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BVY 14-023

10 CFR 50.12
10 CFR 50.54(w)(1)

April 17, 2014

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Request for Exemption from 10 CFR 50.54(w)(1)
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

REFERENCES:
1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Permanent Cessation of Power Operations," BVY 13-079, dated September 23, 2013
2. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E," BVY 14-009, dated March 14, 2014

Dear Sir or Madam:

Pursuant to 10 CFR 50.12, Entergy Nuclear Operations, Inc. (ENO) requests a permanent exemption from 10 CFR 50.54(w)(1) for Vermont Yankee Nuclear Power Station (VY). 10 CFR 50.54(w)(1) requires individual power reactor licensees to obtain insurance coverage from private sources to provide protection covering the licensee's obligation, in the unlikely event of an accident, to stabilize and decontaminate the reactor and the reactor site. Specifically, licensees must obtain insurance having a minimum coverage limit for each reactor station site of either $1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. This insurance coverage is referred to as "onsite coverage" or "onsite insurance coverage."

ENO is requesting an exemption to 10 CFR 50.54(w)(1) to reduce the minimum coverage limit of 10 CFR 50.54(w)(1) to $50 million for VY. The exemption request is provided in the attachment to this letter.

On September 23, 2013, ENO informed the NRC that VY will permanently cease power operations at the end of the current operating cycle, which is expected to occur in the fourth quarter of 2014 (Reference 1). Once VY permanently ceases operations and submits the certifications required by 10 CFR 50.82(a)(1)(i) and (ii), pursuant to 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for VY will no longer authorize operation of the reactor or placement or retention of fuel in the reactor vessel.

The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient property damage insurance to ensure adequate funding of onsite post-accident recovery, stabilization and decontamination costs following an accident at an operating nuclear power plant. However, the regulation does not take into consideration the reduced potential for, and consequences of, such nuclear incidents at permanently shutdown facilities. The VY facility is a single reactor site and the reactor will be permanently shut down and defueled at the end of the current operating cycle (Reference 1). The proposed exemption would allow a reduction in the level of onsite insurance coverage for VY to a level that is commensurate with the planned permanently defueled status of the facility and the underlying purpose of the rule.

ENO has performed an analysis for VY showing that 15.4 months after shutdown provides sufficient decay of the spent fuel stored in the SFP such that there is a significant reduction in risk from SFP draining events. This reduction in risk supports the basis for the 10 CFR 50.12 "Specific exemptions" provided in the attachment to this letter. The analysis related to the 15.4 month decay time was provided with Reference 2.

Based on the projected VY cessation of operations in the fourth quarter of 2014, the decay period of 15.4 months would be reached near the middle of April 2016. Therefore ENO is requesting approval of this exemption request by January 15, 2016 and an effective date of April 15, 2016. The approval date of January 15, 2016 would permit sufficient time to arrange for the reduced insurance coverage allowed by the exemption.

This letter contains no new regulatory commitments.

Should you have any questions concerning this letter or require additional information, please contact Mr. Coley Chappell at 802-451-3374.

Sincerely,

CJW/plc

Attachment: 1. Request for Exemption from 10 CFR 50.54(w)(1)

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Attachment 1

Vermont Yankee Nuclear Power Station

Request for Exemption from 10 CFR 50.54(w)(1)

Vermont Yankee Nuclear Power Station
Request for Exemption from 10 CFR 50.54(w)

I. BACKGROUND

Vermont Yankee Nuclear Power Station (VY) is located in the town of Vernon, Vermont in Windham County on the west shore of the Connecticut River immediately upstream of the Vernon Hydrostation. By letter dated September 23, 2013 (Reference 1), pursuant to 10 CFR 50.82(a)(1)(i), Entergy Nuclear Operations, Inc. (ENO) notified the NRC of its intention to permanently cease power operations at VY at the end of the current operating cycle, which is expected to occur in the fourth quarter of 2014. ENO stated its intention to submit a supplement to Reference 1 certifying the date on which operations have ceased, or will cease, in accordance with 10 CFR 50.82(a)(1)(i) and 10 CFR 50.4(b)(8). Once fuel has been permanently removed from the reactor vessel, ENO will submit a written certification to the NRC, in accordance with 10 CFR 50.82(a)(1)(ii) that meets the requirements of 10 CFR 50.4(b)(9). Upon docketing of these certifications, the 10 CFR Part 50 license for VY will no longer authorize operation of the reactor or emplacement or retention of fuel into the reactor vessel, as specified in 10 CFR 50.82(a)(2).

