



YANKEE ATOMIC ELECTRIC COMPANY  
49 Yankee Road, Rowe, Massachusetts 01367

September 1, 2015  
BYR 2015-028  
Re: 10 CFR 72.4 and 10 CFR 72.7

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

Yankee Atomic Electric Company  
Yankee Nuclear Power Station Independent Spent Fuel Storage Installation  
NRC License Nos. DPR-3 and SFGL-13 (NRC Docket Nos. 50-029 and 72-31)

Subject: Request for Exemption from Certain Requirements of 10 CFR 72.212 and 10 CFR 72.214 for the Yankee Nuclear Power Station Independent Spent Fuel Storage Installation

Pursuant to 10 CFR 72.7, "Specific Exemptions," Yankee Atomic Electric Company (YAEC) requests an exemption from certain requirements of 10 CFR 72.212(a)(2), 10 CFR 72.212(b)(3), 10 CFR 72.212(b)(5)(i), 10 CFR 72.212(b)(7), 10 CFR 72.212(b)(11), and 10 CFR 72.214 for the Yankee Nuclear Power Station (YNPS) Independent Spent Fuel Storage Installation (ISFSI). Specifically, YAEC is requesting an exemption regarding the method of compliance defined in Amendment 5 of the NAC-MPC Certificate of Compliance (CoC) No. 72-1025, Appendix A, "Technical Specifications for the NAC-MPC System," Technical Specification (TS) A 5.3, "Surveillance After an Off-Normal, Accident, or Natural Phenomena Event." The exemption request is provided in Attachment 1.

The exemption request has been discussed with NAC, the Certificate of Compliance Holder for the NAC-MPC System, and a copy of the exemption request will be provided to them as part of the distribution of this letter.

As discussed in a teleconference with the NRC on August 13, 2015, YAEC requests approval of this exemption request by December 31, 2015. This requested date would permit YAEC to utilize the Surveillance Requirement, Conditions, Required Actions and associated Completion Times of NAC-MPC TS A 3.1.6 to comply with the requirement of NAC-MPC TS A 5.3 during the upcoming winter and future winters.

NM5520  
NM5526

The regulatory commitment made in Attachment 1 of this document is defined below.

If you have any questions regarding this submittal, please do not hesitate to contact me at (413) 424-5261 extension 303.

Respectfully,



Brian Smith  
ISFSI Manager

Commitment:

1. Following the granting of the exemption, YAEC will continue to proactively manage snow to prevent conditions that could result in inoperability of the Concrete Cask Heat Removal Systems for the NAC-MPC Systems.

Attachment:

1. YAEC Request for Exemption from Certain Requirements of 10 CFR 72.212 and 10 CFR 72.214

cc: D. H. Dorman, NRC Region I Administrator  
M. S. Ferdas, Chief, Decommissioning Branch, NRC, Region I  
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**1.0 Request for Exemption**

Pursuant to 10 CFR 72.7, “Specific Exemptions,” Yankee Atomic Electric Company (YAEC) requests an exemption from certain requirements of 10 CFR 72.212(a)(2), 10 CFR 72.212(b)(3), 10 CFR 72.212(b)(5)(i), 10 CFR 72.212(b)(7), 10 CFR 72.212(b)(11), and 10 CFR 72.214 for the Yankee Nuclear Power Station (YNPS) Independent Spent Fuel Storage Installation (ISFSI). Specifically, YAEC is requesting an exemption regarding the method of compliance defined in Amendment 5 of the NAC-MPC Certificate of Compliance (CoC) No. 72-1025, Appendix A, “Technical Specifications for the NAC-MPC System,” Technical Specification (TS) A 5.3, “Surveillance After an Off-Normal, Accident, or Natural Phenomena Event.”

Amendment 5 of the NAC-MPC CoC No. 72-1025, Appendix A, NAC-MPC TS A 5.3 states:

“A Response Surveillance is required following off-normal, accident or natural phenomena events. The NAC-MPC SYSTEMs in use at an ISFSI shall be inspected within 4 hours after the occurrence of an off-normal, accident or natural phenomena event in the area of the ISFSI. This inspection must specifically verify that all the CONCRETE CASK inlets and outlets are not blocked or obstructed. At least one-half of the inlets and outlets on each CONCRETE CASK must be cleared of blockage or debris within 24 hours to restore air circulation.”

