

Attachment – Exemption

NUCLEAR REGULATORY COMMISSION

Docket Nos. 72-37, 50-237, and 50-249

Constellation Energy Generation, LLC

Dresden Nuclear Power Station Unit 2 and Unit 3

Independent Spent Fuel Storage Installation;

I. Background

Constellation Energy Generation, LLC (Constellation) is the holder of Renewed Facility Operating License Nos. DPR-19 and DPR-25, which authorize operation of the Dresden Nuclear Power Station, Unit 2 and Unit 3 (Dresden) in Morris, Illinois, 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. Constellation 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 Dresden ISFSI. Under the terms of the general license, Constellation stores spent fuel at its Dresden ISFSI using the HI-STORM 100 Cask System in accordance with Certificate of Compliance (CoC) No. 1014, Amendment No. 8, Revision No. 1.

II. Request/Action

By a letter dated February 23, 2024 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML24054A031), and supplemented on February 28, 2024 (ML24065A292) and March 8, 2024 (ML24068A069), Constellation 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 require Dresden to comply with the terms, conditions, and specifications of the CoC No. 1014, Amendment No. 8, Revision No. 1 (ML16041A233). If approved, Constellation's exemption request would accordingly allow Dresden to maintain loaded and to load Multi-Purpose Canisters (MPC) with an unapproved, variant basket design (i.e., MPC-68M-CBS) in the HI-STORM 100 Cask System, and thus, to load the systems in a storage condition where the terms, conditions, and specifications in the CoC No. 1014, Amendment No. 8, Revision No. 1 are not met.

Constellation currently uses the HI-STORM 100 Cask System under CoC No. 1014, Amendment No. 8, Revision No. 1, for dry storage of spent nuclear fuel in MPC-68M at the Dresden ISFSI. Holtec International (Holtec), the designer and manufacturer of the HI-STORM 100 Cask System, developed a variant of the design with continuous basket shims (CBS) for the MPC-68M, known as MPC-68M-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).

Prior to the issuance of the violations, Constellation had loaded four MPC-68M-CBS in the HI-STORM 100 Cask System, which are safely in storage at the Dresden ISFSI. Constellation's near-term loading campaigns for the Dresden ISFSI include plans to load one MPC-68M-CBS in the HI-STORM 100 Cask System in May 2024 and four MPC-68M-CBS in March 2025. 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 these near-term loading campaigns. Therefore, Constellation submitted this exemption request in order to allow for the continued storage of the four already loaded MPC-68M-CBS, and future loadings of one MPC-68M-CBS in May 2024 and four in March 2025, at the Dresden ISFSI. This exemption is limited to the use of MPC-68M-CBS in the HI-STORM 100 Cask System only for the four already loaded systems and specific near-term planned loadings of five systems using the MPC-68M-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 Constellation to maintain loaded and to load MPC-68M-CBS in the HI-STORM 100 Cask System at its Dresden ISFSI in a storage condition where the terms, conditions, and specifications in the CoC No. 1014, Amendment No. 8, Revision No. 1, are not met. Constellation 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 Constellation to maintain loaded and to load MPC-68M-CBS in the HI-STORM 100 Cask System at the Dresden ISFSI in a storage condition where the terms, conditions, and specifications in the CoC No. 1014, Amendment No. 8, Revision No. 1, are not met. In support of its exemption request, Constellation asserts that issuance of the exemption would not endanger life or property because the administrative controls the applicant has in place prevent a tip-over or handling event, and that the containment boundary would be maintained in such an event. Constellation 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-68M-CBS remains in a subcritical condition.

Constellation 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

Dresden ISFSI. Specifically, Constellation 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 100 Cask System CoC No. 1014, Amendment 8, Revision No. 1 that is used at the Dresden site. Constellation also described its administrative controls for handling of the HI-STORM 100 Cask System at the Dresden ISFSI to prevent a tip-over or handling event. Those controls include operational procedures that demonstrate that the system is handled with a single failure proof device, complying with ANSI N14.6, "for Radioactive Materials – Special Lifting Devices for Shipping Containers Weighing 10 000 Pounds (4500 kg) or More," and consistent with NUREG-612, "Control of Heavy Loads at Nuclear Power Plants," (ML070250180) for heavy load lifting component, inside of the Reactor Buildings and during transport to the ISFSI. In addition, the transporter includes redundant drop protection.