Exemption from 10 CFR 50.54(w)(1) is requested in order to allow reduced insurance coverage commensurate with the significantly reduced risks associated with the permanently defueled condition. ENO has performed an analysis indicating that irradiated fuel decay for 15.4 months after shutdown provides sufficient time for operators to recover SFP water inventory prior to reaching a temperature of 900 degrees Celsius (°C) where oxidation of the spent fuel and cladding could commence. This analysis was submitted in Reference 2. Because VY expects final shutdown to occur by the end of December 2014, 15.4 months after shutdown will occur near the middle of April 2016. The requested approval date of January 15, 2016 will enable ENO adequate time before April 15, 2016 to arrange for the reduced insurance coverage allowed by the exemption.

II. DETAILED DESCRIPTION

Pursuant to 10 CFR 50.12, "Specific exemptions," ENO requests a permanent exemption from 10 CFR 50.54(w)(1) for VY. 10 CFR 50.54(w)(1) requires individual power reactor licensees to obtain insurance coverage from private sources to provide protection covering the licensees obligation, in the unlikely event of an accident, to stabilize and decontaminate the reactor and the reactor site. Specifically, licensees must obtain insurance having a minimum coverage limit for each reactor station site of either $1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. This insurance coverage is referred to as "onsite coverage" or "onsite insurance coverage."

ENO is requesting an exemption to 10 CFR 50.54(w)(1) to reduce the minimum coverage limit of 10 CFR 50.54(w)(1) to $50 million for VY.

10 CFR 50.54(w)(1) reads as follows:

> *"(w) Each power reactor licensee under this part for a production or utilization facility of the type described in §§ 50.21(b) or 50.22 shall take reasonable steps to obtain insurance available at reasonable costs and on reasonable terms from private sources or to demonstrate to the satisfaction of the NRC that it possesses an equivalent amount of protection covering the licensee's obligation, in the event of an accident at the*

licensee's reactor, to stabilize and decontaminate the reactor and the reactor station site at which the reactor experiencing the accident is located, provided that:

(1) The insurance required by paragraph (w) of this section must have a minimum coverage limit for each reactor station site of either $1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. The required insurance must clearly state that, as and to the extent provided in paragraph (w)(4) of this section, any proceeds must be payable first for stabilization of the reactor and next for decontamination of the reactor and the reactor station site. If a licensee's coverage falls below the required minimum, the licensee shall within 60 days take all reasonable steps to restore its coverage to the required minimum. The required insurance may, at the option of the licensee, be included within policies that also provide coverage for other risks, including, but not limited to, the risk of direct physical damage."

III. DISCUSSION

The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient property damage insurance to ensure adequate funding of onsite post-accident recovery, stabilization and decontamination costs following an accident at an operating nuclear power plant. The requirements of 10 CFR 50.54(w)(1) were developed taking into consideration the risks associated with an operating nuclear power reactor, including the potential consequences of a release of radioactive material from the reactor.

This regulation does not take into consideration the reduced potential for, and consequences of, such nuclear incidents at permanently shutdown facilities. The VY facility is a single reactor site and the reactor will be permanently shut down and defueled. The proposed exemption would allow a reduction in the level of onsite insurance coverage to a level that is commensurate with the planned permanently defueled status of VY and the underlying purpose of the rule.

Although the likelihood of an accident at an operating reactor is small, the consequences can be large, in part due to the high temperatures and pressures of the reactor coolant system as well as the inventory of radionuclides. For a permanently shutdown and defueled reactor, nuclear accidents involving the reactor and its associated systems, structures and components are no longer possible. Furthermore, reductions in the probability and consequences of non-operating reactor nuclear incidents are substantially reduced because; 1) the decay heat from the spent fuel decreases over time, which reduces the amount of cooling required to prevent the spent fuel from heating up to a temperature that could compromise the ability of the fuel cladding to retain fission products, and; 2) the relatively short-lived radionuclides contained in the spent fuel, particularly volatile components like iodine and noble gasses, decay away, thus reducing the inventory of radioactive materials available for release.