Specifically, YAEC is requesting the ability to utilize the Surveillance Requirement, Conditions, Required Actions, and Completion Times defined in NAC-MPC TS A 3.1.6 to comply with NAC-MPC TS A 5.3. If granted, YAEC would implement NAC-MPC TS A 5.3 as follows:

“A Response Surveillance [**SR 3.1.6.1**] is required following off-normal, accident or natural phenomena events. The NAC-MPC SYSTEMs in use at an ISFSI shall be inspected [**in accordance with SR 3.1.6.1**] within 4 hours after the occurrence of an off-normal, accident or natural phenomena event in the area of the ISFSI [**to confirm operability of the CONCRETE CASK Heat Removal System for each NAC-MPC System**]. ~~This inspection must specifically verify that all the CONCRETE CASK inlets and outlets are not blocked or obstructed. At least one-half of the inlets and outlets on each CONCRETE CASK must be cleared of blockage or debris within 24 hours to restore air circulation.~~ [**If a CONCRETE CASK Heat Removal System(s) for one or more NAC-MPC Systems is determined to be inoperable, Condition A of TS A 3.1.6 shall be entered and the Required Action and associated Completion Time met.**]”

**2.0 Background**

10 CFR 72.210 issues a general license to store spent fuel in an ISFSI at reactor sites as long as the 10 CFR 50 reactor license remains in effect. 10 CFR 72.212(a)(2) limits the storage of spent fuel to casks approved in 10 CFR 72, Subpart K. 10 CFR 72.212(b)(11) states that the casks “are approved for storage under the conditions specified in their Certificates of Compliance.”

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The Nuclear Regulatory Commission (NRC) approved the use of the NAC-Multi-Purpose Canister (MPC) System by issuing Certificate of Compliance (CoC) No. 1025, NRC Docket No. 72-1025), effective April 10, 2000. This constituted NRC approval and the conditions for use in storing spent fuel under the general licensing provisions of 10 CFR 72.210.

YAEC is a 10 CFR 72 general licensee that utilizes the NAC-MPC System in accordance with the requirements of the NAC-MPC System CoC No. 1025. In July, 2011, YAEC notified the NRC that the 15 NAC-MPC canisters storing spent nuclear fuel at the YAEC ISFSI would be registered to Amendment No. 5 of NAC-MPC CoC No. 1025.

The regulations require YAEC to comply with the terms and conditions of the NAC-MPC CoC No. 1025. NAC-MPC CoC No. 1025, Amendment 5 requires the general licensee to meet the requirements of the Technical Specifications (TS) for the NAC-MPC System (Appendix A to the CoC). Thus, the regulations require YAEC to comply with the TS for the NAC-MPC System.

The NAC-MPC TS Limiting Condition for Operation (LCO) 3.1.6, "Concrete Cask Heat Removal System," requires the Concrete Cask Heat Removal System for each NAC-MPC System to be operable. The applicability of this TS is during storage operations. Storage operations is defined in TS A 1.1 to include all activities that are performed at the ISFSI, while an NAC-MPC System containing spent fuel is located on the storage pad within the ISFSI perimeter. For the YNPS ISFSI, this equates to an applicability of "At all times," because there are 15 NAC-MPC Systems that are utilized to store spent fuel on the ISFSI storage pad.

Operability of the Concrete Cask Heat Removal System for each NAC-MPC System is established by performing Surveillance Requirement (SR) 3.1.6.1 at the required frequency. SR 3.1.6.1 provides the option to establish operability of the Concrete Cask Heat Removal System for each NAC-MPC System by either verifying that the temperature differential meets the acceptance criteria via temperature monitoring or performing visual verifications of the inlet and outlet screens to ensure that they are not obstructed as defined in the TS Bases. This is consistent with the definition of operability provided in NAC-MPC TS A 1.1.

If SR 3.1.6.1 is not met for a Concrete Cask Heat Removal System for one or more of the NAC-MPC Systems, Condition A of TS A 3.1.6 is entered. Required Action A.1 requires the Concrete Cask Heat Removal System for the affected NAC-MPC System to be restored to an operable status within 8 hours, otherwise Condition B of TS A 3.1.6 is required to be entered.

