Attachment 1

Vermont Yankee Nuclear Power Station

Response to Request for Additional Information

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING THE LICENSE AMENDMENT REQUEST TO CHANGE THE EMERGENCY PLAN AND EMERGENCY ACTION LEVEL SCHEME TO REFLECT AN ISFSI-ONLY CONFIGURATION FOR VERMONT YANKEE NUCLEAR POWER STATION

Request for Additional Information:

RAI-VY-1 Section 1.0, "Introduction," of the NRC-approved PDEP states, in part:

> The analysis of the potential radiological impact of design basis accidents in a permanently defueled condition indicates that any releases beyond the Site Boundary are below the Environmental Protection Agency (EPA) Protective Action Guide (PAG) exposure levels, as detailed in the EPA's "Protective Action Guide and Planning Guidance for Radiological incidents," Draft for Interim Use and Public Comment dated March 2013 (PAG Manual). Exposure levels, which warrant pre-planned response measures, are limited to onsite areas. For this reason, radiological emergency planning is focused onsite.

Section 1.0, "Introduction," of the proposed VY ISFSI Emergency Plan states, in part:

> As provided in the Holtec FSAR *[Final Safety Analysis Report}*, the analyses of the potential radiological impacts of postulated off-normal, natural phenomena, and accident events involving the ISFSI indicate that any releases would result in a dose to the public below the radiation limits established in 10 CFR 72.106(b). Exposure levels,' which warrant pre-planned response measures are limited to the ISFSI and immediate vicinity, and for this reason, radiological emergency planning is focused on this area.

Provide technical basis for removal of reference to EPA PAGs in the ISFSI EP with respect to design basis accidents. Also consider updating the reference to the recently updated EPA PAG Manual (EPA-400/R-17/001, January 2017).

Response:

Section 2.0 of the LAR states: "*There continues to be no need for offsite emergency response plans at VY because no postulated design basis accident (DBA) or reasonably conceivable beyond design basis event can result in a radiological release that exceeds Environmental Protection Agency (EPA) Protective Action Guides (PAGs) beyond the Exclusion Area Boundary (EAB or "Site Boundary"), as described in EPA's "Protective Action Guides and Planning Guidance for Radiological Incidents, dated January 2017 (EPA PAG Manual) (Reference 5).*"

In response to the above request, the third paragraph of Section 1.0 of the VY Independent Spent Fuel Storage Installation (ISFSI) Emergency Plan (IEP) will be revised to refer to the EPA PAGs, with respect to DBAs. Attachment 2 of this response provides the revised IEP pages with the proposed changes shown in strikethrough and underline format.

RAI-VY-2 Section 11.1, "Emergency Notification," of the NRC-approved PDEP states, in part:

> The format and contents of the initial message between the plant and State/Commonwealth authorities are specified in notification procedures and have been established with the review and agreement of responsible state authorities.
>
> The Department of Public Health of Vermont, New Hampshire and Massachusetts may request the following information from VY:
>
> 1. Date and time of the incident;
> 2. Emergency classification;
> 3. Status of the facility;
> 4. Whether a release has occurred, is occurring, or is anticipated to occur;
> 5. Actual or projected dose rates at the Site boundary;

Section 9.2, "Emergency Messages," of the proposed VY ISFSI Emergency Plan states, in part:

> The format and content of the initial message between VY and Vermont, New Hampshire, and Massachusetts are specified in EPIPs and have been established with the review and agreement of responsible state authorities. The initial notification contains the following information, as available:
>
> • Identification of the facility
> • Identification of the message sender
> • Date and Time of the emergency declaration
> • Emergency classification, including EAL

Provide basis for not including any information related to a potential radiological release (per PDEP items 4 and 5, above) as part of the initial notification, or reinsert into proposed VY ISFSI Emergency Plan.

Response:

Based upon the above question, section 9.2 of the VY IEP will be updated (per PDEP items 4 and 5, above) to describe the content of messages, including a description of radiological conditions. Attachment 2 of this response provides the revised IEP pages with the proposed changes shown in strikethrough and underline format.

RAI-VY-3 Section 7.4, "Mobile UHF Radio System," of the NRC-approved PDEP states, in part:

> Security also has the capability to contact the primary local law enforcement agency patrol vehicle(s), as defined in the VY Physical Security Plan, that are located in close proximity to the plant via radio.