Although the potential for, and consequences of, nuclear accidents decline substantially after a plant permanently defuels its reactor, they are not completely eliminated. There are potential onsite and offsite radiological consequences that could be associated with the onsite storage of the spent fuel in the spent fuel pool (SFP). In addition, a site with a permanently shutdown and defueled reactor may contain an inventory of radioactive liquids, activated reactor components, and contaminated materials. For purposes of modifying the amount of onsite insurance coverage maintained by a permanently shutdown and defueled reactor licensee, the potential radiological consequences of these non-operating reactor nuclear incidents are appropriate to consider, despite their very low probability of occurrence.

NRC Proposed Rulemaking

The NRC staff has generically evaluated the legal, technical, and policy issues regarding the financial protection requirements for large nuclear power plants that have been permanently shut down. The results of these evaluations were summarized in SECY-96-256 (Reference 3) and the NRC staff recommended course of action was approved by the Commission in a Staff Requirements Memo (SRM) (Reference 4). These documents established the basis for the NRC exercising its discretionary authority to specify an appropriate level of onsite insurance coverage for permanently shutdown nuclear power reactors.

In SECY-97-186 (Reference 5), the NRC staff proposed rulemaking for Commission approval that was consistent with SECY-96-256, Option 2. In SECY-97-186, the NRC staff proposed changes to 10 CFR 50.54(w)(1) that would establish appropriate levels of onsite insurance coverage for plants that are permanently shutdown and defueled and that meet specified facility configurations during permanent shutdown.

On October 30, 1997, the NRC published a proposed rulemaking to amend regulations governing liability coverage for permanently shutdown nuclear plants. The proposed rulemaking established four different configurations for permanently shutdown plants that encompassed anticipated spent fuel characteristics and storage modes during the period between permanent shutdown and termination of the license. The rulemaking proposed financial protection requirements for each of the four specified plant configurations, including a configuration where the plant is permanently shutdown, the reactor defueled, and the spent fuel stored in the spent fuel pool is not susceptible to a zircaloy cladding failure or gap release caused by an incipient fuel cladding failure if the pool is accidentally drained.

However, the NRC staff rulemaking efforts were suspended prior to issuing the final rule when it was realized that an NRC staff-approved technical basis did not exist for generic decay times after which the zirconium cladding failure concern could be eliminated. The proposed changes to regulations governing onsite insurance coverage were subsequently included in a risk-informed, integrated rulemaking initiative for decommissioning nuclear power plants, which has yet to be acted on. This rulemaking initiative, documented in SECY-00-145 (Reference 6), included onsite insurance coverage requirements based on the proposed decommissioning insurance rulemaking issued on October 30, 1997, as modified to address the public comments received in response to that proposed rulemaking. The modified rulemaking, as incorporated into SECY-00-145, would have allowed the minimum onsite insurance coverage to be reduced to $25 million once the spent fuel in the SFP is no longer thermal-hydraulically capable of sustaining a zirconium fire, based on a plant-specific analysis.

As discussed in the staff response to a question in SECY-00-145 (see "NRC Staff Responses to NEI White Paper Comments on Improving Decommissioning Regulations," page 6, response to Question 3):

> *"The staff believes that full insurance coverage must be maintained for 5 years or until a licensee can show by analysis that its spent fuel pool is no longer vulnerable to such [a zirconium] fire."*

In addition, as discussed in the staff response to a question in SECY-00-145 (see "NRC Staff Responses to NEI White Paper Comments on Improving Decommissioning Regulations," page 5, response to Question 2):

> *"Since the zirconium fire scenario would be possible for up to several years following shutdown, and since the consequences of such a fire are severe in terms of property damage and land contamination, the staff position is that full onsite liability coverage must be retained for five years or until analysis has indicated that a zirconium fire is no longer possible."*

In a memorandum dated August 16, 2002 (Reference 7), the NRC Executive Director for Operations provided the NRC Commissioners a status of the regulatory exemptions for plants in decommissioning. This memorandum stated that,

> *"In the absence of any anticipated nuclear power plant decommissionings in the near term, the staff believes that there is no immediate need for moving forward with a majority of the decommissioning regulatory improvement work that is currently planned. Specifically, broad scope regulatory improvements for decommissioning nuclear power plants do not appear to be of sufficient priority given a lack of future licensees that would benefit at this time. Due to higher priorities, resources are being deferred for decommissioning rulemakings that are not currently in progress or not related to security.... If any plants do unexpectedly shutdown permanently, decommissioning regulatory issues would continue to be addressed through the exemption process in a manner similar to current practice."*

Thus, the proposed rulemaking process changes for decommissioning plants discussed above were stopped in deference to the exemption process that had been used for previous licensees.

