearing to read "Sisley".

Steven E. Sisley  
Cask Licensing Manager  
EnergySolutions

NM5526

Attachments:

- (1) Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Storage Cask System (Docket No. 72-1007), Revision 4 (24 pages)

Enclosures:

- 1) Response to Third Request for Additional Information (1 paper copy).
- 2) Certificate of Compliance Renewal Application for the VSC-24 Ventilated Storage Cask System (Docket No. 72-1007), Revision 4, June 26, 2015, Public Version (1 paper copy).
- 3) Calculation No. VSC-04.3207, Revision 0, "VCC Concrete Thermal Fatigue Analysis" (1 paper copy)

cc:

Dr. Pamela Longmire, Division of Spent Fuel Management

Mr. Dan Shrum, EnergySolutions

The following is a summary of the changes incorporated in the Certificate of Compliance Renewal Application for the VSC-24 Ventilated Storage Cask System, Revision 4.

### Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
1.	1-1.	Added 5 <sup>th</sup> bullet with proposed CoC condition to preclude use of fiberglass material for VCC air outlet screens during the extended storage period.	Revised in response to RAI-3.
Table 2	1-11.	Added row for new Section 3.6, Periodic Tollgate Assessments.	Section added in response to RAI-10.
2.2.1.2	2-3.	Revised 4 <sup>th</sup> sentence of 1 <sup>st</sup> paragraph to clarify that only the coating on the exterior surfaces of the MSB shell and bottom plate is not relied upon for general corrosion protection.	Revised in response to RAI-7.
2.2.1.3	2-4.	Changed “steel surfaces of <i>the</i> VCC assembly subcomponents” to “steel surfaces of <i>these</i> VCC assembly subcomponents” in the 6 <sup>th</sup> sentence of 1 <sup>st</sup> paragraph.	Revised in response to RAI-7.
2.2.1.4	2-6.	Revised end of second paragraph to clarify that lubricant is applied over the coating on the sliding surfaces of the shield door and rail components.	Revised in response to RAI-4.
2.3	2-10.	Revised References 2.16 to include correct Code Edition (i.e., ACI 349-85).	Editorial Correction.
Table 5	2-14.	Revised Note 3 to clarify the scoping evaluation of the coating on the MSB assembly.	Revised in response to RAI-7.
Table 6	2-15.	Add Note 4 to clarify the scoping evaluation of the coating on the VCC assembly.	Revised in response to RAI-7.
Table 6	2-15.	Change the Intended Function(s) of the VSC Lifting Lugs (Optional) from “SS” to “---”.	Revised in response to RAI-3.
Table 7	2-17.	Added Note 4 to clarify the scoping evaluation of the coating on the MTC assembly.	Revised in response to RAI-7.
Table 7	2-17.	Clarifying text is added to Note 3 concerning repair or replacement of previously removed MTC subcomponents.	Revised in response to RAI-5.

### Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
3.1.1.1	3-2.	Revised to clarify the scoping evaluation of the coating on the exterior surfaces of the MSB assembly.	Revised in response to RAI-7.
3.1.1.2	3-2.	Revised to clarify the coated surfaces of the VCC assembly.	Revised in response to RAI-7.
3.1.1.3	3-2, 3-3.	Revised to correct and clarify the description of the coating and lubricants applied to the surfaces of the MTC assembly subcomponents.	Revised in response to RAI-4.
3.1.2	3-3, 3-4.	Revised to include the "Sealed Air-Filled" environment.	Revised in response to RAI-2.
3.2.1.1	3-6.	Revised 1 <sup>st</sup> paragraph of section and 1 <sup>st</sup> paragraph under "Loss of Material" subheading to address loss of material in the Sealed Air-Filled environment of the MSB assembly.	Revised in response to RAI-2.
3.2.1.1	3-6.	Revised 1 <sup>st</sup> sentence of 2 <sup>nd</sup> paragraph under "Loss of Material" subheading to delete "epoxy or zinc based" from the description of the coating and changed "most cases" to "some cases".	Revised in response to RAI-7.
3.2.1.2	3-8.	Removed hyphens from ACI 394 and ACI 318.	Editorial change.
3.2.1.2	3-11, 3-12.	Added discussion of Thermal Fatigue to the potential aging effects and degradation mechanism for reinforced concrete.	Revised in response to RAI-8.
3.2.2.1	3-16.	Deleted last paragraph that discussed coating failure and corrosion on the VSC Lifting Lugs at Point Beach.	Revised in response to RAI-3.
3.2.2.2	3-16.	Corrected the year of the first cask loaded at Point Beach.	Editorial correction.
3.3.2	3-23.	Added VCC Thermal Fatigue Analysis to list of TLAAs.	Revised in response to RAI-8.
3.3.3.8	3-28, 3-29.	Added new section to discuss concrete thermal fatigue analysis.	Revised in response to RAI-8.
3.4.2	3-29.	Revised section cross-reference in 1 <sup>st</sup> sentence of 2 <sup>nd</sup> paragraph to account for deletion of	Revised in response to RAI-9.

### Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
		Section 3.4.2.1 and renumbering of subsequent sections.	
3.4.2	3-29.	Revised last sentence of 2 <sup>nd</sup> paragraph to refer to new Section 3.6 for the requirement for periodic tollgate assessments.	Revised in response to RAI-10.
3.4.2.1	3-30.	Deleted Section 3.4.2.1 and renumbered subsequent sections accordingly. (Note: the heading numbers and cross-references to the renumbered sections have been updated, but are not marked as revisions.)	Revised in response to RAI-9.
3.4.2.1 (formerly 3.4.2.2)	3-30, 3-31, 3-32, and 3-34.	<ul style="list-style-type: none"> <li>Inserted paragraph return after 3<sup>rd</sup> sentence of 1<sup>st</sup> paragraph.</li> <li>Added sub-headings for Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, Corrective Actions, Extent of Condition, and Operating Experience for clarity.</li> <li>Changed “grown” to “growth” in 2<sup>nd</sup> to last sentence of 1<sup>st</sup> paragraph under Acceptance Criteria sub-heading.</li> </ul>	Editorial changes.
3.4.2.1 (formerly 3.4.2.2)	3-30, 3-32, and 3-34.	<ul style="list-style-type: none"> <li>Deleted the word “Concrete” from the heading;</li> <li>Revised to address damage or degradation of VCC air inlet and outlet screens and attachment hardware in the Scope, Acceptance Criteria, Corrective Actions, and Operating Experience elements of the AMP.</li> </ul>	Revised in response to RAI-9.
3.4.2.1 (formerly 3.4.2.2)	3-30 through 3-34.	<ul style="list-style-type: none"> <li>Revised 1<sup>st</sup> sentence of 1<sup>st</sup> paragraph to discuss the timing of inspections;</li> <li>Added discussions of Detection of Aging Effects – Method or Technique, Detection of Aging Effects – Data Collection, Monitoring and Trending, and Extent of Condition, similar to those contained in Table 14 (formerly Table 15);</li> </ul>	Revised in response to RAI-10.

## Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
		<ul style="list-style-type: none"> <li>Revised 1<sup>st</sup> paragraph under Acceptance Criteria sub-heading to discuss the basis for the acceptance criteria for defects on the exposed concrete surfaces and include the acceptance criteria for concrete spalling;</li> <li>Revised 1<sup>st</sup> paragraph under Corrective Actions sub-heading to discuss the corrective actions for defects on the concrete surface and steel-to-concrete interfaces that exceed the acceptance criteria;</li> <li>Revised 3<sup>rd</sup> paragraph under Corrective Actions sub-heading to discuss corrective actions for concrete showing evidence of leaching and/or increased porosity;</li> <li>Added paragraph to end of section to discuss the requirements for periodic tollgate assessments.</li> </ul>	
3.4.2.2 (formerly 3.4.2.3)	3-34 through 3-39.	<ul style="list-style-type: none"> <li>Revised 1<sup>st</sup> sentence of 1<sup>st</sup> paragraph to clarify scope of examination;</li> <li>Revised 4<sup>th</sup> sentence of 1<sup>st</sup> paragraph to specifically state that the other purpose of the examination is to confirm that there is no localized corrosion on the steel surfaces that line the annulus, and added paragraph return at end of sentence;</li> <li>Revised last sentence of 2<sup>nd</sup> paragraph for clarity.</li> <li>Added sub-headings for Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, Corrective Actions, Extent of Condition, and Operating Experience for clarity.</li> <li>Deleted paragraph return after 3<sup>rd</sup> sentence of 2<sup>nd</sup> paragraph under Acceptance Criteria sub-heading to combine with following paragraph.</li> </ul>	Editorial changes.

## Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
		<ul style="list-style-type: none"> <li>Revised 1<sup>st</sup> and 2<sup>nd</sup> paragraphs under Corrective Action sub-heading to clarify purpose of evaluation in accordance with GL's corrective action program.</li> </ul>	
3.4.2.2 (formerly 3.4.2.3)	3-34 through 3-39.	<ul style="list-style-type: none"> <li>Revised first sentence of section to discuss timing of inspections;</li> <li>Added/revised discussions of Detection of Aging Effects – Method or Technique, Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, Corrective Actions, and Extent of Condition for completeness and consistency with Table 15 (formerly Table 16);</li> <li>Revised corrective actions for consistency with Lead Cask Inspection AMP. Specifically, paragraphs were added to clarify the required corrective actions for localized corrosion on the annulus facing steel surfaces of the VCC Cask Liner Bottom, VCC Cask Liner Shell, VCC Shielding Ring Plates (Liner Assembly and Shield Ring), and MSB Shell;</li> <li>Added paragraph to end of section to discuss the requirements for periodic tollgate assessments.</li> </ul>	Revised in response to RAI-11.
3.4.2.3 (formerly 3.4.2.4)	3-40, 3-41.	<ul style="list-style-type: none"> <li>Revised 3<sup>rd</sup> sentence and last sentence of 4<sup>th</sup> paragraph for clarity;</li> <li>Revised last sentence of 4<sup>th</sup> paragraph to include a step to lower the VCC Shielding Ring Plates (Shield Ring) into position (if lifted).</li> <li>Added sub-headings for Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, Corrective Actions, Extent of Condition, and Operating Experience for clarity.</li> </ul>	Editorial Changes.

## Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
		<ul style="list-style-type: none"> <li>Revised 2<sup>nd</sup> paragraph under Corrective Actions sub-heading to delete discussion of data collection and acceptance criteria, and added paragraph return before 3<sup>rd</sup> paragraph.</li> <li>Revised 1<sup>st</sup> sentence under Extent of Condition sub-heading to clarify that additional examinations must be performed on VSC-24 casks.</li> </ul>	
3.4.2.3 (formerly 3.4.2.4)	3-39 through 3-42.	<ul style="list-style-type: none"> <li>Revised second sentence of 1<sup>st</sup> paragraph in section to discuss timing of inspections;</li> <li>Added/revised discussions of Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, and Corrective Actions for completeness and consistency with Table 16 (formerly Table 17);</li> <li>Revised last paragraph of Corrective Actions subheading to require removal of coating from area to be repaired by welding to avoid potential for liquid metal embrittlement;</li> <li>Added paragraph to end of section to discuss the requirements for periodic tollgate assessments.</li> </ul>	Revised in response to RAI-12.
3.4.2.3 (formerly 3.4.2.4)	3-39.	Revised 1 <sup>st</sup> paragraph to delete footnote 14 from the 2 <sup>nd</sup> to last sentence and added sentence to end of paragraph to require that the cask selected for the Examination of VSC Top End Steel Components AMP is not the same cask that is selected for the Lead Cask Inspection AMP.	Revised in response to RAI-14.
3.4.2.3 (formerly 3.4.2.4)	3-39.	Removed examination of the VSC Lifting Lugs (Optional) from the scope of the AMP because they have no intended safety function, and therefore do not require aging management activities.	Revised in response to RAI-3.

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Section	Page(s)	Change	Purpose
3.4.2.4 (formerly 3.4.2.5)	3-42 through 3-44.	Added sub-headings for Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, Corrective Actions, and Operating Experience for clarity.	Editorial Changes.
3.4.2.4 (formerly 3.4.2.5)	3-42, 3-43.	Removed functional testing of the MTC shield doors and maintenance of the MTC hydraulic assemblies from the AMP.	Revised in response to RAI-5.
3.4.2.4 (formerly 3.4.2.5)	3-42 through 3-44.	<ul style="list-style-type: none"> <li>Revised 1<sup>st</sup> paragraph to require initial inspection to be completed within 1-year after the 20<sup>th</sup> anniversary of the first cask loaded at the site or within 2-years after the CoC renewal date, whichever is later;</li> <li>Added/revised discussions of Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, and Corrective Actions for completeness and consistency with Table 17 (formerly Table 18);</li> <li>Revised discussion under Corrective Actions sub-heading to clarify that any components of the MTC assembly with corrosion that exceeds the acceptance criteria shall be repaired or replaced;</li> <li>Added paragraph to end of section to discuss the requirements for periodic tollgate assessments.</li> </ul>	Revised in response to RAI-13.
3.4.4	3-52, 3-53, 3-54, 3-56, 3-58.	<ul style="list-style-type: none"> <li>Added sub-headings for Detection of Aging Effects – Sample Size (Lead Cask Selection), Detection of Aging Effects – Data Collection, Monitoring and Trending, Corrective Actions, Extent of Condition, and Operating Experience for clarity;</li> <li>Added transition sentence at end of 1<sup>st</sup> paragraph of section;</li> <li>Revised 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> paragraphs under Detection of Aging Effects – Sample Size</li> </ul>	Editorial Changes.

## Summary of Changes, Certificate of Compliance Renewal Application for the VSC-24 Ventilated Cask Storage System, Revision 4

Section	Page(s)	Change	Purpose
		<p>(Lead Cask Selection) for clarity;</p> <ul style="list-style-type: none"> <li>Added colon at the end of the Inspection Scope and Methods sub-heading.</li> <li>Revised 1<sup>st</sup> sentence under Extent of Condition sub-heading to clarify that additional examinations must be performed on VSC-24 casks.</li> </ul>	
3.4.4	3-52 through 3-58.	<ul style="list-style-type: none"> <li>Revised timing of inspections discussed in 2<sup>nd</sup> sentence of first paragraph and deleted footnote 16;</li> <li>Added sentence to end of 1<sup>st</sup> paragraph of Detection of Aging Effects – Sample Size (Lead Cask Selection) sub-heading to require that the cask(s) selected for the Lead Cask Inspection AMP are not the same cask selected for the Examination of VSC Top End Steel Components AMP;</li> <li>Revised/added discussions of Inspection Scope and Method, Detection of Aging Effects – Data Collection, Monitoring and Trending, Acceptance Criteria, and Corrective Actions for completeness and consistency with Table 18 (formerly Table 19);</li> <li>Added paragraph to end of section to discuss the requirement to perform periodic tollgate assessments during the period of extended operation.</li> </ul>	Revised in response to RAI-14.
3.6 (new)	3-59, 3-60.	Added new section to discuss the requirements for periodic tollgate assessments; Renumbered subsequent section (Note: Section numbers and cross-references to the renumbered section(s) have been updated, but are not marked as revisions).	Revised in response to RAI-10.
3.7 (formerly 3.6)	3-62.	Revised References 3.16 to include correct Code Edition (i.e., ACI 349-85).	Editorial correction.