In addition TS A 5.3, "Surveillance After an Off-Normal, Accident, or Natural Phenomena Event," provides additional requirements regarding the Concrete Cask Heat Removal System for each NAC-MPC System. TS A 5.3. It requires in part:

"A Response Surveillance is required following off-normal, accident or natural phenomena events. The NAC-MPC SYSTEMs in use at an ISFSI shall be inspected within 4 hours after the occurrence of an off-normal, accident or natural phenomena event in the area of the ISFSI. This inspection must specifically verify that all the CONCRETE CASK inlets and outlets are not blocked or obstructed. At least one-half of the inlets and outlets on each

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CONCRETE CASK must be cleared of blockage or debris within 24 hours to restore air circulation.”

The requirements of NAC-MPC TS A 5.3 are not consistent with the requirements of NAC-MPC TS A 3.1.6. These differences include:

- NAC-MPC TS A 5.3 is only applicable after the occurrence of an off-normal, accident or natural phenomena event. While NAC-MPC TS A 3.1.6 is applicable during storage operations (i.e., at all times including during the occurrence of off-normal, accident, and natural phenomena events). This inconsistency results in unnecessary complications (including the potential for different methods of implementation of the requirements) regarding the literal compliance with these TSs.
- TS A 5.3 requires the performance of a response surveillance following off-normal, accident or natural phenomena events in the area of the ISFSI by performing an inspection of the affected NAC-MPC System within 4 hours after the occurrence of the event. This inspection is required to specifically verify that all the Concrete Cask inlets and outlets are not blocked or obstructed.
  - Literal compliance with TS A 5.3 would not permit the temperature monitoring system to be utilized to determine if there is blockage, because this is a monitoring activity not an inspection activity.
  - In addition, the phrase “after the occurrence” is not defined. For events that occur at a precise period of time, e.g., loss of instrumentation, an earthquake or tornado, it is readily apparent when “after the occurrence” occurs. In the case of an event that leads to blockage of greater than one-half of the inlets or outlets (snow storm), “after the occurrence” is subjective.

TS A 3.1.6 permits the use of temperature monitoring or visual verification in accordance with SR 3.1.6.1 to establish that the Concrete Cask Heat Removal System for each NAC-MPC System is operable. The frequency for conducting the surveillance is at least once every 24 hours. This surveillance requirement has to be met when TS A 3.1.6 is applicable, i.e., during storage operations.

- TS A 5.3 permits 24 hours to clear the blockage or debris from at least one-half of the inlets and outlets on each affected Concrete Cask (NAC-MPC System).

In the event visual verification of the inlets and outlets screens are utilized to meet SR 3.1.6.1 to establish operability and the air inlet or outlet screens are determined to be obstructed as defined in the Bases for SR 3.1.6.1 in Appendix 12C of the NAC-MPC Final Safety Analysis Report (FSAR), then the affected Concrete Cask Heat Removal System(s) is required to be declared inoperable. Condition A of TS A 3.1.6 would be entered. TS A 3.1.6, Required Action A.1 requires the Concrete Cask Heat Removal System for each affected NAC-MPC System to be restored to an operable status within 8

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hours. If the Required Action is not met within the associated Completion Time, Condition B of TS A 3.1.6 is required to be entered.

### **3.0 Technical Justification**

The purpose of both NAC-MPC TS A 3.1.6 and NAC-MPC TS A 5.3 is to ensure that the Concrete Cask Heat Removal System for each NAC-MPC System in use remains operable. However, the methodology defined in the two TSs are inconsistent. YAEC is requesting the ability to utilize the Surveillance Requirement, Conditions, Required Actions, and Completion Times defined in NAC-MPC TS A 3.1.6 to comply with NAC-MPC TS A 5.3. If granted, YAEC would implement NAC-MPC TS A 5.3 as follows:

“A Response Surveillance [**SR 3.1.6.1**] is required following off-normal, accident or natural phenomena events. The NAC-MPC SYSTEMs in use at an ISFSI shall be inspected [**in accordance with SR 3.1.6.1**] within 4 hours after the occurrence of an off-normal, accident or natural phenomena event in the area of the ISFSI [**to confirm operability of the CONCRETE CASK Heat Removal System for each NAC-MPC System**]. ~~This inspection must specifically verify that all the CONCRETE CASK inlets and outlets are not blocked or obstructed. At least one half of the inlets and outlets on each CONCRETE CASK must be cleared of blockage or debris within 24 hours to restore air circulation.~~ [**If a CONCRETE CASK Heat Removal System(s) for one or more NAC-MPC Systems is determined to be inoperable, Condition A of TS A 3.1.6 shall be entered and the Required Action and associated Completion Time met.**]”

#### 3.1 Utilization of SR 3.1.6.1

SR 3.1.6.1 permits temperature monitoring or visual inspection of the inlet and outlet screens to be utilized to establish the operability of the Concrete Cask Heat Removal System for each NAC-MPC System to comply with LCO 3.1.6. The same method should also apply to compliance with the requirement of NAC-MPC TS A 5.3 to perform a response surveillance within 4 hours after the occurrence of an off-normal, accident, or natural phenomena.

The Bases for NAC-MPC TS A 3.1.6, SR 3.1.6.1 establishes that either visual inspection of the inlets and outlets screens or temperature monitoring will establish that adequate air flow past the canister is occurring and heat transfer is taking place. It states:

“Visual observation that all four air inlet and outlet screens are unobstructed and intact ensures that air flow past the CANISTER is occurring and heat transfer is taking place...Alternatively, based on the thermal analyses, if the air temperature rise is less than the limits stated in the SR, adequate air flow and, therefore, adequate heat transfer is occurring to provide assurance of long-term fuel cladding integrity...” [Note: Each Vertical Concrete Cask has four inlet screens and four outlet screens, i.e., four sets of inlet and outlet screens or a total of eight inlet and outlet screens.]

This is consistent with the definition of operability provided in NAC-MPC TS A 1.1:

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“An OPERABLE CONCRETE CASK heat removal system transfers sufficient heat away from the fuel assemblies such that the fuel cladding, CANISTER component and CONCRETE CASK temperatures do not exceed applicable limits. The CONCRETE CASK heat removal system is considered OPERABLE if the difference between the ISFSI ambient temperature and the average outlet air temperature is  $\leq 92^{\circ}\text{F}$  for the YANKEE-MPC ...or if all four air inlet and outlet screens are visually verified to be unobstructed...” [Note: Each Vertical Concrete Cask has four inlet screens and four outlet screens, i.e., four sets of inlet and outlet screens or a total of eight inlet and outlet screens.]

The following statements from the NAC-MPC Final Safety Analysis Report (FSAR) support the use of either method defined in SR 3.1.6.1 to establish operability to comply with NAC-MPC TS A 3.1.6 or NAC-MPC TS A 5.3:

Section	FSAR Statement
11.1.1.1	This event [Blockage of Half of the Air Inlets] would be detected by the daily concrete cask operability inspection, which is performed either by outlet air temperature measurements or by visual inspection of the inlet and outlet screens for blockage and integrity...
11.1.3.2	For concrete casks incorporating daily temperature-monitoring programs, the maximum time period during which an increase in outlet air temperatures may go undetected is 24 hours. The principal condition that could cause an increase in temperature is the blockage of the air inlets and/or outlets. Section 11.2.8 shows that even if all of the inlets and outlets of a single cask are blocked immediately after a temperature measurement, it would take longer than 24 hours before any component approaches its allowable temperature limit. Therefore, there would be sufficient time to identify and correct temperature instrumentation failure events prior to critical system components reaching their temperature limits.
11.1.3.5	Following the loss of instrumentation, the temperature instrumentation shall be replaced or repaired and returned to service to allow the surveillance requirements and frequency of LCO 3.1.6 to be met. Alternatively, the surveillance requirement may be met by the daily visual inspection of the inlet and outlet screens of each concrete cask to verify they are not blocked and are intact.
11.2.2.5	Response Surveillance of the storage casks at the ISFSI is required following an earthquake accident in accordance with Section A 5.3 of the Technical Specifications to verify the heat removal systems of the casks are operable.
11.2.3.5	Response Surveillance of the storage casks at the ISFSI in accordance with Section A 5.3 of the Technical Specifications is required following an explosion event to verify the heat removal systems of the casks are operable.