Table 10-1, "Communications Systems" of the proposed VY ISFSI Emergency Plan identifies portable radios as a communication system in use.

Clarify whether these portable radios have this same capability to contact the primary local law enforcement agency patrol vehicle(s), as defined in the VY Physical Security Plan.

Response:
The portable radios identified in Table 10-1 will have the same capability to contact the primary local law enforcement agency patrol vehicles that may be in close proximity to VY, as defined in the VY Physical Security Plan.

RAI-VY-4 NUREG-0654, Section II, Evaluation Criterion N.2.b states, "Fire drills shall be conducted in accordance with the plant (nuclear facility) technical specifications."

Section 12.1.4, "Fire Drills," of the NRC-approved PDEP states, in part:

> To test and evaluate the response and training of the plant's fire brigade, fire drills are conducted in accordance with the Vermont Yankee Fire Protection Program.

However, a provision for fire drills is not included in Section 18.0, "Exercises and Drills," of the proposed VY ISFSI Emergency Plan.

Clarify whether the Vermont Yankee Fire Protection Program will continue to include fire drills on some routine frequency and, as applicable, provide basis for removal or reinsert into the proposed VY ISFSI Emergency Plan.

Response:
VY will continue to conduct fire drills in accordance with the VY Fire Protection Program. Section 18.2 of the VY IEP is revised to clarify performance of fire drills as shown in the new section 18.2.5. Attachment 2 of this response provides the revised IEP pages with the proposed changes shown in strikethrough and underline format.

RAI-VY-5 NUREG-0654, Section II, Evaluation Criterion N.1.a states, "The *[exercise]* scenario should be varied from year to year such that all major elements of the plans and preparedness organizations are tested.

Section 18.0, "Exercises and Drills," of the proposed VY ISFSI Emergency Plan does not provide a statement indicating whether scenarios will vary from year to year and what elements of the plan are tested.

Provide justification for removal of this statement from the proposed VY ISFSI Emergency Plan, or reinsert as appropriate.

Response:
Section 18.1 of the VY IEP will be revised to clarify that VY will continue to vary exercise scenarios, to the extent practicable, such that all major elements of the plans and preparedness organizations are tested. Attachment 2 of this response provides the revised IEP pages with the proposed changes shown in strikethrough and underline format.

RAI-VY-6 NUREG-0654, Section II, Evaluation Criterion P.3 states, "Each licensee shall designate an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations."

However, Section 20.1.2, "Emergency Preparedness Responsibilities," of the proposed VY ISFSI Emergency Plan states, in part:

> A VY ISFSI position is designated the responsibility for maintaining an adequate knowledge of emergency preparedness regulations, emergency planning techniques, and the latest applications of emergency equipment and supplies.

Clarify, by title, which VY ISFSI position is in charge of maintaining the emergency plan and reviews, and coordination of these plans with other response organizations.

Response:
Section 20.1 of the VY IEP will be revised to clarify that the VY ISFSI senior management position is responsible for maintaining an adequate knowledge of emergency planning regulations, emergency planning techniques, and the latest applications of emergency equipment and supplies. Attachment 2 of this response provides the revised IEP pages with the proposed changes shown in strikethrough and underline format.

RAI-VY-7 EAL E~HU1.1, "Damage to a loaded cask CONFINEMENT BOUNDARY," of the VY proposed ISFSI Emergency Plan states:

> Two times the ISFSI Technical Specification allowable levels equate to:
>
> - 14.80 mR/hr on the top of the overpack
>
> or
>
> - 16.62 mR/hr on the side of the overpack, excluding inlet and outlet ducts

This is not consistent with the NRC-approved Permanently Defueled EAL Scheme.

a. Provide the basis for the change to these values; and
b. Verify whether these values (as stated in one hundredths of a unit) can be accurately read by VY radiation Instruments. If required, revise values appropriate to ensure they can be accurately read on radiation instruments.