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Section	Page(s)	Change	Purpose
3.7 (formerly 3.6)	3-63	Added new Reference 3.40 to NEI 14-03.	Revised in response to RAI-10.
3.7 (formerly 3.6)	3-64	Added new Reference 3.41 to ACI 215R-74.	Revised in response to RAI-8.
Table 9	3-65, 3-66.	<ul style="list-style-type: none"> <li>Added "&amp; AMP" in Aging Management Activity column Bottom Plate/Sheltered/Loss of Material row;</li> <li>Added Note 2 to clarify the meaning of "N/A" in the Aging Effect and Aging Mechanism columns for the Closure Weld Backing Ring, Shield Lid Pipe &amp; Flex Tubing, and Swagelok Quick Connect subcomponents;</li> <li>Changed the Aging Effect and Aging Mechanism columns for the Shim subcomponent to "None" because it has a safety function, but no aging effects were identified that require aging management activities;</li> <li>Changed "General Corrosion" to "Corrosion" in Aging Mechanism column for Structural Lid Valve Covers/Sheltered/Loss of Material row.</li> </ul>	Editorial corrections.
Table 9	3-65, 3-66.	<ul style="list-style-type: none"> <li>Changed the environment for Structural Lid, Closure Weld Backing Ring, Shield Lid Top Plate, and Structural Lid Valve Covers from "Inert Gas" to "Sealed Air-Filled";</li> <li>Changed the environment for the Shell and Swagelok Quick Connect from "Inert Gas" to "Inert Gas/Sealed Air-Filled".</li> </ul>	Revised in response to RAI-2.
Table 10	3-67.	<ul style="list-style-type: none"> <li>Changed "Scaling, Cracking, and Spalling" to "Cracking &amp; Loss of Material" in Aging Effects column for the Concrete Shell subcomponent;</li> </ul>	Editorial change.

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Section	Page(s)	Change	Purpose
		<ul style="list-style-type: none"> <li>• Changed Aging Effects, Aging Mechanism, and Aging Management Activities column entries for the VCC Lifting Lugs (Optional) to "N/A";</li> <li>• Added Note 3 to clarify the meaning of "N/A" in the Aging Effect and Aging Mechanism columns for the Locking Wire w/ Lead Seal, Lid Gasket, Tile (MSB support), MTC Alignment Plates, and VSC Lifting Lugs (Optional) subcomponents;</li> <li>• Changed the Aging Effect and Aging Mechanism columns for the Air Inlet Assembly/Embedded, Air Outlet Weldment/Embedded, and Bottom Plate Assembly/Embedded rows to "None" because these subcomponent have safety function(s), but no aging effects were identified for the embedded surfaces that require aging management activities;</li> <li>• Changed the Aging Management Activities column entries from "N/A" to "None" for consistency throughout Tables 9 through 12.</li> </ul>	
Table 10	3-68.	<ul style="list-style-type: none"> <li>• Changed the Air Inlet Screen/Hardware material to "Varies<sup>(4)</sup>" and added Note 4 to identify the materials for the Air Inlet Screen and attachment hardware;</li> <li>• Added Note 5 to the Air Outlet Screen/Hardware material call-out;</li> <li>• Changed the VCC Lifting Lugs (Optional) material to "CS" and deleted the old Note 2 call-out.</li> </ul>	Revised in response to RAI-3.
Table 11	3-69.	<ul style="list-style-type: none"> <li>• Added Note 3 to clarify the meaning of "N/A" in the Aging Effect and Aging Mechanism columns for the Drain Pipe, Trunnion Cylinder/End Covers, Rail Alignment Plate/Door Bolt, Door Top Cover, Door</li> </ul>	Editorial changes.

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Section	Page(s)	Change	Purpose
		<p>Hydraulics/Brackets/Attach. Hardware, and Hydraulic Cylinder Assembly subcomponents;</p> <ul style="list-style-type: none"> <li>• Changed the entry in the Environment column for the Light MTC Shield Door Lead Plug to Embedded;</li> <li>• Changed the Aging Effect and Aging Mechanism columns for the Light MTC Shield Door Lead Plug row to "None" because it has a safety function, but no aging effects were identified for the embedded surfaces that require aging management activities;</li> <li>• Changed the Aging Management Activities column entries from "N/A" to "None" for consistency throughout Tables 9 through 12.</li> <li>• Changed "General Corrosion" to "Corrosion" in Aging Mechanism column for Trunnion row.</li> </ul>	
Table 11	3-69, 3-70.	<ul style="list-style-type: none"> <li>• Change Angle, Heat Transfer material to "CS";</li> <li>• Added Note 2 to clarify that the material for the Outer Shell, Inner Shell, Top Ring, Bottom Ring, Trunnion Cylinder/End Covers, Rail Shield, Rail Lower Plate, Shield Door, and Door Top Cover is coated only on the exposed (air-facing) surfaces of the top-level assembly;</li> <li>• Added Note 4 to clarify that lubricant is applied over the coating on the sliding surface of the Rail Shield, Rail Lower Plate, and Shield Door components;</li> <li>• Changed material for Hydraulic Cylinder Assembly to "CS".</li> </ul>	Revised in response to RAI-4.

