UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION REPORT

DOCKET NOS. 72-51, 72-1014, 50-247 AND 50-286
EXEMPTION REQUEST FOR
HOLTEC DECOMMISSIONING INTERNATIONAL, LLC
INDIAN POINT ENERGY CENTER
INDEPENDENT SPENT FUEL STORAGE INSTALLATION

SUMMARY

By letter dated March 24, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22083A191), as supplemented during a Microsoft Teams conversation on June 17, 2022 (ADAMS Accession No. ML22172A174), Holtec Decommissioning International, LLC (HDI), on behalf of Holtec Indian Point 2, LLC and Holtec Indian Point 3, LLC, requested an exemption under Title 10 of the *Code of Federal Regulations* (10 CFR) 72.7, "Specific exemptions." HDI further clarified its request during a Microsoft Teams call on September 20, 2022 (ADAMS Accession No. ML22264A045). HDI specifically requested an exemption from the requirements of 10 CFR 72.212(b)(3), and the portion of 10 CFR 72.212(b)(11) that states "[t]he licensee shall comply with the terms, conditions, and specifications of the certificate of compliance (CoC)." The exemption request would, if granted, permit HDI to load up to three MPC-32Ms, using Amendment No. 15 of the Holtec International Certificate of Compliance (CoC) No. 1014 for the HI-STORM 100 storage system (ADAMS Accession No. ML21118A862), with either up to 32 fuel assemblies each containing either a Californium-252 (Cf-252) or an Antimony-Beryllium (Sb-Be) NSA with sufficient cooling time, or a combination of up to five fuel assemblies each containing a Plutonium-Beryllium (Pu-Be) NSA and up to all of the remaining basket locations with fuel assemblies each containing either a Cf-252 or an Sb-Be NSA with sufficient cooling time. Further, as discussed below, it would permit HDI to load the fuel assemblies containing either Cf-252 or Sb-Be NSAs in any location in the basket and the fuel assemblies containing Pu-Be NSAs such that one is located in the center of the basket and no more than one is located in each of the four basket quadrants. Additionally, although HDI's analysis included information about Polonium-Beryllium (Po-Be) NSAs, based on its September 20, 2022, Microsoft Teams call, HDI indicated that they only wanted to load Cf-252 and Sb-Be NSAs.

Although HDI only requested exemptions from 10 CFR 72.212(b)(3) and (b)(11), to carry out this action, the NRC would also need to grant exemptions from 72.212(a)(2), (b)(5)(i), and 72.214. Consequently, in evaluating the request, the NRC also considered, pursuant to its authority in 10 CFR 72.7, exempting HDI from similar requirements in 10 CFR 72.212(a)(2), 10 CFR 72.212(b)(5)(i); and 10 CFR 72.214, "List of Approved Spent Fuel Storage Casks." For clarity, when this safety evaluation report refers to HDI's requested exemption, it means both the two provisions from which HDI requested exemption and the additional provisions from which the NRC staff is considering exempting HDI on its own initiative.

In its exemption request, HDI states that it plans to use Holtec International's HI-STORM 100 storage cask utilizing CoC No. 1014, Amendment No. 15 for dry storage of NSAs at the Indian Point Energy Center under the general license provisions of 10 CFR Part 72 in an upcoming loading campaign. Appendix D, table 2.1-1, section V, "MPC MODEL: MPC-32M," Item C of Amendment No. 15 for CoC No. 1014 only permits general licensees to load a single NSA per cask. Further, per Final Safety Analysis Report (FSAR) table 2.II.1.1, Rev. 22, (ADAMS