Response:
a. Based upon the request above, and consistent with the guidance provided in NEI 99-01, Rev. 6, VY will utilize an on-contact radiation reading greater than 2 times the site-specific cask specific technical specification allowable radiation levels as the threshold for declaring Emergency Action Level (EAL) E-HU1.1. Because the VY ISFSI contains casks loaded under Amendments 2 and 10 of the Holtec International HI-STORM 100 Cask System Certificate of Compliance (CoC) No. 72-1014, the proposed EAL will utilize the allowable levels of Amendment 2 as these are comparable to Amendment 10 and would be the first to

be reached in the case of a confinement boundary failure issue. Two times the Technical Specification allowable values (Technical Specification 5.7.4) equate to:

- 40 mR/hr (gamma + neutron) on the top of the overpack
- 220 mR/hr (gamma + neutron) on the side of the overpack, excluding inlet and outlet ducts

Attachment 3 of this response provides the revised pages of the EAL Technical Bases Document and Attachment 4 provides the revised page from the Comparison Matrix of NEI 99-01 to the proposed VY Emergency Classification System and the ISFSI EALs with the proposed changes shown in strikethrough and underline format. It is noted that, under the provisions of 10 CFR 72.2112, applying the changes authorized by an amended CoC to a cask loaded under an earlier amended CoC may result in a corresponding change to the applicable site-specific cask specific technical specification allowable radiation levels, which would be subject to the change process at 10 CFR 50.54(q)(3).

b. VY instrumentation have the capability to read the EAL values described in Part a of this response.

Attachment 2

Vermont Yankee Nuclear Power Station

Revised pages of ISFSI Emergency Plan

1.0 INTRODUCTION

Vermont Yankee Nuclear Power Station (VY) permanently ceased power operations on December 29, 2014. On January 12, 2015, by letter BVY 15-001, Entergy Nuclear Operations, Inc. provided certification to the U.S. Nuclear Regulatory Commission (NRC) required by 10 CFR 50.82(a)(1)(i) and (ii) that VY had permanently ceased power operations and that all fuel had been permanently removed from the reactor vessel. Subsequently, all spent fuel has been transferred to the on-site Independent Spent Fuel Storage installation (ISFSI) facility.

The VY ISFSI Emergency Plan (IEP) describes the plan for responding to emergencies that may arise at the ISFSI. In this condition, no reactor operations can take place and all irradiated fuel has been removed from the Spent Fuel Pool. This IEP adequately addresses the risks associated with VY's current conditions.

The Holtec International (Holtec) Final Safety Analysis Report (FSAR) for the HI-STORM 100 Cask System describes the Design Basis Accidents (DBAs) applicable to the VY ISFSI along with the radiological dose calculation results. As provided in the Holtec FSAR, the analyses of the potential radiological impacts of postulated off-normal, natural phenomena, and accident events involving the ISFSI indicate that any releases would result in a dose to the public below the radiation limits established in 10 CFR 72.106(b). The analyses of the potential radiological impact of DBAs indicate that that any releases beyond the Site Boundary are below the Environmental Protection Agency (EPA) Protective Action Guide (PAG) exposure levels, as detailed in EPA's "Protective Action Guide and Planning Guidance for Radiological Incidents," dated January 2017. Exposure levels, which warrant pre-planned response measures are limited to the ISFSI and immediate vicinity, and for this reason, radiological emergency planning is focused on this area. The VY 10 CFR 72.212 Report for the HI-STORM 100 System discusses compliance with Amendments 2 and 10 of the Holtec HI-STORM 100 System Certificate of Compliance (CoC) terms, conditions, and specifications

1.1. Purpose

The purpose of the IEP is to ensure an adequate level of preparedness to cope with the spectrum of emergencies that could be postulated to occur. This plan integrates the necessary elements to provide effective emergency response considering cooperation and coordination of organizations expected to respond to potential emergencies.

1.2. Scope

The IEP has been developed to respond to potential radiological emergencies at the VY ISFSI. Because there are no postulated off-normal, natural phenomena or accident events that would result in dose consequences that are large enough to require offsite emergency planning, the overall scope of the IEP details the actions necessary to safeguard onsite personnel. The concepts presented in the IEP address the applicable regulations stipulated

9.0 NOTIFICATION METHODS AND PROCEDURES

Procedures are established for the prompt notification to Vermont, New Hampshire, Massachusetts, and local organizations and for notification of VY emergency personnel in the event of an emergency declaration. VY has established the means for notification and dissemination of emergency messages. The content of initial and follow-up messages to response organizations has been established.

9.1. Basis for Notification

The notification of personnel and emergency response organizations is commensurate with the hazard posed by the emergency. The emergency classification system described in Section 8.0 is the primary bases for notification and has been mutually agreed upon by applicable State and Federal organizations.

