

LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter 1, Part 72, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, and possess the power reactor spent fuel and other radioactive materials associated with spent fuel storage designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified herein.

Licensee		3 License No.	SNM-2505
1 Calvert Cliffs Nuclear Power Plant, LLC(Owner) Exelon Generation Company, LLC, (Operator)		Amendment No.	
2 300 Exelon Way Kennett Square, PA 19348		4 Expiration Date	November 30, 2052
		5 Docket or Reference No.	72-8

6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical or Physical Form	8. Maximum Amount That Licensee May Possess at Any One Time Under This License
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A Spent fuel assemblies from Calvert Cliffs Nuclear Station Units 1 and 2 reactor using natural water for cooling and enriched not greater than 4.5 percent U-235 and associated radioactive materials related to receipt, storage, and transfer of fuel assemblies.	A. As UO ₂ clad with zirconium or zirconium alloys.	A. 1,111.68 TeU of spent fuel assemblies.
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9. Authorized Use: For use in accordance with the conditions in this license and the attached Technical Specifications. The basis for this license was submitted in the Safety Analysis Report (SAR) application dated December 21, 1989, and supplemented April 25, June 29, November 1, and December 20, 1990; February 1, February 12, September 30, October 18, December 19, and December 27, 1991; August 18, and September 4, 1992; July 29 and October 20, 1994; March 31, 1995; November 22, 1999; May 19, June 20, October 4, November 10 and 16, 2000; May 18, and July 26, 2001; December 12, 2003, May 12, 2004 and June 7 2005; May 16, September 29, October 28, 2005, January 22, February 26, April 8, June 25, July 27, October 15, 19, 25 (2 letters), 26, and 28, 2009; June 15, 2009, February 18, March 31, May 6, and September 1, 2010; September 17, 2010, February 10, March 9, June 28, and December 15, 2011; July 27, 2012; April 24, 2013; June 14, and September 18, 2014.

The material identified in 6.A and 7.A above is authorized for receipt, possession, storage, and transfer.

10. Authorized Place of Use: The licensed material is to be received, possessed, transferred, and stored at the Calvert Cliffs Independent Spent Fuel Storage Installation (ISFSI) located on the Calvert Cliffs Nuclear Power Plant site in Calvert County, Maryland. This site is described in Chapter 2 of the licensee's SAR for the Calvert Cliffs ISFSI.

NRC FORM 588A (10-2000) 10 CFR 72 LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE SUPPLEMENTARY SHEET	U. S. NUCLEAR REGULATORY COMMISSION	
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11. The Technical Specifications contained in Appendix A attached hereto are incorporated into the license. Exelon Generation shall operate the installation in accordance with the Technical Specifications in Appendix A.
12. Exelon Generation shall fully implement and maintain in effect all provisions of the Independent Spent Fuel Storage Installation (ISFSI) physical security, guard training and qualification, and safeguards contingency plans previously approved by the Commission and all amendments made pursuant to the authority of 10 CFR 72.56, 10 CFR 72.44(e) and 72.186.
13. The Technical Specifications for Environmental Protection contained in Appendix A attached hereto are incorporated into the license.

Specifications required pursuant to 10 CFR 72.44(d), stating limits on the release of radioactive materials for compliance with limits of 10 CFR Part 20 and "as low as is reasonably achievable objective" for effluents are not applicable. Dry Shielded Canister (DSC) external surface contamination within the limits of Technical Specification 3.2.3.1 ensures that the offsite dose will be inconsequential. In addition, there are no normal or off-normal releases or effluents expected from the double-sealed storage canisters of the ISFSI.

Specifications required pursuant to 10 CFR 72.44(d)(1) for operating procedures, for control of effluents, and for the maintenance and use of equipment in radioactive waste treatment systems to meet the requirements of 10 CFR 72.104 are not applicable. There are, by the design of the sealed storage canisters at the ISFSI, no effluent releases. Also, all Calvert Cliffs site DSC and Transfer Cask (TC) loading and unloading operations and waste treatment there from will occur at the Calvert Cliffs Nuclear Power Plant under the specifications of its operating licenses.