Accession No. ML21221A329), the single NSA must be located in a cell in the inner part of the basket (i.e., fuel storage location 13, 14, 19, or 20). With this exemption, if granted, HDI could load up to three MPC-32Ms, using Amendment No. 15 for CoC No. 1014, with either up to 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA with sufficient cooling time, or a combination of up to five fuel assemblies each containing a Pu-Be NSA and up to all of the remaining basket locations with fuel assemblies each containing either a Cf-252 or an Sb-Be NSA with sufficient cooling time. Further, as discussed below, it would permit HDI to load the fuel assemblies containing either Cf-252 or Sb-Be NSAs in any location in the basket and the fuel assemblies containing Pu-Be NSAs such that one is located in the center of the basket (i.e., fuel storage location 13, 14, 19, or 20) and no more than one is located in each of the four basket quadrants. As the staff will discuss below, the decay time sufficient for HDI to load up to three MPC-32Ms with either up to 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA or up to 27 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA in combination with up to five fuel assemblies each containing a Pu-Be NSA is seven half-lives.

This safety evaluation report (SER) documents the staff's review and evaluation of HDI's exemption request. The staff reviewed HDI's application to determine whether it meets the criteria for an exemption specified in 10 CFR 72.7. The provision in 10 CFR 72.7 authorizes the Commission to, upon application by an interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 72 if the exemption is authorized by law and will not endanger life, property, or the common defense and security, and is otherwise in the public interest.

A. Authorized by Law

The Commission has the legal authority to issue exemptions from the requirements of 10 CFR Part 72 as provided in 10 CFR 72.7. Issuance of this exemption is consistent with the Atomic Energy Act of 1954, as amended, and not otherwise inconsistent with the U.S. Nuclear Regulatory Commission's regulations or other applicable laws. Therefore, issuance of the exemption is authorized by law.

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

The staff reviewed HDI's exemption request and concludes, as discussed below, that the proposed exemption from certain requirements of 10 CFR Part 72 will not cause the HI-STORM 100 storage cask to encounter conditions beyond those for which it has already been evaluated and demonstrated to meet the applicable safety requirements in 10 CFR Part 72. The staff followed the guidance in NUREG-2215, "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities," April 2020, to complete its safety evaluation.

The staff's safety evaluation includes only a shielding safety review. The staff determined that the presence of additional NSAs or the presence of those NSAs in different locations throughout the basket will not cause the bounding canister weight previously evaluated in approving Amendment No. 15 to be exceeded, making a structural evaluation unnecessary. Further, the staff determined that the decay heat contribution from activated metal associated with the NSAs at issue in the specified locations is negligible compared to the decay heat from the fuel assembly. Consequently, the staff determined that a thermal evaluation is unwarranted. Since the NSAs are located inside the confinement boundary of the multi-purpose canister (MPC) and changing the number of NSAs, or their locations, will not change that fact, a confinement evaluation is also not necessary. In addition, increasing the neutron source terms by adding NSAs in different locations does not increase the multiplication factor. Therefore, criticality safety is not affected, and a criticality evaluation is unnecessary. Therefore, shielding is the only area potentially affected by the requested exemption.

Shielding

The current CoC authorizes general licensees to load only a single fuel assembly containing an NSA per cask, and that fuel assembly must be loaded in a cell within the inner part of the basket (i.e., fuel storage location 13, 14, 19, or 20) because NSAs can have a significant neutron source term. The applicant developed a quantitative analysis that explicitly evaluated the neutron dose rates associated with storing more than one fuel assembly containing an NSA per cask to support new loading requirements. In its analysis, the applicant evaluated two possible high-level loading scenarios: a maximum of 32 fuel assemblies each containing an NSA and a maximum of 5 fuel assemblies each containing a Pu-Be NSA.