IV. TECHNICAL EVALUATION

Section 14 of the VY Updated Final Safety Analysis Report (UFSAR) describes the design basis accident (DBA) and transient scenarios applicable to VY during power operations. During normal power operations, the forced inlet flow of water through the reactor coolant system (RCS) removes the heat from the reactor by generating steam. The steam system, operating at high temperatures and pressures, transfers this heat to the turbine generator. The most severe postulated accidents for nuclear power plants involve damage to the nuclear reactor core and the release of large quantities of fission products to the reactor coolant system. Many of the accident scenarios postulated in the UFSAR involve failures or malfunctions of systems which could affect the reactor core.

However, as a result of the notification of permanent cessation of power operations submitted by ENO pursuant to 10 CFR 50.82(a)(1), and the planned removal of authorization to operate the reactor or to place or retain fuel in the reactor vessel in accordance with 10 CFR 50.82(a)(2) once it has been certified that all fuel has been permanently removed from the reactor, most of the DBA scenarios postulated in the UFSAR will no longer be possible. The irradiated fuel will be stored in the spent fuel pool (SFP) and the Independent Spent Fuel Storage Installation (ISFSI) until it is shipped off site in accordance with the schedules to be provided in the Post Shutdown Decommissioning Activities Report (PSDAR) and the updated Irradiated Fuel Management Plan.

When the reactor is permanently defueled, the SFP and its supporting systems will be modified and dedicated only to spent fuel storage. With the reactor defueled, the reactor vessel assembly and supporting structures and systems are no longer in operation and have no function related to the safe storage and management of irradiated fuel in the SFP. Fuel pool cooling and

makeup capabilities function to remove decay heat from spent fuel stored in the fuel pool and to maintain a specified water temperature and level.

A. Accident Analysis Overview

Following the termination of reactor operations at VY and the permanent removal of the fuel from the reactor vessel, the postulated accidents involving failure or malfunction of the reactor and supporting structures, systems and components are no longer applicable.

A summary of the postulated radiological accidents analyzed for the permanently shutdown and defueled condition of VY is presented below.

1. Consequences of Design Basis Events

The postulated design basis accident that will remain applicable to VY in its permanently shutdown and defueled condition is the fuel handling accident (FHA) in the reactor building where the SFP is located. A new analysis based on the FHA was performed to determine the dose to operators in the control room and the public at the Exclusion Area Boundary (EAB) and Low Population Zone (LPZ) as a function of time after shutdown. The analysis shows that the dose at the EAB and LPZ 17 days after shutdown (with open containment) is less than 1 rem TEDE, which is below the Environmental Protection Agency (EPA) Protective Action Guideline (PAG) (Reference 8) threshold of 1 rem for recommended evacuation.

The 17 day decay time of this analysis may be applied after January 17, 2015, assuming a VY shutdown by the end of December 2014. The analysis was submitted for NRC review in Reference 9.

2. Consequences of Beyond Design Basis Events

a. Hottest Fuel Assembly Adiabatic Heatup - Beyond Design Basis Event

The analysis provided with Reference 2 compares the conditions for the hottest fuel assembly stored in the VY fuel pools to the criteria proposed in NUREG-1738 (Reference 10). This criterion considers the time for the hottest assembly to heat up adiabatically from 30 °C to 900 °C. NUREG-1738 considers that a heat up time to 900 °C of 10 hours after fuel is uncovered would provide sufficient time for operators to detect and recover from the SFP draining prior to causing a zirconium fire. The 10 hour time period is considered reasonable for a facility implementing the SFP industry decommissioning commitments (IDCs) and meeting the staff decommissioning assumptions (SDAs) described in Tables 4.1-1 and 4.1-2 of NUREG-1738. ENO has provided an assessment of how these IDCs and SDAs are applicable to VY in Reference 2.