14. The design, construction, and operation of the ISFSI shall be accomplished in accordance with the NRC regulations specified in Title 10 of the U.S. Code of Federal Regulations. All commitments to the applicable NRC Regulatory Guides and to engineering and construction codes shall be carried out.
15. The double closure seal welds at the bottom end of the DSC shall satisfy the Liquid Penetrant Acceptance Standards of ASME B&PV Code Section III, Division 1, Subsection NB-5350 (1983). Additionally, these seal welds at the bottom of the DSC shall be leak tested in accordance with ANSI N14.5 (1987).
16. Fuel and TC movement and handling activities which are to be performed in the Calvert Cliffs Nuclear Power Plant Auxiliary Building will be governed by the requirements of the Exelon Generation Facility Operating Licenses (DRP-53 and -69) and associated Technical Specifications.
17. Pursuant to 10 CFR 72.7, the licensee is hereby exempted from the provisions of 10 CFR 72.122(i) with respect to providing instrumentation and control systems for the DSC and HSM during storage operations.
18. Within 90 days after issuance of the license, the licensee shall submit an updated SAR, and continue to update the SAR pursuant to the requirements in 10 CFR 72.70(b) and (c).

The updated SAR submitted in accordance with 10 CFR 72.70(a) shall include Attachment 4 to the Response to Fourth Request for Additional Information for Renewal Application, "ISFSI Updated Safety Analysis Report Supplement and Changes" [Agencywide Document Access and Management System (ADAMS) Accession Number ML14267A065] (hereinafter referred to as Attachment 4). The licensee may make changes to the SAR, including changes to Attachment 4, consistent with 10 CFR 72.48(c).

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19. Exelon Generation shall update, revise or create, procedures for implementing the activities in the Aging Management Programs (AMPs) summarized in Attachment 4 within 180 days of the renewed license issuance.

The licensee shall maintain procedures that implement the AMPs throughout the term of this license.

Each procedure for implementing the AMPs shall contain a reference to the specific AMP provision the procedure is intended to implement. The reference shall be maintained if procedures are modified.

Within 240 days of issuance of the renewed license, the licensee shall confirm, in a letter to the Commission (submitted pursuant to 10 CFR 72.4), that: the procedures for implementation of the activities as described in the AMPs summarized in Attachment 4 are in place, that the procedures will be maintained for the term of this license, and that appropriate references to the AMPs are provided in the procedures.

20. The licensee shall not remove (a) any structure, system or component (SSC) or subcomponent, or (b) any aging mechanism or aging effect, as detailed in Tables 9.6-1 through 9.6-4 in Attachment 4, from the scope of the AMPs.
21. With respect to the aging management activities for the Horizontal Storage Module (HSM), as described in the "HSM Aging Management Program" in Attachment 2 to the Response to Fourth Request for Additional Information for Renewal Application:
- (a) The licensee shall perform visual inspections of accessible exterior surfaces of the HSM concrete, including any exposed reinforcing steel and steel embedments. The inspections shall be performed at intervals not to exceed one year.
 - (b) The licensee shall perform visual inspections for a minimum of five targeted HSMs to be selected based on the results of the inspections per Condition 21(a). The targeted visual inspections shall be performed at intervals not to exceed every five years. The licensee shall evaluate for loss of intended function for inspection results meeting Tier 2 or Tier 3 acceptance criteria in ACI 349.3R-02.
 - (c) The licensee shall perform subsequent visual inspections of the interior surfaces of HSM-1 and HSM-15, first inspected in June 2012 [ADAMS Accession Number ML12212A216], at intervals not to exceed every five years. These inspections will focus on the interior concrete and steel subcomponents, including the DSC support structure. The licensee shall evaluate for loss of intended function for inspection results meeting Tier 2 or Tier 3 acceptance criteria in ACI 349.3R-02.
 - (d) The licensee shall obtain groundwater chemistry samples representative of the HSM below-grade environment for a minimum of 3 locations at intervals not to exceed every five years. The licensee shall characterize these groundwater chemistry samples to monitor for an aggressive below-grade environment, as defined in ASME Code Section XI Subsection IWL.