For both scenarios, the applicant considered three primary NSA types in its evaluation: Cf-252, Pu-Be, and Po-Be. During the September 20th, 2020, Microsoft TEAMS call, HDI indicated that they only wanted to load Cf-252 and Sb-Be NSAs. Consequently, the staff did not consider Po-Be NSAs in its evaluation of this exemption. Cf-252 and Pu-Be NSAs have half-lives of 2.646 years and 87.7 years, respectively. The applicant also considered a secondary NSA type, Sb-Be, with a half-life of 60.2 days. For Cf-252, which decays by neutron emission, the analysis identified that the neutron source strength will reduce gradually over time because the half-life is on the order of a few years; neither long enough for the source strength to remain relatively constant, nor short enough for the reduction to be quick. For Pu-Be, which generates neutrons when the beryllium absorbs an alpha particle emitted by the plutonium, the analysis identified that the neutron source strength will remain essentially the same as when the NSA was manufactured (i.e., it will not reduce significantly over time) because the half-life for plutonium is very long. For Sb-Be, which produces neutrons when the beryllium interacts with a high energy gamma emitted by activated antimony (i.e., antimony that has absorbed neutrons), the analysis identified that the neutron source strength will reduce very quickly over time because of the short half-life of the activated antimony.

In evaluating the scenario of loading a maximum of 32 fuel assemblies containing NSAs, the applicant determined, using the initial source strength and the half-life values in the previous paragraph, that after seven half-lives the neutron source strength of a fuel assembly containing either a Cf-252 or an Sb-Be NSA is negligibly higher than the neutron source strength of a design basis fuel assembly. Therefore, the applicant asserted that, after seven half-lives, the presence of either a Cf-252 or an Sb-Be NSA within a design basis fuel assembly will not significantly increase the dose rate from a design basis fuel assembly. Consequently, the applicant concluded that up to 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA can be loaded per basket, and that they can be loaded into any basket location.

Staff reviewed the applicant's approach. In reviewing this approach, staff found that the applicant could load up to 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA—with those 32 fuel assemblies having any combination of Cf-252 and Sb-Be NSAs— and that the neutron source strength of each fuel assembly with either a Cf-252 NSA or an Sb-Be NSA increased by only a small amount, approximately 2×10^{-6} neutrons per second, after seven half-lives relative to a design basis fuel assembly. Because this increase is so small, after seven half-lives, the dose rate of a canister containing 32 fuel assemblies with either Cf-252 or Sb-Be NSAs that have undergone seven half-lives of decay will be very similar to the dose rate of a container containing 32 design basis fuel assemblies. More specifically, accounting for statistical uncertainties, dose rates would potentially increase a millirem/hr or less, if at all, under both normal and accident conditions. The NRC staff considers dose rate increases of this magnitude to be negligible relative to the dose rates from design basis fuel assemblies. Therefore, the staff determined that the analysis demonstrated that dose rates under both normal and accident conditions would increase negligibly by the addition of 32 fuel assemblies containing either Cf-252 or Sb-Be NSAs after seven half-lives of decay time. Further, because a canister loaded with 32 fuel assemblies each containing either a Cf-252 or Sb-Be NSA would have an NSA loaded in every fuel loading location and because the effect on dose would be negligible, the NRC staff concludes that loading fuel assemblies containing either a Cf-252 or an Sb-Be NSA in any location in the basket would have a negligible effect on dose.

In evaluating loading a maximum of five fuel assemblies each containing a Pu-Be NSA the applicant performed dose rate calculations assuming each NSA had the design basis fuel assembly neutron source term in HI-STORM 100 FSAR table 5.2.15 (ADAMS Accession No. ML21221A329) rather than the actual source strength of an NSA. The applicant evaluated dose rates using the general-purpose, continuous-energy, generalized-geometry, time-dependent Monte Carlo N-Particle (MCNP) code. The applicant used MCNP5 version 1.41 to model the MPC-32M, with up to five NSAs per basket, in both the HI-TRAC Version MS and the HI-STORM 100S Version E overpack. The MCNP model located one NSA in the center of the MPC-32M (i.e., cell locations 13, 14, 19 and 20 of appendix D, figure 2.1-1) (ADAMS Accession No. ML21118A868). In addition, the model located the remaining four NSAs on the basket periphery with one NSA in each basket quadrant.