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<b>Section</b>	<b>Page(s)</b>	<b>Change</b>	<b>Purpose</b>
Table 11	3-69.	<ul style="list-style-type: none"> <li>Deleted the Trunnion Inner and Outer Plate, MTC Middle Shell, and Trunnion Lead/Neutron Shield subcomponents;</li> <li>Changed Aging Effect, Aging Mechanism, and Aging Management Activities for the Trunnion Cylinder/End Covers subcomponent to "N/A".</li> </ul>	Revised in response to RAI-5.
Table 12	3-71.	<ul style="list-style-type: none"> <li>Added Note 2 to clarify the meaning of "N/A" in the Aging Effect and Aging Mechanism columns for the Fuel Pellets, Holddown Spring &amp; Upper End Plugs, and Control Components subcomponents, and renumbered subsequent note;</li> <li>Changed entries in the Aging Effect and Aging Mechanism columns for the Spacer Grid Assemblies, Upper End Fitting, Lower End Fitting, and Guide Tubes rows to "None" because these components have a safety function, but no aging effects were identified that require aging management activities;</li> <li>Changed entry in the Aging Management Activities column entries from "None Required" to "None" for consistency throughout Tables 9 through 12.</li> </ul>	Editorial changes.
Table 12	3-71.	Changed 2 <sup>nd</sup> row of "Upper End Fitting" to "Lower End Fitting" to correct typo.	Revised in response to RAI-6.
Table 13	3-72, 3-73.	<ul style="list-style-type: none"> <li>Added row for the Bottom Plate subcomponent of the MSB Assembly for consistency with Lead Cask Inspection AMP, added Note 1 to clarify that only localized corrosion on the Bottom Plate is managed by the AMP, renumbered subsequent notes and note call-outs;</li> <li>Revised AMP Section(s) column for MSB Assembly/Shell to add references to the Examination of VSC Top End Steel</li> </ul>	Editorial changes.

**Summary of Changes, Certificate of Compliance Renewal Application  
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Section	Page(s)	Change	Purpose
		<p>Components and Lead Cask Inspection AMPs (Sections 3.4.2.3 and 3.4.4, respectively);</p> <ul style="list-style-type: none"> <li>• Changed “Cracking, Spalling &amp; Pitting” to “Cracking &amp; Loss of Material” in Aging Effects column for the Concrete Shell subcomponent;</li> <li>• Revised AMP Section(s) column for VCC Assembly/Cask Liner Bottom to add reference to the Lead Cask Inspection AMP (Section 3.4.4);</li> <li>• Revised AMP Section(s) column for VCC Assembly/Air Outlet Weldment to delete reference to Section 3.4.2.1.</li> </ul>	
Table 13	3-73.	<ul style="list-style-type: none"> <li>• Changed the Air Inlet Screen/Hardware material to “Varies<sup>(3)</sup>”, and added Note 3 to identify the different materials for the Air Inlet Screen and attachment hardware;</li> <li>• Added Note 4 to the Air Outlet Screen/Hardware material call-out;</li> <li>• Deleted rows for VSC Lifting Lug (Optional) subcomponent.</li> </ul>	Revised in response to RAI-3.
Table 13	3-73.	<ul style="list-style-type: none"> <li>• Added Note 2 call-out to Outer Shell, Inner Shell, Top Ring, Bottom Ring, Rail Shield, Rail Lower Plate, and Shield Door subcomponents of the MTC assembly to clarify that coating is only on the exposed (air-facing) surfaces of these MTC assembly subcomponents;</li> <li>• Revised Note 2 (formerly Note 1) to make definition of embedded surfaces generic to the VCC and MTC assemblies;</li> <li>• Added Note 5 to clarify that lubricant is applied over the coating on the sliding surface of the shield door and rail components.</li> </ul>	Revised in response to RAI-4.

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Section	Page(s)	Change	Purpose
Table 13	3-73.	Deleted row for the Trunnion Cylinder/End Covers subcomponent.	Revised in response to RAI-5.
Table 13	3-73.	Revised the AMP Section(s) for the VCC Assembly, "Air Inlet Screen/Hdwr." and "Air Outlet Screen/Hdwr." to reference the AMP for Examination of VCC Assembly Exterior Concrete (i.e., Section 3.4.2.1, as renumbered.)	Revised in response to RAI-9.
Table 14	3-74	Deleted Table 14 (Examination of VCC Assembly Air Inlets and Outlets) and renumbered subsequent tables, accordingly. (Note: Table numbers and cross-references to the renumbered tables have been updated, but are not marked as revisions.)	Revised in response to RAI-9.
Table 14 (formerly Table 15)	3-74.	<ul style="list-style-type: none"> <li>Revised Detection of Aging Effects – Method or Technique to change the reference to the Maintenance Rule from 10 CFR 50.56 to 10 CFR 50.65.</li> <li>Changed Detection of Aging Effects – Sample Size to "All in-service casks" because the surfaces to be examined are already addressed in Scope.</li> </ul>	Editorial changes.
Table 14 (formerly Table 15)	3-74 through 3-78.	<ul style="list-style-type: none"> <li>Revised table caption to delete the word "Concrete" and update the number of pages;</li> <li>Revised Scope, Preventative Actions, Parameters Monitored or Inspected, Detection of Aging Effects, Detection of Aging Effects-Method or Technique, Monitoring and Trending, Acceptance Criteria, Corrective Actions, and Operating Experience AMP elements to address air inlet and outlet screens and attachment hardware.</li> </ul>	Revised in response to RAI-9.
Table 14 (formerly Table 15)	3-75, 3-76, 3-78.	<ul style="list-style-type: none"> <li>Revised Detection of Aging Effects-Data Collection to include more specific requirements for data collection, based on the guidelines provided in ACI 201.1 R-08;</li> <li>Revised Detection of Aging Effects-Timing</li> </ul>	Revised in response to RAI-10.