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22. Exelon Generation shall submit an evaluation of the results of the confirmatory evaluation related to high burnup fuel cladding performance specified in the "High Burnup Fuel Aging Management Program" in Attachment 2 to the Response to Fourth Request for Additional Information for Renewal Application, in a letter to the NRC (submitted pursuant to 10 CFR 72.4), by April 30, 2028. The evaluation shall include an assessment of the ability of stored high burnup fuel assemblies to continue to perform the intended function(s). If the licensee identifies fuel which is unable to perform the intended function(s), the licensee shall cease use of such cask or submit a license amendment request to modify this license condition.
23. With respect to the aging management activities for the Dry Shielded Canister (DSC), as described in the "DSC External Surfaces Aging Management Program" in Attachment 2 to the Response to Fourth Request for Additional Information for Renewal Application (hereinafter referred to as Attachment 2), the licensee must perform the inspections at intervals not to exceed 5 years:
- (a) The licensee shall perform DSC inspections on canisters that are determined to be most susceptible to aging effects. The licensee shall include DSC-6 in HSM-15 and DSC-11 in HSM-1 in inspections throughout the duration of the renewed license period. The licensee shall continue to obtain samples using method(s) that will allow DSC surface deposits to be collected and analyzed.
 - (b) The licensee shall perform inspections of DSC external surfaces using proven technology reasonably available at the time the inspection is conducted which is capable of meeting the physical access and environmental constraints of the HSM interior.
 - i. At a minimum, the licensee shall perform the inspection identified in the DSC External Surfaces Aging Management Program, as described in Attachment 2, which identifies remote visual inspection using inspection equipment capable of meeting ASME Section XI Article IWA-2210 VT-3 standards to the extent allowed by the inspection equipment.
 - ii. For areas outside of the range capable of being inspected to VT-3 standards, the licensee shall inspect and document these areas to the best of the ability of the inspector.
 - (c) Remote visual inspections performed by the licensee shall include the surfaces identified in the DSC External Surfaces Aging Management Program, as described Attachment 2. The licensee shall evaluate the condition of the DSC shell at the support rail contact region based on the appearance of the visible regions immediately adjacent to the crevice location. Remote visual inspections will cover the DSC surface areas to the maximum extent practicable including;
 - i. The bottom end of the DSC visible from the HSM doorway opening including the grapple ring, and excluding areas obstructed by the seismic restraint and the sides of bottom shield plug where access is restricted by the small HSM doorway gap;
 - ii. The top cover including the closure weld and excluding areas obstructed by the HSM rail back stops;
 - iii. The DSC shell from and including the center circumferential weld (WJ-3) to the top end of the DSC (near the back wall of the HSM), including the longitudinal weld in this region (WJ-2) and excluding the portion of the shell obstructed by the HSM rails;

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- iv. The portion of the DSC shell from the center circumferential weld to the bottom end of the DSC (near the HSM doorway), including the longitudinal weld in this region (WJ-1) and excluding the portion of the shell obstructed by the HSM rails.
- (d) The licensee shall use inspection acceptance criteria defined in the Dry Shielded Canister (DSC) External Surfaces Aging Management Program included in Attachment 2 to the Response to Fourth Request for Additional Information for Renewal Application:
- i. Acceptable signifies that a component is free of significant deficiencies or degradation that could lead to the loss of intended function.
 - ii. Acceptable with Defects signifies that a component contains deficiencies or degradation new or increased areas of pitting, crevice corrosion, or staining, compared to the baseline but will remain able to perform its design basis function until the next inspection.
 - iii. Unacceptable signifies a component contains deficiencies or degradation that either prevents (or could prevent prior to the next inspection the ability to perform their intended function such as a positive identification of the presence of cracks on the DSC surface with length exceeding the requirements of ASME Section XI Table IWB-3514-2 acceptance criteria for surface examination of in-service austenitic steel components.
 - iv. In the event of an inspection finding other than acceptable as described in (d)(i) above, the licensee shall issue a condition report in the site corrective action program to drive further evaluation, characterization, and other actions as needed to preserve the DSC intended functions. The cask may not develop through wall cracking or any other through wall breach that places the licensee out of compliance with 72.122(h)(5), and which the licensee is unable to, through corrective actions, return the DSC to its approved design basis. If the licensee identifies such through wall cracking or other through wall breach and is unable, through corrective actions, to return the DSC to its approved design basis, the licensee shall cease use of such cask or submit a license amendment request to modify this license condition.

This renewed license is effective as of the date of issuance shown below.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Michele M. Sampson, Chief
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555

Date of Issuance: November 30, 1992
Renewed License: Dated October 23, 2014
Attachment: Technical Specifications