The applicant calculated the maximum dose rate from the NSAs in the fuel assembly and not the maximum total dose rate from the fuel assembly and the NSA. The applicant asserted that this approach would result in conservative dose rates because the maximum dose rate due to the design basis fuel assembly may be in a different location (e.g., the midplane of the overpack radial surface) from the maximum dose rate due to the NSAs. The applicant calculated dose rates at the same surface and one-meter locations for design basis fuel under normal conditions as reported in HI-STORM 100 FSAR tables 5.II.1.1 and 5.II.1.3 (ADAMS Accession No. ML21221A329). Additionally, the applicant evaluated the dose rate at 100 meters for design basis fuel in the HI-TRAC under accident conditions at the same locations as reported in HI-STORM 100 FSAR table 5.II.1.4 (ADAMS Accession No. ML21221A329). The analysis determined the maximum dose rate increase under normal conditions due to adding four fuel assemblies each containing a Pu-Be NSA, in addition to the fuel assembly containing an NSA authorized by CoC No. 1014, at the following locations: the overpack surface, one meter from the overpack surface, the HI-TRAC surface, and one meter from the HI-TRAC surface. The analysis calculated the following dose rate increases at these locations: 3.44 millirem per hour (mrem/hr), 0.78 mrem/hr, 1099.92 mrem/hr and 122.69 mrem/hr respectively. Finally, the analysis determined the maximum dose rate increase under accident conditions due to adding four NSAs, in addition to the NSA authorized by CoC No. 1014, at 100 meters from the HI-TRAC is 0.27 mrem/hr.

In conducting its evaluation, the applicant assumed the Pu-Be NSA source strength equaled the design basis fuel assembly source strength of 1.4×10^9 neutrons per second. The staff determined that this approach is conservative because the initial source term of a Pu-Be NSA is approximately 1.5×10^6 neutrons per second which is less than the value HDI used. Because the MCNP code is a standard tool in the nuclear industry for performing Monte Carlo criticality safety and radiation shielding calculations, the staff found MCNP an acceptable code for this application. Because the exemption request is limited to fuel stored in an MPC-32M, which can only be stored in the HI-STORM 100S Version E overpack, and because the HI-TRAC MS can only be used with the HI-STORM 100S Version E overpack, staff found it acceptable to limit the MCNP analyses to the HI-TRAC MS and the HI-STORM 100S Version E overpack. In addition, the applicant calculated the dose rates related to this exemption at the same locations at which it calculated the dose rates for HI-STORM Amendment No. 15. In issuing Amendment No. 15, staff determined the dose rates at these locations satisfied ALARA principles, where relevant, and demonstrated compliance with 10 CFR 72.104 and 10 CFR 72.106, as well as 10 CFR Part 20, as documented in Section 6 of the SER (ADAMS Accession No. ML22217A017) staff prepared to support issuance of Amendment No. 15. Nothing about this exemption would affect, or in any way make inapplicable, the staff's previous finding that calculating the dose rate at those locations is acceptable. Therefore, staff finds these locations are appropriate for calculating dose rates associated with this exemption.

Further, the staff reviewed the applicant's approach of only calculating the maximum dose rate caused by the NSAs in the fuel assemblies and not the overall maximum dose rate. The total dose rate from two different sources (i.e., the design basis fuel assembly and the NSA) is simply the sum of the individual dose rates. Consequently, by taking the dose rate caused by design basis fuel assemblies in the canister, which are found in FSAR Tables 5.II.1.1, 5.II.1.3 and 5.II.1.4 and adding them to the dose rate caused by the NSAs within fuel assemblies, the staff was able to evaluate the overall maximum dose rate as part of its review. Therefore, the staff also found acceptable the applicant's approach of only calculating the maximum dose rate due to fuel assemblies containing NSAs.

