

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 72-0028, 50-387, and 50-388; NRC-2024-0068]

Susquehanna Nuclear, LLC;

Susquehanna Steam Electric Station, Units 1 and 2;

Independent Spent Fuel Storage Installation;

Exemption

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) issued an exemption to Susquehanna Nuclear, LLC, permitting Susquehanna Steam Electric Station to load six new 89 multi-purpose canisters (MPC) with continuous basket shims in the HI-STORM Flood/Wind MPC Storage System at its Susquehanna Steam Electric Station, Units 1 and 2 independent spent fuel storage installation in a storage condition where the terms, conditions, and specifications in the Certificate of Compliance No. 1032, Amendment No. 5, are not met.

DATES: The exemption was issued on April 22, 2024.

ADDRESSES: Please refer to Docket ID **NRC-2024-0068** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2024-0068**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individual listed in the "For Further Information Contact" section of this document.

- **NRC's Agencywide Documents Access and Management System**

(ADAMS): You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, at 301-415-4737, or by email to PDR.Resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.

- **NRC's PDR:** The PDR, where you may examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Christian Jacobs, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555; telephone: 301-415-6825; email: Christian.Jacobs@nrc.gov.

SUPPLEMENTARY INFORMATION: The text of the exemption is attached.

Dated: April 25, 2024.

For the Nuclear Regulatory Commission.

/RA/

Yaira Diaz-Sanabria, Chief,
Storage and Transportation Licensing
Branch,
Division of Fuel Management,
Office of Nuclear Material Safety,
and Safeguards.

Attachment – Exemption

NUCLEAR REGULATORY COMMISSION

Docket Nos. 72-0028, 50-387, and 50-388

Susquehanna Nuclear, LLC

Susquehanna Steam Electric Station Units 1 and 2

Independent Spent Fuel Storage Installation;

I. Background

Susquehanna Nuclear, LLC (Susquehanna) is the holder of Renewed Facility Operating License Nos. NPF-14 and NPF-22, which authorize operation of the Susquehanna Steam Electric Station (SSES), Units 1 and 2 in Salem Township, Luzerne County, PA (70 miles northeast of Harrisburg, PA), pursuant to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR), “Domestic Licensing of Production and Utilization Facilities.” The licenses provide, among other things, that the facility is subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (NRC) now or hereafter in effect.

Consistent with 10 CFR part 72, subpart K, “General License for Storage of Spent Fuel at Power Reactor Sites,” a general license is issued for the storage of spent fuel in an Independent Spent Fuel Storage Installation (ISFSI) at power reactor sites to persons authorized to possess or operate nuclear power reactors under 10 CFR part 50. Susquehanna is authorized to operate nuclear power reactors under 10 CFR part 50 and holds a 10 CFR part 72 general license for storage of spent fuel at the SSES ISFSI. Under the terms of the general license, Susquehanna stores spent fuel at its SSES ISFSI using the HI-STORM Flood/Wind (FW) Multi-Purpose Canister (MPC) Storage System in accordance with Certificate of Compliance (CoC) No. 1032, Amendment No. 5.

II. Request/Action

By a letter dated March 19, 2024 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML24079A070) and supplemented on March 21, 2024 (ML24081A335), Susquehanna requested an exemption from the requirements of 10 CFR §§ 72.212(a)(2), 72.212(b)(3), 72.212(b)(5)(i), 72.212(b)(11), and 72.214 that requires SSES to comply with the terms, conditions, and specifications of the CoC No. 1032, Amendment No. 5 (ML20163A701). If approved, Susquehanna's exemption request would accordingly allow SSES to load MPCs with continuous basket shims (CBS) (i.e., MPC-89-CBS), an unapproved variant basket design, in the HI-STORM FW MPC Storage System, and thus, to load the systems in a storage condition where the terms, conditions, and specifications in the CoC No. 1032, Amendment No. 5, are not met.

Susquehanna currently uses the HI-STORM FW MPC Storage System under CoC No. 1032, Amendment No. 5, for dry storage of spent nuclear fuel at the SSES ISFSI. Holtec International (Holtec), the designer and manufacturer of the HI-STORM FW MPC Storage System, developed a variant of the MPC-89 design with CBS, known as MPC-89-CBS. Holtec performed a non-mechanistic tip-over analysis with favorable results and implemented the CBS variant design under the provisions of 10 CFR 72.48, "Changes, tests, and experiments," which allows licensees to make changes to cask designs without a CoC amendment under certain conditions (listed in 10 CFR 72.48(c)). After evaluating the specific changes to the cask designs, the NRC determined that Holtec erred when it implemented the CBS variant design under 10 CFR 72.48, as this is not the type of change allowed without a CoC amendment. For this reason, the NRC issued three Severity Level IV violations to Holtec (ML24016A190).