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Section	Page(s)	Change	Purpose
		<p>of Inspections to require completion of the initial AMP inspection within 1-year after the 20<sup>th</sup> anniversary of the first cask loaded at each site or 2-years after the effective date on the CoC renewal, whichever is later;</p> <ul style="list-style-type: none"> <li>• Revised Monitoring and Trending to require a baseline crack/defect map to be developed from the initial inspection during the extended storage period (based on RAI-11), to clarify that data from inspections performed during the initial storage period may be used to inform the baseline, to identify trends that require monitoring, and to discuss evaluation of the results and corrective actions;</li> <li>• Revised Acceptance Criteria to include acceptance criteria for concrete spalling, added a subheading for “Concrete Surfaces”, and moved acceptance criteria for “Steel-to-Concrete Interfaces” to separate subheading for clarity;</li> <li>• Revised Corrective Actions-Repair of Defects to change subheading title to “Repair of <u>Surface</u> Defects” and revised second sentence to include a parenthetical example of the types of defects on the concrete exterior surface that are included;</li> <li>• Revised Operating Experience to include a discussion of the requirement to perform periodic tollgate assessments during the period of extended operation.</li> </ul>	
Table 15 (formerly Table 16)	3-79 through 3-83.	<ul style="list-style-type: none"> <li>• Revised page count in table heading;</li> <li>• Revised Parameters Monitored or Inspected AMP element to include all subcomponents that line the ventilation flow path.</li> <li>• Revised Detection of Aging Effects – Method or Technique to delete second use of</li> </ul>	Editorial Corrections.

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Section	Page(s)	Change	Purpose
		“identify” in 1 <sup>st</sup> sentence, and change the reference to the Maintenance Rule in the 2 <sup>nd</sup> sentence from 10 CFR 50.56 to 10 CFR 50.65.	
Table 15 (formerly Table 16)	3-79 through 3-83.	<ul style="list-style-type: none"> <li>Revised Detection of Aging Effects-Timing of Inspections to require initial inspection to be completed within 5-years of the 20<sup>th</sup> anniversary of the 1<sup>st</sup> cask loaded at the site;</li> <li>Revised Monitoring and Trending to clarify that the baseline should be based on the initial inspection during the extended storage period, to clarify that data from inspections performed during the initial storage period may be used to inform the baseline, to identify trends that require monitoring, and to discuss evaluation of the results and corrective actions;</li> <li>Revised Corrective Actions to clarify corrective actions for blockage of VCC ventilation ducts and annulus and coating degradation and corrosion on the steel surfaces that line the ventilation ducts and annulus, clarify the required corrective actions for localized corrosion on the surfaces of the VCC Cask Liner Bottom, VCC Cask Liner Shell, VCC Shielding Ring Plates (Liner Assembly and Shield Ring), and MSB Shell (includes addition of Notes 2 and 3), and move discussion on Extent of Condition the end of section;</li> <li>Revised Operating Experience to include a discussion of the requirement to perform periodic tollgate assessments during the period of extended operation.</li> </ul>	Revised in response to RAI-11.
Table 15 (formerly Table 16)	3-81, 3-82.	Corrective Actions: Revise Coating Degradation and Corrosion sub-heading to.	Revised in response to RAI-14.

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Section	Page(s)	Change	Purpose
Table 16 (formerly Table 17)	3-84 through 3-87.	<ul style="list-style-type: none"> <li>Revised page count in table heading;</li> <li>Revised Parameters Monitored or Inspected to be more specific about what aging effects are monitored or inspected, and on which surfaces/subcomponents.</li> <li>Revised Detection of Aging Effects – Method or Technique to change the reference to the Maintenance Rule in the 2<sup>nd</sup> sentence from 10 CFR 50.56 to 10 CFR 50.65;</li> <li>Revised 1<sup>st</sup> sentence of Corrective Actions to clarify the purpose of the evaluation performed in accordance with the GL's corrective action program, and added transition to the following corrective actions;</li> <li>Deleted 1<sup>st</sup> sentence of 3<sup>rd</sup> paragraph of Corrective Actions because it is redundant with the 1<sup>st</sup> paragraph in the section.</li> <li>Revised 1<sup>st</sup> sentence of last paragraph of Corrective Actions to clarify that additional examinations are performed on VSC-24 storage systems;</li> <li>Revised 1<sup>st</sup> sentence of 1<sup>st</sup> paragraph of Operating Experience to change "VCC top interior" to "VSC top end steel components";</li> <li>Moved table notes to separate page.</li> </ul>	Editorial Corrections.
Table 16 (formerly Table 17)	3-84.	Removed [VSC] Lifting Lugs from the AMP scope.	Revised in response to RAI-3.
Table 16 (formerly Table 17)	3-84 through 3-86.	<ul style="list-style-type: none"> <li>Revised Parameters Monitored or Inspected to delete "lid gasket," from sentence;</li> <li>Revised Detection of Aging Effects-Data Collection to include more specific requirements for data collection;</li> <li>Revised Detection of Aging Effects-Timing</li> </ul>	Revised in response to RAI-12.