When the staff approved the MPC-32M, the HI-TRAC MS and the HI-STORM 100S Version E overpack (ADAMS Accession No. ML21118A862), the staff identified two accident conditions that increased the dose at the controlled area boundary: (1) the draining of the neutron shield water jacket for the transfer cask and (2) a non-mechanistic tipover of the overpack which exposes the bottom of the cask. As discussed in the SER (ADAMS Accession No. ML22217A017) approving the HI-STORM 100S Version E overpack, staff found it very unlikely that the Version E overpack would tipover. Nothing about this exemption would affect that conclusion. Therefore, the staff found the applicant's approach of modeling the HI-TRAC with the assumed loss of the neutron absorber as the bounding accident acceptable for this evaluation.

NRC staff concluded that the increased dose rates under normal conditions from the presence of up to five fuel assemblies containing Pu-Be NSAs are acceptable for the HI-STORM overpack because the dose rate increase is less than a mrem/hr for all locations except at the midplane of the radial surface on the overpack surface where it increased by less than four mrem/hr. Relative to the dose rates from loading the canister as already-approved, staff considers dose rate increases of this magnitude negligible. Additionally, the dose rate increases at a distance of one meter are even less than the dose rate increases at the surface. Thus, relative to the dose rates from loading the canister as already approved, the staff also considers these dose rate increases to be negligible. Further, the HI-TRAC MS dose rates increased by less than ten percent compared to the dose rates in HI-STORM 100 FSAR table 5.II.1.3 (ADAMS Accession No. ML21221A329) at all locations both on the HI-TRAC MS surface and one meter from the HI-TRAC MS surface except at the HI-TRAC MS radial surface midplane where the dose rate increased by 28 percent (i.e., 1099.92 mrem/hr). Staff considers the dose rate increase at the HI-TRAC MS radial surface midplane a very localized effect due to the reduced neutron shielding capability of the HI-TRAC MS compared to the HI-STORM 100S Version E overpack. The staff considers the HI-TRAC MS dose rate increases, including the increase at the radial surface midplane, acceptable for the following reasons. First, radiological workers would only be exposed to these increased dose rates for relatively short periods of time. Second, members of the public will be exposed to even lower dose rates since 10 CFR 72.106(b) requires a minimum distance of 100 meters between spent fuel and members of the public and dose rates decrease as distance increases. NRC staff also determined that an increase in the HI-TRAC dose rates of less than ten percent compared to the dose rates in HI-STORM 100 FSAR table 5.II.1.4 (ADAMS Accession No. ML21221A329) for the HI-TRAC MS accident condition dose rates due to the presence of up to five fuel assemblies containing Pu-Be NSAs is acceptable because staff confirmed through hand calculations that the dose at 100 meters meets the 10 CFR 72.106 requirement assuming a 30-day duration. Finally, after adding the dose rates considered when issuing CoC 1014, Amendment No. 15 to the dose rate increases that would result from approving this exemption, staff finds that canisters loaded in accordance with this exemption will continue to satisfy overall dose limits of 10 CFR 72.104 for normal conditions, 10 CFR 72.106 for accident conditions, and the limits in 10 CFR Part 20. These conclusions only apply, however, when the fuel assemblies containing the Pu-Be NSAs are loaded such that one is located in the center of the basket (i.e., fuel storage location 13, 14, 19, or 20) and no more than one is located in each of the four basket quadrants