9.2. Emergency Messages

The Emergency Director is responsible for the notification of an emergency declaration to Vermont, New Hampshire, Massachusetts, and the NRC within 60 minutes of the event classification or change in classification.

The format and content of the initial and follow-up messages between VY and Vermont, New Hampshire, and Massachusetts are specified in EPIPs and have been established with the review and agreement of responsible state authorities. The ~~initial notifications~~ messages contains the following information, as available:

- Identification of the facility
- Identification of the message sender
- Date and Time of the emergency declaration
- Emergency classification, including EAL
- Whether a release has occurred, is occurring, or is anticipated to occur;
- Actual or projected dose rates at the Site boundary

Follow-up ~~reports~~ messages are provided as additional information describing the emergency situation becomes available, or as requested by Vermont, New Hampshire, or Massachusetts, until such time that the emergency condition has been terminated. ~~The follow-up messages will contain the following information, as available:~~

- ~~Identification of the facility~~
- ~~Identification of the message sender~~
- ~~Date and Time of the emergency declaration~~
- ~~Emergency classification, including EAL~~
- ~~Radiological conditions, including an assessment of any radioactive release~~
- ~~Emergency response actions underway~~
- ~~Request for any needed support from offsite agencies~~

- ~~Prognosis for worsening or termination of the event based on available information~~

9.3. Means of Providing Emergency Notification

Various communications systems, as described in Section 10.0 are available to perform emergency notifications. The Emergency Director is the primary individual for initiating notifications. However, the Emergency Director may designate an individual to perform the notifications. EPIPs and emergency telephone directories identify organizations and individuals to be notified and contain appropriate listings of telephone numbers.

The following sections describe the means of notifying, alerting, and mobilizing the various organizations or individuals.

9.3.1. Vermont, New Hampshire, and Massachusetts

Notification of an emergency declaration, and specific emergency information, is conveyed to Vermont, New Hampshire, and Massachusetts using the commercial telephone system. This system is available in the ERF on a 24-hour per day basis and is staffed continuously in the State Police dispatching points.

Other commercial means, including the use of wireless communications, will serve as a backup to the commercial telephone system.

9.3.2. NRC Emergency Notification System

The NRC utilizes the Federal Telecommunications System (FTS) telephone network. The FTS system provides a dedicated telephone. The Emergency Notification System (ENS) utilizes an FTS line which exists between the NRC Operations Office in Rockville, Maryland and the VY ISFSI. Emergency notification, plant status information, and radiological information are communicated via the ENS.

The NRC will be notified as soon as possible after State notifications and within 60 minutes of event declaration or change in classification.

The commercial telephone system serves as a backup to the ENS.

9.3.3. ERO Notification

The Resource Manager is notified of an emergency declaration by an onsite announcement and the commercial telephone system, or other commercial means which may include land line and/or wireless devices. The Emergency Director is responsible for the notification to the Resource Manager. As described in Section 5.1 of this Plan, the on-shift staff positions are staffed on a 24-hour per day basis and can perform all required IEP actions.

18.0 EXERCISES AND DRILLS

Periodic exercises are conducted to evaluate major portions of VY's emergency response capabilities. Periodic drills are conducted to develop and maintain key skills. Deficiencies as a result of exercises or drills are identified and corrected.

An exercise tests the execution of the overall emergency preparedness and the integration of this preparedness. A drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular response function. A summary of exercises and drills, including the associated elements for each, is outlined below.

18.1. Emergency Plan Exercises and Drills

A Biennial Exercise is conducted for the purposes of testing: 1) the adequacy of timing and content of implementing procedures and methods; 2) emergency equipment and communication networks, and; 3) to ensure that emergency personnel are familiar with their duties. VY offers the following organizations the opportunity to participate to the extent that their assistance would be expected during an emergency declaration. However, participation is not required.

- Vermont, New Hampshire, and Massachusetts
- Vernon Fire Department
- Brattleboro Fire Department
- Rescue, Inc.
- Brattleboro Memorial Hospital
- LLEAs

At least one drill involving a combination of some of the principal functional areas of emergency response shall be conducted in the interval between Biennial Exercises for the purpose of testing, developing, and maintaining the proficiency of emergency responders.