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Section	Page(s)	Change	Purpose
		<p>of Inspections to require the initial inspection to be completed within 1-year after the 20<sup>th</sup> anniversary of the 1<sup>st</sup> cask loaded at the site or within 2-years after the effective date of the CoC renewal, whichever is later;</p> <ul style="list-style-type: none"> <li>• Revised Monitoring and Trending to require a baseline to be developed from the initial inspection during the extended storage period (based on RAI-11), to clarify that data from inspections performed during the initial storage period may be used to inform the baseline, to identify trends that require monitoring, and to discuss evaluation of the results and corrective actions;</li> <li>• Added Note 4 to 2<sup>nd</sup> paragraph (2 places) of Corrective Actions and in Notes section to require removal of coating from area to be repaired by welding to avoid potential for liquid metal embrittlement;</li> <li>• Revised Operating Experience to add discussion of the requirement to perform periodic tollgate assessments during the period of extended operation.</li> </ul>	
Table 16 (formerly Table 17)	3-84, 3-87.	Revised Detection of Aging Effects - Sample Size to add Note 3 to require a different cask to be used for the VSC Top End Steel Examination AMP and Lead Cask Inspection AMP.	Revised in response to RAI-14.
Table 17 (formerly Table 18)	3-88.	Revised Scope to include bullet list of the specific components/surfaces included in the scope of the AMP.	Editorial clarification.
Table 17 (formerly Table 18)	3-88, 3-89.	Removed requirements related to functional testing of the MTC shield doors and maintenance of the Hydraulic Cylinder Assemblies from the Scope, Preventative Actions, Parameters Monitored or Inspected, Acceptance Criteria, and Corrective Actions AMP elements.	Revised in response to RAI-5.

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Section	Page(s)	Change	Purpose
Table 17 (formerly Table 18)	3-88, 3-89.	<ul style="list-style-type: none"> <li>Revised Detection of Aging Effects-Method or Technique to specify VT-3 visual examination and qualification requirements for personnel performing the examination;</li> <li>Revised Detection of Aging Effects-Data Collection to require documentation of the examination on a checklist/inspection form, written descriptions, sketches, and photographs of observed aging effects, records of corrective actions, and to clarify that video may also be used to document the inspection;</li> <li>Revised Detection of Aging Effects-Timing of Inspections to require the initial inspection to be completed within 1-year of the 20<sup>th</sup> anniversary of the 1<sup>st</sup> cask loaded at the site, or 2-years of the effective date of the CoC renewal, whichever is later;</li> <li>Revised Monitoring at Trending to require a baseline to be developed from the initial inspection during the extended storage period (based on RAI-11), to clarify that data from maintenance activities performed during the initial storage period may be used to inform the baseline, to identify trends that require monitoring, and to discuss evaluation of the results and corrective actions;</li> <li>Revised Corrective Actions to clarify that any components of the MTC assembly with corrosion that exceeds the acceptance criteria shall be evaluated in accordance with the GL's corrective action program and repaired or replaced in accordance with GL's procedures. Also added Note 1 to require removal of coating from area to be repaired by welding to avoid potential for liquid metal embrittlement;</li> </ul>	Revised in response to RAI-13.

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Section	Page(s)	Change	Purpose
		<ul style="list-style-type: none"> <li>Revised Operating Experience to add discussion of the requirement to perform periodic tollgate assessments during the period of extended operation.</li> </ul>	
Table 18 (formerly Table 19)	3-90 through 3-96.	<ul style="list-style-type: none"> <li>Revised page count in table heading;</li> <li>Revised Detection of Aging Effects – Method or Technique to change the reference to the Maintenance Rule from 10 CFR 50.56 to 10 CFR 50.65;</li> <li>Revise 3<sup>rd</sup> paragraph under Acceptance Criteria, Coating Degradation and Corrosion subheading to include the bottom surface of the MSB Bottom Plate and top surface of the VCC Cask Liner Bottom for completeness.</li> <li>Revise Corrective Actions to move requirements to evaluate conditions in accordance with GL's corrective action program into an introductory paragraph and revise Blockage sub-heading to replace specific acceptance criteria with a general reference to Acceptance Criteria section;</li> <li>Revised Corrective Actions, Extent of Condition sub-heading to clarify that additional VSC-24 storage systems are required to be examined for extent of condition.</li> <li>Revised Note 3 to replace the references to Section 3.4.4 of CoC renewal application with the pertinent information from that section because only the table (not Section 3.4.4) will be added to the FSAR as Table 9.3-10;</li> <li>Deleted Note 4 because it is not necessary.</li> </ul>	Editorial changes.
Table 18 (formerly Table 19)	3-90, 3-92.	Removed VSC Lifting Lugs from the Scope and Acceptance Criteria elements of the AMP.	Revised in response to RAI-3.

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Section	Page(s)	Change	Purpose
Table 18 (formerly Table 19)	3-91 through 3-96.	<ul style="list-style-type: none"> <li>Revised Detection of Aging Effects-Data Collection to require documentation of the examination on a checklist/inspection form, written descriptions, sketches, and photographs of observed aging effects, records of corrective actions, and to clarify that video should also be used to document the inspection;</li> <li>Revised Detection of Aging Effects-Timing of Inspections to require the initial inspection to be completed within 1-year of the 20<sup>th</sup> anniversary of the 1<sup>st</sup> cask loaded at the site, or 2-years of the effective date of the CoC renewal, whichever is later, delete Note 4, and delete the last sentence discussing frequency because it redundant;</li> <li>Revised Monitoring at Trending to require a baseline to be developed from the initial inspection during the extended storage period (based on RAI-11), to clarify that data from previous inspections performed during the initial storage period may be used to inform the baseline, to identify trends that require monitoring, and to discuss evaluation of the results and corrective actions;</li> <li>Corrective Actions: Revise Coating Degradation and Corrosion sub-heading to include corrective actions for the VSC top end steel components, and to clarify the required corrective actions for localized corrosion on the surfaces of the VCC Cask Liner Bottom, VCC Cask Liner Shell, VCC Shielding Ring Plates (Liner Assembly and Shield Ring), MSB Shell, and MSB Bottom Plate (includes addition of Notes 4 and 5);</li> <li>Revised Operating Experience to add a discussion of the requirement to perform periodic tollgate assessments during the</li> </ul>	Revised in response to RAI-14.