As referenced above, if granted, this exemption would permit HDI to load a fuel canister with up to five fuel assemblies each containing a Pu-Be NSA and up to all of the remaining basket locations with fuel assemblies each containing either a Cf-252 or an Sb-Be NSA that has decayed for at least seven half-lives. HDI did not provide an analysis of this specific configuration. That said, as discussed above, staff has already analyzed a canister loaded with five fuel assemblies each containing a Pu-Be NSA and a canister loaded with 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA that has decayed for at least seven half-lives. Staff concluded that the neutron source strength of a fuel assembly with either a Cf-252 NSA or an Sb-Be NSA increased by only a small amount—approximately 2×10^{-6} neutrons per second—after seven half-lives relative to a design basis fuel assembly. As discussed above, the staff concluded that that source strength increase was so small that the neutron dose rate increase, if any, associated with loading a canister with 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA would be negligible. As the dose rate increase from loading a canister with 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA would be negligible, it follows that adding 27 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA that has undergone seven half-lives of decay, will have a similarly negligible effect on dose rate because the increase in neutron source strength will be even smaller than when loading 32 such fuel assemblies. Consequently, loading 27 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA that has undergone seven half-lives of decay into a canister with five fuel assemblies each containing a Pu-Be NSA will negligibly increase the neutron dose rate, if at all, beyond the neutron dose rate associated with loading just five fuel assemblies each containing a Pu-Be NSA. Therefore, the staff determined that under this loading scenario—up to five fuel assemblies each containing a Pu-Be NSA and up to 27 fuel assemblies, each containing a Cf-252 of Sb-Be NSA—the dose rates under both normal and accident conditions will continue to satisfy overall dose limits of 10 CFR 72.104 for normal conditions, 10 CFR 72.106 for accident conditions, and the limits in 10 CFR Part 20. Finally, the staff determined that this loading scenario, along with the scenario of loading 32 fuel assemblies each containing a Cf-252 or an Sb-Be NSA bound all loading scenarios that this exemption, if granted, would permit because the other loading scenarios will be a version of these two scenarios with fewer fuel assemblies containing NSAs and, therefore, less dose.

As a final note, the staff's analysis of a canister loaded with five fuel assemblies each containing a Pu-Be NSA depends on HDI's dose rate analysis. As discussed above, that analysis was based on a model with one NSA in the center of the MPC-32M (i.e., cell locations 13, 14, 19 and 20 of appendix D, figure 2.1-1) and the remaining four NSAs on the basket periphery with one

NSA in each basket quadrant. Consequently, the staff's analysis of and conclusions about this loading scenario—up to five fuel assemblies each containing a Pu-Be NSA and up to 27 fuel assemblies, each containing a Cf-252 of Sb-Be NSA—only apply when the fuel assemblies containing Pu-Be NSAs are loaded with one in the center of the basket and a maximum of one in each of the remaining quadrants.

Although the exemption request did not explicitly evaluate the gamma dose associated with storing more than one NSA, the applicant asserted that the additional gamma dose due to activation of the NSA components will remain within the limits of 10 CFR 72.104 for normal conditions and 10 CFR 72.106 for accident conditions. In evaluating this assertion, staff reviewed HI-STORM 100 FSAR sections 5.2.7.1 submitted with Amendment No. 15 in which Holtec stated that the total Burnable Poison Rod Assembly (BPRA) activation source term bounded the total NSA activation source term. In approving Amendment No. 15, in SER section 6.2.2.3, the staff found the use of the BPRA source term to represent all non-fuel hardware—including Pu-Be, Cf-252, and Sb-Be NSAs—acceptable (ADAMS Accession No. ML21118A871). Further, the SER approving Amendment No. 15 determined that a canister loaded with 32 fuel assemblies containing BPRAs would remain within the limits of 10 CFR 72.104 for normal conditions and 10 CFR 72.106 for accident conditions. Because the staff found that the BPRA activation source term bounded the NSA activation source term in approving Amendment No. 15, and because this exemption does not change or affect that determination, the staff determined, for this exemption request, that the gamma source term associated with storing either five fuel assemblies each containing a Pu-Be NSA and up to 27 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA or 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA in an MPC-32M canister is bounded by the dose rates evaluated in Amendment No. 15. Therefore, because the dose rates evaluated in Amendment No. 15 met the applicable regulatory requirements, the staff finds that the dose due to activation of NSA components will remain within the limits of 10 CFR 72.104 for normal conditions, 10 CFR 72.106 for accident conditions, and the limits in 10 CFR Part 20.