Based on the limiting fuel assembly for decay heat and an adiabatic heatup, the VY analysis calculated that a fuel decay period of 15.4 months after shutdown would provide the necessary 10 hours after fuel is uncovered before reaching 900°C. Therefore, a zirconium fire in the VY SFP is not considered a credible event following 15.4 months of shutdown for events in which SFP level is recoverable.

b. Risk Analysis of Seismic Events and Fuel Cask Drop

NUREG-1738 concluded that the dominant initiating event for a beyond design basis zirconium fire are a severe seismic event and the dropping of a spent fuel cask over the pool because these events are assumed to result in major SFP damage causing non-recoverable fuel pool draining.

The NUREG also concluded that these events cannot be correlated to reduced risk for insurance purposes because insurance has no effect on the probability or consequences of these events and a generic evaluation of the potential for a zirconium fire following unrecoverable draining cannot be performed due to uncertainty about fuel cooling following these events.

Nevertheless, the initiating event frequencies for seismic events and dropped fuel casks leading to unrecoverable draining were established by NUREG-1738 to be very low (Table 3.1 of the NUREG). These low seismic hazard estimates supported meeting a pool performance guideline (PPG) used by NUREG-1738 as an indicator of low risk at decommissioning facilities (that implement IDCs and SDAs as discussed above).

For seismic events, the PPG was based on Lawrence Livermore National Laboratory (LLNL) and the Electric Power Research Institute (EPRI) seismic hazard estimates. The NUREG stated that with one exception (not related to VY) all Central and Eastern sites which implement the IDCs and SDAs would be expected to meet the PPG regardless of whether LLNL or EPRI seismic hazard estimates are assumed.

Similarly, for the fuel cask drop analysis over the spent fuel pool, the NUREG established very low initiating event frequencies leading to fuel uncovery. This low frequency was based on a single failure proof system in accordance with NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants, Resolution of Generic Technical Activity A-36," July 1980. For VY, IDC #1 and SDA #5 discuss NUREG-0612 (Reference 2) and are the basis for concluding that the low frequency for a cask drop determined by NUREG-1738 also applies to VY.

In June 2013, a draft study, entitled "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark 1 Boiling Water Reactor," was published for public comment (Reference 11). The purpose of the consequence study was to determine if accelerated transfer of older, colder spent fuel from the SFP at a reference plant to dry cask storage significantly reduces risks to public health and safety. The specific reference plant used for the study was a General Electric (GE) Type 4 BWR with a Mark I containment. VY is a GE BWR/4 with a Mark I containment.

The study states: "Past risk studies have shown that storage of spent fuel in a high-density configuration is safe and risk of a large release due to an accident is very low. This study's results are consistent with earlier research conclusions that spent fuel pools are robust structures that are likely to withstand severe earthquakes without leaking. The NRC continues to believe, based on this study and previous studies that spent fuel pools protect public health and safety."

The study also estimated that the likelihood of a radiological release from the SFP resulting from the selected severe seismic event analyzed in the study was on the order

of one time in 10 million years or lower. The study analyzed two cases for each scenario: one where mitigation measures of 10 CFR 50.54(hh)(2) were credited, and one where they were not used or were unsuccessful. It showed that successful mitigation reduces the likelihood of a release and that the likelihood of a release was equally low for both high- and low-density loading in the SFP. The study did not consider the post-Fukushima mitigation measures required by Orders EA-12-049 (Mitigating Strategies Order) and EA-12-051 (Reliable Spent Fuel Pool Instrumentation Order). In the unlikely event of a loss of SFP water inventory or cooling, VY has procedures and guidance in place to ensure the availability of onsite and offsite makeup inventory. These measures are described in Tables 3 and 4 of Reference 2.