Susquehanna's near-term loading campaign for the SSES ISFSI includes plans to load six MPC-89-CBS in the HI-STORM FW MPC Storage System beginning in August 2024. While Holtec was required to submit a CoC amendment to the NRC to seek approval of the CBS variant design, such a process will not be completed in time to inform decisions for this near-term loading campaign. Therefore, Susquehanna submitted this exemption request to allow for future loading of six MPC-89-CBS beginning in August 2024 at the SSES ISFSI. This exemption is limited to the use of MPC-89-CBS in the HI-STORM FW MPC Storage System only for the specific near-term planned loading of six new canisters using the MPC-89-CBS variant basket design.

III. Discussion

Pursuant to 10 CFR 72.7, "Specific exemptions," the Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations of 10 CFR part 72 as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

A. The Exemption is Authorized by Law

This exemption would allow Susquehanna to load six new MPC-89-CBS in the HI-STORM FW MPC Storage System, beginning in August 2024, at its SSES ISFSI in a storage condition where the terms, conditions, and specifications in the CoC No. 1032, Amendment No. 5, are not met. Susquehanna is requesting an exemption from the provisions in 10 CFR part 72 that require the licensee to comply with the terms, conditions, and specifications of the CoC for the approved cask model it uses. Section 72.7 allows the NRC to grant exemptions from the requirements of 10 CFR part 72. This authority to grant exemptions is consistent with the Atomic Energy Act of 1954, as amended, and is not otherwise inconsistent with NRC's regulations or other applicable

laws. Additionally, no other law prohibits the activities that would be authorized by the exemption. Therefore, the NRC concludes that there is no statutory prohibition on the issuance of the requested exemption, and the NRC is authorized to grant the exemption by law.

B. The Exemption Will Not Endanger Life or Property or the Common Defense and Security

This exemption would allow Susquehanna to load six new MPC-89-CBS in the HI-STORM FW MPC Storage System, beginning in August 2024, at the SSES ISFSI in a storage condition where the terms, conditions, and specifications in the CoC No. 1032, Amendment No. 5, are not met. In support of its exemption request, Susquehanna asserts that issuance of the exemption would not endanger life or property because a tip-over or handling event is administratively controlled, and that the containment boundary would be maintained in such an event. Susquehanna relies, in part, on the approach in the NRC's Safety Determination Memorandum (ML24018A085). The NRC issued this Safety Determination Memorandum to address whether, with respect to the enforcement action against Holtec regarding this violation, there was any need to take an immediate action for the cask systems that were already loaded with non-compliant basket designs. The Safety Determination Memorandum documents a risk-informed approach concluding that, during the design basis event of a non-mechanistic tip-over, the fuel in the basket in the MPC-89-CBS remains in a subcritical condition.

Susquehanna also provided site-specific technical information, as supplemented, including information explaining why the use of the approach in the NRC's Safety Determination Memorandum is appropriate for determining the safe use of the CBS variant baskets at the SSES ISFSI. Specifically, Susquehanna described that the analysis of the tip-over design basis event that is relied upon in the NRC's Safety

Determination Memorandum, which demonstrates that the MPC confinement barrier is maintained, is documented in the updated final safety analysis report (UFSAR) for the HI-STORM FW MPC Storage System CoC No. 1032, Amendment 5, that is used at the SSES site. In addition, the handling procedures utilized by Susquehanna comply with the requirements of Appendix A of CoC No. 1032, Amendment No. 5, including a single failure proof lifting system and redundant drop protection features in accordance with applicable codes and standards.

Additionally, Susquehanna referenced specific information from SSES's 72.212 Evaluation Report, Revision 0, that demonstrated the combined dose produced by the storage systems on the SSES ISFSI will not result in annual doses at the ISFSI controlled area boundary in excess of the limits specified in 10 CFR 72.104(a), "Criteria for radioactive materials in effluents and direct radiation from an ISFSI or MRS", during normal and anticipated operational occurrences, or in excess of the limits specified in 72.106, "Controlled area of an ISFSI or MRS", during design bases accidents. Specifically, Susquehanna described that, in the highly unlikely event of a tip-over, any potential fuel damage from a non-mechanistic tip-over event would be localized, the confinement barrier would be maintained, and the shielding material would remain intact. Susquehanna concluded that there is no adverse effect on the shielding or confinement functions since there is no effect on occupational or public exposures as a result of this accident condition.