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Section	FSAR Statement
11.2.6.5	Response Surveillance of the NAC-MPC systems at the ISFSI shall be performed following the flood accident in accordance with Section A 5.3 of the Technical Specifications to verify the heat removal systems of the casks are operable.

TS A 5.3 was revised in Amendment 5 to NAC-MPC CoC No. 1025 that was issued by the NRC on July 24, 2007. Prior to Amendment 5, TS A 5.3 was met by performance of SR 3.1.6.2. SR 3.1.6.2 required the verification of the temperature difference between the average Concrete Cask air outlet temperature and the ISFSI ambient temperature meets the acceptance criterion within 4 hours after an off-normal, accident, or natural phenomena. This TS did not allow for visual verification at this time. However, SR 3.1.6.2 was eliminated in Amendment 5 to NAC-MPC CoC No. 1025, and TS A 5.3 was rewritten.

The NRC's Safety Evaluation Report (SER) for Amendment 5 to NAC-MPC CoC No. 1025 dated July 24, 2007, includes statements that make it clear that the applicable TS revisions were intended to permit the use of visual verifications of the outlets and inlets or temperature monitoring in accordance with SR 3.1.6.1 to ensure the operability of the Concrete Cask Heat Removal System for each NAC-MPC System.

Section	Statement
Thermal Evaluation	The application proposed several modifications to the TS and the FSAR to include the option to visually verify that all four air inlet and outlet screens are unobstructed and operable in lieu of daily temperature monitoring.
Thermal Evaluation	Chapter 2.0, Principle Design Criteria, was revised throughout to reflect the alternative for daily visual inspection of the air inlet and outlet screen for blockage
Thermal Evaluation	Chapter 10.0, Radiation Protection, of the FSAR was revised to add an option for temperature measurement or daily visual monitoring of cask inlet and outlet screens for the purpose of verifying that they are unobstructed.
Thermal Evaluation	Chapter 11.0, Accident Analysis, was revised throughout to include changes associated with the revised thermal monitoring requirement allowing visual inspections of air inlet and outlet screens. The changes refer to the basis of the analysis for verifying the safety of the cask for blockages of 24-hours or less.

In addition, this is consistent with Amendment 4 of NAC-MPC CoC No. 1025, which is currently effective for those sites that invoke Amendment 4. It still allows the use of temperature monitoring as the way to demonstrate operability of the Concrete Cask Heat Removal System for each NAC-MPC System by performing the surveillance invoked by TS A 5.3 (i.e., SR 3.1.6.2).



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3.2 Utilization of Conditions, Required Actions, and Completion Times of TS A 3.1.6

TS A 5.3 permits 24 hours to clear the blockage or debris from at least one-half of the inlets and outlets on each Concrete Cask. This requirement causes confusion (including the potential for different implementation of the requirements), because it is different than Required Action A.1 of TS A 3.1.6 and its associated Completion Time which require the Concrete Cask Heat Removal System for the affected NAC-MPC System to be restored to an operable status within 8 hours.

The 24-hour time frame identified in TS A 5.3 may only be utilized if the operability of the Concrete Cask Heat Removal Systems for the NAC-MPC Systems is established by utilizing the temperature monitoring system as defined in SR 3.1.6.1. If YAEC is relying on visual verification of the inlet and outlet screens to establish operability of the Concrete Cask Heat Removal System for each NAC-MPC System in accordance with SR 3.1.6.1, and the SR is not met, then Condition A of TS A 3.1.6 would be entered and the Concrete Cask Heat Removal System for the affected NAC-MPC System must be restored to an operable status within 8 hours.

3.3 Other Considerations

Section 11.1.1 of the NAC-MPC FSAR provides an evaluation of the NAC-MPC storage cask for the steady state effects of a blockage of one-half of the air inlets at the normal ambient temperature (75°F). Section 11.1.2 of the NAC-MPC FSAR concludes that the component temperatures are within the allowable temperature range with one-half of the inlets blocked.