3. Consequences of Other Analyzed Events

a. Loss of Spent Fuel Pool Normal Cooling

This analysis assesses the time available to initiate compensatory measures in the event of a loss of spent fuel pool inventory as well as the radiological impact. From Engineering Change (EC) 47710, the initiating event is postulated to be an external event that results in a prolonged loss of all Alternating Current (AC) power. In this scenario, there is no active cooling of the spent fuel pool, nor is there the ability to maintain pool water inventory with normal plant systems. This evaluation determined that 15.4 months following shutdown, the time to reach 212 degrees Fahrenheit will be 74 hours, and the total time from the loss of cooling to boil off inventory to 3 feet above the top of the fuel assemblies will be 16 days. Although no fuel damage is expected while the water level remains above the top of the fuel, a level of 3 feet above the top of the fuel was chosen for ease of comparison to the corresponding information contained in NUREG-1738. Three feet of water continues to provide sufficient shielding from radiation to any personnel involved in responding to the event. Due to the slow rate of spent fuel pool water boil-off, adequate time will be available to restore cooling or makeup, either through restoration of normal systems or through readily available mitigation measures, without significant radiological consequences for plant workers in the Reactor Building

b. Radioactive Waste Handling Accident

This analysis evaluated the drop of a high integrity container (HIC). The accident evaluated the drop of the largest liner containing the highest concentration of radioactive materials (dewatered resin containing 19,415 curies of 25 various radionuclides representing the highest activity waste at the facility). The calculation postulates that the container is dropped 250 meters (820 feet) from the closest site boundary with subsequent container failure with 1% of the liner contents released and 0.5% of the release becoming aerosolized and carried in the direction of the closest Site Boundary. The resulting two hour integrated dose at the Site Boundary is projected to be 16.1 millirem TEDE, which is below the EAB limit of 1 rem TEDE.

V. PRECEDENTS

The following table provides examples of exemption requests to 10 CFR 50.54(w)(1) that were approved by the NRC Safety Evaluation Report (SER) indicated.

Previously Approved Exemptions to 10 CFR 50.54(w)			
10 CFR 50.54(w)	**Facility**	**SER dated:**	**Comments**
Full Exemption*	Trojan	11/17/93 (Ref.12)	Fuel stored in SFP for almost 1 year. *Pacific Gas and Electric committed to maintain a minimum of $5 million in insurance coverage or to demonstrate self-insurance of this amount.
$50 million	Connecticut Yankee	11/19/98 (Ref.13)	Fuel stored in SFP greater than 2 years.
$50 million	Maine Yankee	1/7/99 (Ref.14)	Fuel stored in SFP for about 2 years (shutdown for 2 1/2 years).
$50 million	TMI Unit 2	7/21/99 (Ref.15)	Fuel removed from site but large volumes of liquid radioactive waste present.

VI. JUSTIFICATION FOR EXEMPTION AND SPECIAL CIRCUMSTANCES

10 CFR 50.12 states that the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of the regulations of Part 50 which are authorized by law, will not present an undue risk to the public health and safety, and are consistent with the common defense and security. 10 CFR 50.12 also states that the Commission will not consider granting an exemption unless special circumstances are present.

As discussed below, this exemption request satisfies the provisions of 10 CFR 50.12.

A. The exemption is authorized by law

10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR Part 50. The proposed exemptions would not result in a violation of the Atomic Energy Act of 1954, as amended, or the Commission's regulations. Exemptions granted to other licensees for insurance reductions of the same regulation being requested here by ENO have been previously determined to be authorized by law and granted (see Section V of this attachment).

In addition, the requested exemption is consistent with the guidelines presented by the NRC staff in SECY- 96-256. The proposed exemption is not contrary to the Atomic

Energy Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

B. The exemption will not present an undue risk to public health and safety

The requirements of 10 CFR 50.54(w)(1) and the existing level of onsite insurance coverage for VY are predicated on the assumption that the reactor is operating. However, VY will be a permanently shutdown and defueled facility. The planned permanently defueled status of the facility will result in a significant reduction in the number and severity of potential accidents, and correspondingly, a significant reduction in the potential for and severity of onsite property damage. The proposed reduction in the amount of onsite insurance coverage does not impact the probability or consequences of potential accidents. The proposed level of insurance coverage is commensurate with the reduced risk and reduced cost consequences of potential nuclear accidents at VY once it is permanently defueled. Therefore, granting the requested exemption will not present an undue risk to the health and safety of the public.

C. The exemption is consistent with the common defense and security

The proposed exemption would not eliminate any requirements associated with physical protection of the site and would not adversely affect VY's ability to physically secure the site or protect special nuclear material. Physical security measures at VY are not affected by the requested exemption. Therefore, the proposed exemption is consistent with the common defense and security.