Finally, the staff reviewed the application from the perspective of dose rates remaining as low as is reasonably achievable (ALARA). Staff determined that the proposed exemption did not alter those aspects of the HI-STORM 100 system that the SER issued with CoC No. 1014 Amendment No. 15 had indicated contributed to a finding that ALARA had been satisfied (e.g., temporary shielding equipment utilized during loading operations) (ADAMS Accession No. ML21118A871). In addition, as explained in section 11.1.2 of the SER issued with Amendment No. 15 to CoC No. 1014, the staff found reasonable assurance that the design of the HI-TRAC MS and the operational restrictions meet ALARA objectives for direct radiation levels because the estimated occupational exposure in FSAR Table 10.II.3 was below the 10 CFR 20.1202(a) dose limit for an individual (ADAMS Accession No. ML21221A329). For this exemption request, staff increased the estimated occupational exposure in FSAR Table 10.II.3.1 by 3.3 percent, which was the greatest increase for locations where most operations occurred. The revised estimated occupational exposure remained below the 10 CFR 20.1201(a) dose limit. Therefore, consistent with these previous evaluations, the staff finds that for a canister loaded as permitted by this exemption, the occupational doses would remain ALARA despite the overall increase in dose.

Security

HDI's exemption request is not related to any aspect of the physical security or defense of the Indian Point Energy Center ISFSI. In addition, the number of NSAs stored within a multipurpose canister does not affect the Indian Point Energy Center ISFSI security plans. Therefore, granting the exemption would not result in any potential impacts to common defense and security.

As discussed above, the staff has evaluated the effects this exemption would have, if granted, on shielding for the configurations that exist during the different stages of storage operations including under both normal and accident conditions. This evaluation includes dose rate results which lead the staff to conclude that the HI-STORM 100 system will meet the limits in 10 CFR Part 20, the 10 CFR 72.104 and 72.106 radiation protection requirements, and that ALARA principles for occupational exposure are adequately considered and incorporated into the HI-STORM 100 system design and operations after implementing the exemption. The staff reached this finding based on a review that considered the regulations, appropriate regulatory guides, applicable codes and standards, accepted engineering practices, and the statements and representations in the application. Based on this evaluation, the staff concludes that granting this exemption will not endanger life, property or the common defense and security.

C. OTHERWISE IN THE PUBLIC INTEREST

During a June 17, 2022, Microsoft TEAMS call with the NRC, the applicant indicated that granting the requested exemption would result in shorter operation of the spent fuel pool cleaning system (ADAMS Accession No. ML22172A174). Shorter operation of the cleaning system would generate less waste of which the licensee would ultimately need to dispose. The staff reviewed the information provided by HDI, and based upon the above stated information, concludes that granting the requested exemption would be in the public interest because it would result in the generation of less low-level waste.

CONCLUSION

Based on the statements and representations provided by HDI in its exemption request, the staff concludes that the proposed action is authorized by law and will not endanger life, property, or the common defense and security, and is otherwise in the public interest. As a result, the NRC staff concludes the requested exemption meets the requirements in 10 CFR 72.7. Therefore, the NRC staff hereby grants HDI, an exemption from 10 CFR 72.212(a)(2), (b)(3), (b)(5)(i), (b)(11), and 72.214, pursuant to 10 CFR 72.7, permitting HDI to load up to three MPC-32Ms, using Amendment No. 15 for CoC No. 1014, with either up to 32 fuel assemblies each containing either a Cf-252 or an Sb-Be NSA with sufficient cooling time, or a combination of up to five fuel assemblies each containing a Pu-Be NSA and up to all of the remaining basket locations with fuel assemblies each containing either a Cf-252 or an Sb-Be NSA with sufficient cooling time. Further, it permits HDI to load the fuel assemblies containing either Cf-252 or Sb-Be NSAs in any location in the basket and the fuel assemblies containing Pu-Be NSAs such that one is located in the center of the basket (i.e., fuel storage locations 13, 14, 19, or 20) and no more than one is located in each of the four basket quadrants.