Currently, YAEC actively manages the accumulation of snow on the ISFSI pad to ensure that the inlet screens for the concrete casks are not blocked to prevent the occurrence of an off-normal event and entry into TS A 5.3. Blockage of the outlet screens by snow would be unusual. Following the granting of the requested exemption, YAEC will continue to ensure that the Concrete Cask Heat Removal System for each NAC-MPC System remains operable by complying with the requirements of TS A 3.1.6. YAEC can more accurately comply with operability assessments “after the occurrence” of the event using temperature monitoring than the more subjective visual verification.

Chapter 11 of the NAC-MPC FSAR includes analysis for off-normal events, accidents, and natural phenomenon events. The natural phenomenon events analyzed in Chapter 11 of the NAC-MPC are severe environmental conditions (Section 11.1.4), earthquake (Section 11.2.2), flood (Section 11.2.6), lightning strike (Section 11.2.9), exceedance of maximum anticipated heat load (Section 11.2.10), and tornado and tornado driven missiles (Section 11.2.13). In addition, while a snow storm is not specifically analyzed as a natural phenomenon event in Section 11 of the NAC-MPC FSAR, it can lead to an off-normal event involving blockage of greater than one-half of the inlet screens, as defined in Section 11.1.1 of the NAC-MPC FSAR. A snow storm can result in accumulation in front of and even into the inlet vents, and can have the appearance of “blockage,” when using an inspection process. However, based on experience, YAEC does not expect blockage due to snow to affect the operability of the Concrete Cask Heat Removal System for a NAC-MPC System, because the differential temperature remains well

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below the limit defined in TS SR 3.1.6.1. YAEC clears snow proactively to preclude: 1) entry into TS A 5.3; and 2) gradual ice formation by freeze-thaw cycles acting on snow accumulation that could obstruct the inlets and outlets screens such that operability of the Concrete Cask Heat Removal System for a NAC-MPC System may be challenged.

Following the granting of the exemption, YAEC will continue to proactively manage snow to prevent conditions that could result in inoperability of the Concrete Cask Heat Removal Systems for the NAC-MPC Systems. The exemption will permit YAEC the flexibility to adapt its snow management methodology to respond to actual conditions affecting the Concrete Cask Heat Removal Systems and not specifically in response to subjective criteria with indeterminate starting times.

#### **4.0 Applicable Regulations**

The specific requirements for granting exemptions to 10 CFR Part 72 licensing requirements are set forth in 10 CFR 72.7, "Specific exemptions," which states:

"The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part 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."

#### **5.0 Exemption Request Considerations**

YAEC has reviewed 10 CFR 72 and determined that an exemption to certain requirements of 10 CFR 72.212(a)(2), 10 CFR 72.212(b)(3), 10 CFR 72.212(b)(5)(i), 10 CFR 72.212(b)(7), 10 CFR 72.212(b)(11), and 10 CFR 72.214 are necessary to permit the YNPS ISFSI to utilize the Surveillance Requirement, Conditions, Required Actions, and Completion Times defined in NAC-MPC TS A 3.1.6 to comply with the requirement of NAC-MPC TS A 5.3.

##### 5.1 Authorized by Law

10 CFR 72.7 allows the NRC to grant exemptions from the requirements of 10 CFR 72. Granting of the proposed exemptions will not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemptions would be authorized by law.

##### 5.2 No Undue Risk to Public Health and Safety

Chapter 11 of the NAC-MPC FSAR provides analyses of loss of instrumentation, blockage of half of the air inlets, full blockage of air inlets and outlets, and various natural phenomena events. No new accident precursors are created by utilizing the Surveillance Requirement, Conditions, Required Actions, and Completion Times defined in NAC-MPC TS A 3.1.6 to comply with NAC-MPC TS A 5.3. Thus, the probability of postulated accidents is not increased. Also, based on the above, the consequences of postulated accidents are not increased. No

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changes are being made in the types or amounts of effluents that may be released offsite. There is no significant increase in occupational or public radiation exposure. Therefore, there is no undue risk to public health and safety.

5.3 Consistent with the Common Defense and Security

The YNPS ISFSI will continue to be managed in accordance with the YNPS ISFSI Physical Security Plan, and the outstanding NRC Orders and Interim Compensatory Measures. The proposed exemption will not alter the scope of the licensee's security program. Therefore, the common defense and security is not impacted by this exemption.