D. Special Circumstances

Pursuant to 10 CFR 50.12(a)(2), the NRC will not consider granting an exemption to its regulations unless special circumstances are present. Special circumstances are present because the plant will be permanently shutdown and defueled and the radiological source term at the site will be reduced from that associated with reactor power operation. With the reactor power plant permanently shutdown and defueled, the DBAs and transients postulated to occur during reactor operation will no longer be possible. In particular, the potential for a release of a large radiological source term to the environment from the high pressures and temperatures associated with reactor operation will no longer exist.

1. 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 of the rule.

The underlying purpose of 10 CFR 50.54(w)(1) is to require sufficient property damage insurance to ensure funding of onsite post-accident recovery stabilization, and decontamination costs following an accident at an operating nuclear power plant. The requirements of 10 CFR 50.54(w)(1) were developed taking into consideration the risks associated with the operation of an operating nuclear power reactor, including the potential consequences of a release of radioactive material from the reactor. However, the regulation does not take into consideration the reduced potential for, and consequences of, nuclear incidents at permanently shutdown facilities.

The radiological consequences of accidents that will remain possible at VY in the permanently defueled condition are substantially lower than those at an operating plant.

Following 17 days after shutdown, it will no longer be possible for the radiological consequences of design basis accidents or other credible events at VY to exceed the limits of the EPA PAGs at the EAB.

The proposed reduction in the level of onsite insurance coverage from $1.06 billion to $50 million would continue to serve the underlying purpose of the rule by requiring a level of financial protection commensurate with the significant reduction in the probability and consequences of nuclear incidents at VY. Consistent with the NRC's conclusions documented in SECY-00-145 (Reference 6), the proposed reduction in the level of onsite insurance coverage would continue to require sufficient property damage insurance to ensure funding for onsite post-accident recovery, stabilization, and decontamination costs in the unlikely event of an accident at VY.

Therefore, application of the requirement in 10 CFR 50.54(w)(1) to maintain $1.06 billion in onsite insurance coverage is not necessary to achieve the underlying purpose of this rule and special circumstances are present as defined in 10 CFR 50.12(a)(2)(ii).

2. **Compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated.**

Continued application of the requirement to maintain $1.06 billion in onsite insurance coverage for VY would result in undue hardship and costs being incurred by the VY decommissioning trust fund for the purchase of unnecessary levels of onsite insurance coverage.

As tabulated in Section V of this attachment, other licensees of permanently shutdown power reactors have been granted exemptions by the NRC to the subject regulation in the same or lower insurance amounts being requested by ENO for VY.

Therefore, compliance with the rule would result in an undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated and the special circumstances required by 10 CFR 50.12(a)(2)(iii) exist.

VII. ENVIRONMENTAL ASSESSMENT

The proposed exemption meets 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 requirements from which the exemption is sought involve surety, insurance or indemnity 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.

(i) No Significant Hazards Consideration Determination

Entergy Nuclear Operations, Inc. (ENO) has evaluated the proposed exemption to determine whether or not a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92 as discussed below:

1. Does the proposed exemption involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed exemption has no effect on structures, systems, and components (SSCs) and no effect on the capability of any plant SSC to perform its design function. The proposed exemption would not increase the likelihood of the malfunction of any plant SSC.

   When the exemption becomes effective, there will be no credible events that would result in doses to the public beyond the exclusion area boundary that would exceed the Environmental Protection Agency Protective Action Guidelines. The probability of occurrence of previously evaluated accidents is not increased, since most previously analyzed accidents will no longer be able to occur and the probability and consequences of the remaining Fuel Handling Accident are unaffected by the proposed amendment.

   Therefore, the proposed exemption does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed exemption create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed exemption does not involve a physical alteration of the plant. No new or different type of equipment will be installed and there are no physical modifications to existing equipment associated with the proposed exemption. Similarly, the proposed exemption will not physically change any SSCs involved in the mitigation of any accidents. Thus, no new initiators or precursors of a new or different kind of accident are created. Furthermore, the proposed exemption does not create the possibility of a new accident as a result of new failure modes associated with any equipment or personnel failures. No changes are being made to parameters within which the plant is normally operated, or in the setpoints which initiate protective or mitigative actions, and no new failure modes are being introduced.

   Therefore, the proposed exemption does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed exemption involve a significant reduction in a margin of safety?