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Section	Page(s)	Change	Purpose
		<p>period of extended storage.</p> <ul style="list-style-type: none"> <li>Revised Note 3 to require that the cask(s) selected for the lead cask inspection are different from the cask selected for the Examination of VSC Top End Steel Components AMP.</li> </ul>	
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App. A, Table A-1, FSAR Section 9.3.2.6.	A-10, A-11.	Revised text to explain that a 44.4% decrease in source strength more than offsets a 75% increase in neutron dose rate due to complete loss of the RX-277 neutron shielding material in the MSB shield lid.	Editorial revision.
App. A, Table A-1, FSAR Section 9.3.2.7.	A-11, A-12.	<ul style="list-style-type: none"> <li>Added Section 9.3.2.7 (VCC Concrete Thermal Fatigue Analysis) to the FSAR;</li> <li>Added Reference 9.3 to Section 14.1 of the FSAR.</li> </ul>	Revised in response to RAI-8.
App. A, Table A-1, FSAR Section 9.3.3.	A-12, A-13.	Delete "Examination of VCC Air Inlets and Outlets" from the AMPs to be added to the FSAR and renumber the subsequent table numbers.	Revised in response to RAI-9.
App. A, Table A-1, FSAR Section 9.3.4.	A-13, A-16.	<ul style="list-style-type: none"> <li>Update the reference number for ISG-2 to use the reference in the FSAR (i.e., Ref. 9.1) so that it stands-alone from the CoC renewal application;</li> <li>Added Reference 9.1 to Section 14.1 of the FSAR.</li> </ul>	Editorial changes.
App. A, Table A-1, FSAR Section 9.3.5.	A-14 through A-16.	Added Section 9.3.5 (Periodic Tollgate Assessments) to FSAR.	Revised in response to RAI-10.

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Section	Page(s)	Change	Purpose
App. A, Table A-1, FSAR Section 14.1.	A-16.	<ul style="list-style-type: none"> <li>• Add new subheading “Section 9.0” in Section 14.1 of the FSAR;</li> <li>• Add references 9.1 and 9.2 for ISG-2 and NEI 14-03, respectively.</li> </ul>	Editorial changes.
App. A, Table 9.3-1.	A-18, A-19.	Added “& AMP <sup>(2)</sup> ” to Aging Management Activities column for Bottom Plate/Sheltered/Loss of Material row and added Note 2 to clarify that only localized corrosion on the Bottom Plate is managed by the AMP.	Editorial changes.
App. A, Table 9.3-1.	A-18, A-19.	<ul style="list-style-type: none"> <li>• Changed the “Inert Gas” environment for Structural Lid, Shield Lid Top Plate, and Structural Lid Valve Covers to “Sealed Air-Filled”;</li> <li>• Changed the environment for the Shell from “Inert Gas” to “Inert Gas/Sealed Air-Filled” because the inside surface of the shell between the inner and outer closure welds is exposed to the “Sealed Air-Filled” environment.</li> </ul>	Revised in response to RAI-2.
App. A, Table 9.3-2.	A-20.	Changed “Scaling, Cracking & Spalling” to “Cracking & Loss of Material” in Aging Effects column for the Concrete Shell subcomponent.	Editorial change.
App. A, Table 9.3-2.	A-21.	<ul style="list-style-type: none"> <li>• Appendix A, Table 9.3-2: Changed the Air Inlet Screen/Hardware material from “Galvanized Steel” to “Varies<sup>(3)</sup>” and added Note 3 to identify the different materials for the Air Inlet Screen and attachment hardware (i.e., Flat Stock and Moly Bolt);</li> <li>• Added Note 4 to the Air Outlet Screen/Hardware material call-out to identify the different materials for the screen and screen fasteners;</li> <li>• Deleted rows for VSC Lifting Lugs (Optional).</li> </ul>	Revised in response to RAI-3.

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<b>Section</b>	<b>Page(s)</b>	<b>Change</b>	<b>Purpose</b>
App. A, Table 9.3-3.	A-22, A-23.	<ul style="list-style-type: none"> <li>Added page count in table heading;</li> <li>Changed "General Corrosion" to "Corrosion" in Aging Mechanism column for Trunnion row.</li> </ul>	Editorial change.
App. A, Table 9.3-3.	A-22, A-23.	<ul style="list-style-type: none"> <li>Added Note 2 for Outer Shell, Inner Shell, Top Ring, Bottom Ring, Rail Shield, Rail Lower Plate, and Shield Door subcomponents of the MTC assembly to clarify that coating is only on the exposed (air-facing) surfaces of these MTC assembly subcomponents;</li> <li>Added Note 3 for Rail Shield, Rail Lower Plate, and Shield door to clarify that lubricant is applied over the coating on the sliding surface of these subcomponents..</li> </ul>	Revised in response to RAI-4.
App. A, Table 9.3-3.	A-22.	<ul style="list-style-type: none"> <li>Deleted the MTC Middle Shell, Trunnion Cylinder/End Covers, Trunnion Inner &amp; Outer Plate, and Trunnion Lead/Neutron Shield subcomponents;</li> <li>Deleted existing Note 2.</li> </ul>	Revised in response to RAI-5.