5.4 Special Circumstances

While 10 CFR 72.7 does not specify a presentation of "special circumstances" similar to those required for 10 CFR 50 exemptions, YAEC's exemption request can be elucidated by using three of the special circumstances identified in 10 CFR 50.12. The applicable special circumstances are discussed below:

5.4.1 10 CFR 50.12(a)(2)(i) - Application of the regulation in the particular circumstances conflicts with other rules or requirements of the Commission

YAEC must comply with the terms and conditions of the NAC-MPC CoC No. 1025, including the TS. NAC-MPC TS A 1.1, Definition of Operability and NAC-MPC TS SR 3.1.6.1 both defines that the Concrete Cask Heat Removal System for each NAC-MPC System can be determined to be operable by utilizing temperature monitoring or visual verifications of the inlet and outlet screens. However, literal compliance with NAC-MPC TS A 5.3 only permits inspections of the inlet and outlet vents to be performed to verify operability. In addition, the time frame permitted by TS A 5.3 for clearing of blockage or obstructions is not consistent with the requirements of TS A 3.1.6. Permitting the Surveillance Requirement, Conditions, Required Actions, and associated Completion Times of NAC-MPC TS A 3.1.6 to comply with NAC-MPC TS A 5.3 would resolve these inconsistencies.

5.4.2 10 CFR 50.12(a)(2)(ii) - Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose.

The underlying purpose of 10 CFR 72.212 is to allow reactor licensees to utilize dry fuel storage casks that have previously been found to be safe and appropriately analyzed for use by the cask designer, the cask user, and the NRC. The intent of NAC-MPC TS A 3.1.6 and A 5.3 is to ensure that the Concrete Cask Heat Removal System for each NAC-MPC System remains operable. The definition of operability provided in NAC-MPC TS A 1.1 defines that the Concrete Cask Heat Removal System for each NAC-MPC System is considered operable if the difference between the ISFSI ambient temperature and the average outlet air temperature is  $\leq 92^{\circ}\text{F}$  for the YANKEE-MPC System or if all air inlet and outlet screens are visually verified to be unobstructed. The Bases for NAC-MPC TS A 3.1.6, SR 3.1.6.1 establishes that either visual

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inspection of the inlets and outlets screens or temperature monitoring will establish that adequate air flow past the canister is occurring and heat transfer is taking place.

5.4.3 10 CFR 50.12(a)(2)(iii) - Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or those incurred by others similarly situated.

Currently, YAEC proactively engages in the removal of snow that could block the inlet screens for the NAC-MPC Systems to avoid having the effective area of the inlet screens for any single NAC-MPC System to be blocked by greater than 50% and preclude ice formations that could block the inlet screens. Note: Snow blockage of the outlet screens would be unusual. As a result, YAEC often puts individuals in harm's way during blizzards and slippery winter conditions to ensure compliance with NAC-MPC TS A 5.3 due to the inability to utilize the temperature monitoring system to comply with NAC-MPC TS A 5.3. Additionally, verification that the inlet and outlet screens are free of blockage during a snowstorm is a difficult and subjective process which does not provide the level of demonstrated, documented acceptability that the temperature differential readings provide. This fact and operational flexibility is the reason that YAEC installed and maintains a temperature monitoring system. The exemption would give YAEC the operational flexibility during dynamic environmental conditions.

The additional operational flexibility would allow YAEC to maintain doses to workers As Low As Reasonably Achievable (ALARA), because the frequency for clearing the vents would be reduced, and the clearing of the vents would be conducted in weather conditions that would improve efficiency.

## **6.0 Environmental Consideration**

The proposed exemption does not increase the probability or consequences of accidents, no changes would be made to the types of effluents released offsite, and there would be no increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action. Additionally the proposed action would not involve any construction or other ground disturbing activities, would not change the footprint of the existing ISFSI, and would have no other significant non-radiological impacts. The ISFSI is located on previously disturbed land, thus, the proposed exemption does not have the potential to create any significant impact on aquatic or terrestrial habitat in the vicinity of the ISFSI, or to threatened, endangered, or protected species. In addition, the proposed exemption does not have the potential to cause effects on historic or cultural properties, assuming such properties are present at the site of the YNPS ISFSI.