   The proposed exemption does not alter the design basis or any safety limits for the plant. The proposed exemption does not impact station operation or any plant SSC that is relied upon for accident mitigation.

Therefore, the proposed exemption does not involve a significant reduction in a margin of safety.

Based on the above, ENO concludes that the proposed exemption presents no significant hazards consideration, and, accordingly, a finding of "no significant hazards consideration" is justified.

(ii) There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

There are no changes in the types, characteristics, or quantities of effluents discharged to the environment associated with the proposed exemption. There are no materials or chemicals introduced into the plant that could affect the characteristics or types of effluents released offsite. In addition, the method of operation of waste processing systems will not be affected by the exemption. The proposed exemption will not result in changes to the design basis requirements of SSCs that function to limit or monitor the release of effluents. All the SSCs associated with limiting the release of effluents will continue to be able to perform their functions. Therefore, the proposed exemption will result in no significant change to the types or significant increase in the amounts of any effluents that may be released offsite.

(iii) There is no significant increase in individual or cumulative public or occupational radiation exposure.

The proposed exemption does not involve any physical alterations to the plant configuration or any changes to the operation of the facility that could lead to a significant increase in individual or cumulative occupational radiation exposure.

(iv) There is no significant construction impact.

No construction activities are associated with the proposed exemption.

(v) There is no significant increase in the potential for or consequences from radiological accidents.

See the no significant hazards considerations discussion in Item (i)(1) above.

(vi) The requirements from which exemption is sought involve surety, insurance or indemnity requirements.

The requirements from which the exemption is sought involve financial protection and for the indemnification and limitation of liability of licensees pursuant to Section 170 of the Atomic Energy Act of 1954, as amended and 10 CFR 50.54(w)(1).

VIII. CONCLUSION

Pursuant to the provisions of 10 CFR 50.12, ENO is requesting a permanent exemption from 10 CFR 50.54(w)(1) for VY. Based on the considerations discussed above, the requested exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. In addition, special circumstances are present as set forth in 10 CFR 50.12.

References

1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of Permanent Cessation of Power Operations," BVY 13-079, dated September 23, 2013 (ML13273A204)
2. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E," BVY 14-009, dated March 14, 2014
3. Commission Paper, SECY-96-256, "Changes to the Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors, 10 CFR 50.54(w) and 10 CFR 140.11," dated December 17, 1996.
4. Staff Requirements Memo, "Re: SECY-96-256, Changes to Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors," dated January 28, 1997 (Accession Number 9702070060)
5. Commission Paper, SECY-97-186, "Changes to the Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors, 10 CFR 50.54(w) and 10 CFR 140.11," dated August 13, 1997
6. SECY-00-145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," dated June 28, 2000.
7. Memorandum from William D. Travers (NRC) to NRC Commissioners, "Status of Regulatory Exemptions for Decommissioning Plants (WITS 200100085, WITS 199900133, WITS 199900072)," dated August 16, 2002.
8. Environmental Protection Agency Protective Action Guides and Planning Guidance for Radiological Incidents, Draft for Interim Use and Public Comment, dated March 2013
9. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Technical Specifications Proposed Change No. 306, Eliminate Certain ESF Requirements during Movement of Irradiated Fuel," BVY 13-097, dated November 14, 2013 (ML13323A518)
10. NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," dated February 2001
11. USNRC, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor" (Draft Report for Comment) June 2013 (ML13133A132)
12. Letter, USNRC to Portland General Electric Company, "Exemption from Certain Requirement of 10 CFR 50.54(w) for the Trojan Nuclear Plant (TAC NO. M86979)," dated November 17, 1993
13. Letter, USNRC to Connecticut Yankee Atomic Power Company, "Exemption from Financial Protection Requirement Limits of 10 CFR 50.54(w) and 10 CFR 140.11 (TAC No. M99775)," dated November 19, 1998
14. Letter, USNRC to Maine Yankee Atomic Power Company, "Exemption from Financial Protection Requirement Limits of 10 CFR 50.54(w) and 10 CFR 140.11 (TAC Nos. MA0659 and MA0660)," dated January 7, 1999
15. Letter, USNRC to GPU Nuclear Inc, "Exemption from Insurance Coverage Limit of 10 CFR 50.54(w) (TAC No. MA5066)," dated July 21, 1999