Additionally, Constellation provided specific information from Dresden's 72.212 Evaluation Report, Revision 15, indicating that during the design basis event of a non-mechanistic tip-over, Dresden's ISFSI would meet the requirements in 10 CFR 72.104, "Criteria for radioactive materials in effluents and direct radiation from an ISFSI or MRS," and 72.106, "Controlled area of an ISFSI or MRS." Specifically, Constellation 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. Coupled with the distance of the Dresden ISFSI to the site area boundary, Constellation concluded that compliance with 72.104 and 72.106 is not impacted by approving this exemption request.

The NRC staff reviewed the information provided by Constellation and concludes that issuance of the exemption would not endanger life or property because the administrative

controls Constellation has in place at the Dresden 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 100 Cask System CoC No. 1014, Amendment 8, Revision No. 1 that is used at the Dresden site. In addition, the staff confirmed that the information provided by Constellation regarding Dresden's 72.212 Evaluation Report, Revision 15, 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 Dresden ISFSI; therefore, granting the exemption would not result in any potential impacts to common defense and security.

For these reasons, the NRC staff has 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 the four already loaded MPC-68M-CBS in the HI-STORM 100 Cask System to remain in storage at the Dresden ISFSI, and allow Constellation to load one MPC-68M-CBS in the HI-STORM 100 Cask System in May 2024 and four MPC-68M-CBS in March 2025, at the Dresden ISFSI, even though the CBS variant basket design is not part of the approved CoC No. 1014, Amendment No. 8, Revision No. 1. According to Constellation, the exemption is in the public interest because unloading fuel from already loaded canisters and not being able to load fuel into dry storage in future loading campaigns would impact Constellation's ability to offload fuel from the Dresden reactor units, consequently impacting continued safe reactor operation. The refueling of the MPCs, removal of fuel

assemblies, and replacement into a different MPC would result in additional doses and handling operations with no added safety benefit. In addition, future loading campaigns would need to be delayed until older design canisters can be fabricated and delivered to the site.

Constellation stated that to unload already loaded MPC-68M-CBS or delay the future loading campaigns would impact the ability to effectively manage the margin to full core discharge capacity in the Dresden Unit 2 and Unit 3 spent fuel pools. The low spent fuel pool capacity would make it difficult to refuel and present potential risks to fuel handling operations during pre- and post-outage. In addition, a crowded spent fuel pool would challenge the decay heat removal demand of the pool and increase the likelihood of a loss of fuel pool cooling event and a fuel handling accident. Furthermore, Dresden planned the cask loading campaigns years in advance based on availability of the specialized workforce and equipment that is shared throughout the Constellation fleet. These specialty resources support competing priorities including refueling outages, loading campaigns, fuel pool cleanouts, fuel inspections, fuel handling equipment upgrade and maintenance, fuel sipping, new fuel receipt, and crane maintenance and upgrades. Any delays would have a cascading impact on other scheduled specialized activities.

For the reasons described by Constellation in the exemption request, the NRC agrees that it is in the public interest to grant the exemption. If the exemption is not granted, in order to comply with the CoC, Constellation would have to unload MPC-68M-CBS from the HI-STORM 100 Cask System at the Dresden ISFSI and reload into the older design MPC-68M to restore compliance with terms, conditions, and specifications of the CoC. This would subject onsite personnel to additional radiation exposure, increase the risk of a possible fuel handling accident, and increase the risk of a possible heavy load handling accident. Furthermore, the removed spent fuel would need to be placed in the spent fuel pool until it can be loaded into another storage cask or remain in the spent fuel pool if it is not permitted to be loaded into casks for

future loading campaigns. As described by Constellation, this scenario would affect Constellation's ability to effectively manage the spent pool capacity and reactor fuel offloading at Dresden. In addition, the rescheduling of the specialized resources for the future loading campaigns would impact the operations of Dresden and other Constellation sites.

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 1, 2024 (89 FR 22463).

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 Constellation 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 ongoing storage of four MPC-68M-CBS in the HI-STORM 100 Cask System and future loading in the HI-STORM 100 Cask System of one MPC-68M-CBS in May 2024 and four MPC-68M-CBS in March 2025.

This exemption is effective upon issuance.

Dated: April 1, 2024.

For the Nuclear Regulatory Commission.

/RA/

Yaira K. Diaz-Sanabria, Chief,
Storage and Transportation Licensing Branch,
Division of Fuel Management,
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SUBJECT: FEDERAL REGISTER NOTICE: ISSUANCE OF EXEMPTION FOR DRESDEN
UNIT 2 AND UNIT 3 INDEPENDENT SPENT FUEL STORAGE INSTALLATION
EXEMPTION REQUEST

DOCUMENT DATE: April 1, 2024

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