The proposed exemption would meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(25), because the proposed exemption involves: (i) no significant hazards consideration; (ii) no significant change in the types or significant increase in the amounts of any effluents that may be released offsite; (iii) no significant increase in individual or cumulative public or occupational radiation exposure; (iv) no significant construction impact; (v) no significant increase in the potential for or consequences from radiological accidents; and (vi) the

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requirements from which the exemption is sought involve inspection or surveillance requirements. Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed exemption.

**7.0 Conclusion**

YAEC has reviewed 10 CFR 72 and determined that an exemption to certain requirements of 10 CFR 72.212(a)(2), 10 CFR 72.212(b)(3), 10 CFR 72.212(b)(5)(i), 10 CFR 72.212(b)(7), 10 CFR 72.212(b)(11), and 10 CFR 72.214 is necessary to permit the YNPS ISFSI to effectively utilize the Surveillance Requirement, Conditions, Required Actions and associated Completion Times of NAC-MPC TS A 3.1.6 to comply with the requirement of NAC-MPC TS A 5.3.

Such an exemption meets the specific exemption requirements of 10 CFR 72.7. The requested exemption is authorized by law, will not endanger life or property, and is consistent with the common defense and security. Special circumstances as defined in 10 CFR 50.12(a)(2)(i), 10 CFR 50.12(a)(2)(ii) and (iii) would be present. In addition, the exemption request would meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(25).

YAEC requests approval of this exemption request by December 31, 2015. This requested date would permit YAEC to utilize the Surveillance Requirement, Conditions, Required Actions and associated Completion Times of NAC-MPC TS A 3.1.6 to comply with the requirement of NAC-MPC TS A 5.3 during the upcoming winter and future winters.

**8.0 Precedent**

No previous examples of an NRC-approved exemption request that dealt with a similar issue could be found. However, on July 15, 2010 (Reference 7), the NRC granted YAEC an exemption from certain sections of 10 CFR 72.212 and 10 CFR 72.214 regarding the NAC-MPC CoC and its Technical Specifications that establish that this type of exemption request is not a novel approach.

In addition, the Technical Specifications for the following 10 CFR 72 approved storage systems rely on the Technical Specifications for the Concrete Cask Heat Removal System to maintain operability during and following an off-normal, accident, or natural phenomenon event, because they do not possess a Technical Specification similar to NAC-MPC TS A 5.3:

1. Appendix A of Certificate of Compliance No. 1031, Technical Specifications and Design Features for the Magnastor System, Amendment No. 4.
2. Appendix A of Certificate of Compliance No. 1040, Technical Specifications for the Hi-Storm UMAX Canister Storage System, Amendment No. 0.
3. Appendix A of Certificate of Compliance No. 1014, Technical Specifications for the Hi-Storm 100 Cask System, Amendment No. 8.

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4. Appendix A of Certificate of Compliance No. 1032, Technical Specifications for the Hi-Storm FW MPC Storage System, Amendment No. 1.

**9.0 References**

1. Certificate of Compliance (CoC) for the NAC International (NAC) Multi-Purpose Canister (MPC) System, U.S. Nuclear Regulatory Commission, April 10, 2000.
2. Amendment 5 of NAC-MPC Certificate of Compliance No. 1025, including Appendix A, "Technical Specifications for the NAC-MPC System."
3. Amendment 4 of NAC-MPC Certificate of Compliance No. 1025, including Appendix A, "Technical Specifications for the NAC-MPC System."
4. NAC-MPC FSAR, Chapter 11, "Accident Analysis," and Appendix 12C, "Technical Specification Bases for the NAC-MPC System."
5. Letter from R. Mitchell (YAEC) Document Control Desk (NRC), "Yankee Atomic Electric Company Adoption of NAC-MPC® System, Amendment 5 Certificate of Compliance and Cask Registration," BYR 2011-018, July 28, 2011.
6. NRC Safety Evaluation Report, Docket No. 72-1025, NAC-MPC Storage System, Certificate of Compliance No. 1025, Amendment No. 5, dated July 24, 2007.
7. Letter from J. Goshen (NRC) to R. Mitchell (YAEC), Exemption from 10 CFR 72.212 and 72.214 for Dry Spent Fuel Storage Activities – Yankee Atomic Independent Spent Fuel Storage Installation (TAC No. L24421), dated July 15, 2010.