The NRC staff reviewed the information provided by Susquehanna and concludes that issuance of the exemption would not endanger life or property because the administrative controls Susquehanna has in place at the SSES ISFSI sufficiently minimize the possibility of a tip-over or handling event, and that the containment boundary would be maintained in such an event. The staff confirmed that these

administrative controls comply with the technical specifications and UFSAR for the HI-STORM FW MPC Storage System CoC No. 1032, Amendment No. 5, that is used at the SSES site. In addition, the staff confirmed that the information provided by Susquehanna regarding SSES's 72.212 Evaluation Report, Revision 0, demonstrates that the consequences of normal and accident conditions would be within the regulatory limits of the 10 CFR 72.104 and 10 CFR 72.106. The staff also determined that the requested exemption is not related to any aspect of the physical security or defense of the SSES ISFSI; therefore, granting the exemption would not result in any potential impacts to common defense and security.

For these reasons, the NRC staff determined that under the requested exemption, the storage system will continue to meet the safety requirements of 10 CFR part 72 and the offsite dose limits of 10 CFR part 20 and, therefore, will not endanger life or property or the common defense and security.

C. The Exemption is Otherwise in the Public Interest

The proposed exemption would allow Susquehanna to load six new MPC-89-CBS in the HI-STORM FW MPC Storage System beginning in August 2024, at the SSES ISFSI, even though the CBS variant basket design is not part of the approved CoC No. 1032, Amendment No. 5. According to Susquehanna, the exemption is in the public interest because not being able to load fuel into dry storage in the future loading campaign would adversely impact Susquehanna's ability to maintain full core offload capability, consequently increasing risk and challenges to continued safe reactor operation.

Susquehanna stated that to delay the future loading would impact the ability to maintain a healthy margin in the spent fuel pools in support of a full core discharge for one reactor unit with a goal of providing a full core discharge for both reactor units. Susquehanna also stated that the inability to utilize the MPC-89 canister containing the

CBS basket in the 2024 Spent Fuel Storage campaign significantly impacts the ability to effectively manage margin for full core discharge capability, because margin reduction results in increased inventory in the spent fuel pool that would likely require additional fuel moves and an increased reactivity management risk due to increased fuel handling operations. Additionally, Susquehanna notes that there are logistical concerns that the availability of the specialized equipment and personnel resources, which are secured years in advance of scheduled campaigns, would have a cascading impact on all other scheduled activities that utilize these specialized resources. Any delay would lead to a reduction in the margin to capacity in the spent fuel pool. Once the spent fuel pool capacity is reached, the ability to refuel the operating reactor is limited, thus affecting continued reactor operations.

For the reasons described by Susquehanna in the exemption request, the NRC agrees that it is in the public interest to grant the exemption. If the exemption is not granted, to comply with the CoC, SSES would have to keep spent fuel in the spent fuel pool if it is not permitted to be loaded into casks in a future loading, thus impacting Susquehanna's ability to effectively manage the margin for full core discharge capacity. As explained by Susquehanna, increased inventory of fuel in the spent fuel pool could result in the need for additional fuel moves and, therefore, an increase in worker doses and the potential for fuel handling accidents that accompany increased fuel handling operations. Moreover, should spent fuel pool capacity be reached, the ability to refuel an operating reactor unit is challenged, thus potentially impacting continued reactor operations.

Therefore, the staff concludes that approving the exemption is in the public interest.

Environmental Consideration

The NRC staff also considered whether there would be any significant environmental impacts associated with the exemption. For this proposed action, the NRC staff performed an environmental assessment pursuant to 10 CFR 51.30. The environmental assessment concluded that the proposed action would not significantly impact the quality of the human environment. The NRC staff concluded that the proposed action would not result in any changes in the types or amounts of any radiological or non-radiological effluents that may be released offsite, and there would be no significant increase in occupational or public radiation exposure because of the proposed action. The environmental assessment and the finding of no significant impact was published on April 22, 2024 (89 FR 29369).

IV. Conclusion

Based on these considerations, the NRC has determined that, pursuant to 10 CFR 72.7, the exemption is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. Therefore, the NRC grants Susquehanna an exemption from the requirements of §§ 72.212(a)(2), 72.212(b)(3), 72.212(b)(5)(i), 72.212(b)(11), and 72.214 with respect to the future loading in the HI-STORM FW MPC Storage System of six new MPC-89-CBS beginning in August 2024.

This exemption is effective upon issuance.

Dated: April 22, 2024.

For the Nuclear Regulatory Commission.

/RA/

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