Exercise and Drill scenarios will include, at a minimum, the following:

- The basic objective(s) of the exercise/drill
- The date(s), time period, place(s), and participating organizations
- A time schedule of real and simulated events
- A narrative summary describing the conduct of the drill to include such items as simulated casualties, offsite fire assistance, rescue of personnel, and use of protective clothing

The scenarios will be varied from year to year such that all major elements of the plans and preparedness organizations are tested.

18.2.5. Fire Drills

Fire drills are conducted in accordance with the VY Fire Protection Program.

18.3. Critique and Evaluation

Critiques are used to evaluate the performance of participating facility personnel and the adequacy of the ERF, equipment, and procedures. The ability of emergency response personnel to self-evaluate weaknesses and identify areas for improvement is key to successful exercise or drill conduct.

Exercise and drill performance objectives are evaluated against measurable demonstration criteria. As soon as possible following the conclusion of each exercise or drill, a critique, including participants and evaluators, is conducted to evaluate the ability of the ERO to implement the IEP and associated procedures. Deficiencies identified during exercises or drills are entered into the corrective actions program.

A written report is prepared following an exercise or drill involving the evaluation of designated objectives. The report evaluates and documents the ability of the ERO to respond to a simulated emergency situation. The report will also contain reference to corrective actions and recommendations for revisions to the IEP, EPIPs and/or the upgrade of emergency equipment and supplies resulting from the exercise or drill.

20.0 RESPONSIBILITY FOR THE PLANNING EFFORT: DEVELOPMENT, PERIODIC REVIEW, AND DISTRIBUTION

Responsibilities for IEP development and review and for distribution of the IEP are established and planners are properly trained.

20.1. Emergency Preparedness Responsibilities

20.1.1. Overall Authority and Responsibility

The VY ISFSI ~~A member of VY's~~ senior management position has the overall authority and responsibility for emergency response planning and implementation of the IEP. This responsibility includes ensuring that the emergency preparedness program is maintained and implemented as described in the IEP, and that applicable requirements and regulations are met.

20.1.2. Maintaining the IEP

The ~~A~~ VY ISFSI senior management position is ~~designated the responsibility~~ responsible for maintaining an adequate knowledge of emergency preparedness regulations, emergency planning techniques, and the latest applications of emergency equipment and supplies. The position is responsible for the following tasks:

- Maintaining and updating this Plan and associated procedures
- Ensuring exercise and drill commitments stated in this Plan are met
- Ensuring material readiness of the ERF
- Overseeing the Emergency Preparedness Training Program
- Maintaining Emergency Preparedness interfaces with OROs
- Performing and documenting appropriate evaluations of the Emergency Preparedness program and classified emergency events

Individuals assigned the duties of maintaining the IEP are required to maintain an adequate knowledge of regulations, planning techniques, and the latest applications of emergency equipment and supplies. Training for these individuals includes 10 CFR 50.54(q) Evaluation Qualification.

20.1.3. Audits

Independent audits of the emergency preparedness program meeting the requirements of 10 CFR 50.54(t) will be performed. All aspects of emergency preparedness, including exercise documentation, capabilities, procedures, and interfaces with state and local governments are audited.

20.2. Review and Updating of the IEP

The IEP, the associated EPIPs, and the ISFSI EAL Technical Bases Documents are reviewed at least annually, and updated as needed, in accordance with the requirements of

Attachment 3

Vermont Yankee Nuclear Power Station

Revised pages of ISFSI EAL Technical Basis

Independent Spent Fuel Storage Installation

E-HU1

ECL: Unusual Event

Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY.

Emergency Action Levels: **E-HU1.1**

E-HU1.1

Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than two times the ISFSI Technical Specification allowable levels.

Two times the ISFSI Technical Specification allowable levels equate to:

- ~~14.80~~ 40 mR/hr on the top of the overpack

  or

- ~~16.62~~ 220 mR/hr on the side of the overpack, excluding inlet and outlet ducts

Basis:

This IC addresses an event that results in damage to the CONFINEMENT BOUNDARY of a storage cask containing spent fuel. It applies to irradiated fuel that is licensed for dry storage beginning at the point that the loaded storage cask is sealed. The issues of concern are the creation of a potential or actual release path to the environment, degradation of one or more fuel assemblies due to environmental factors, and configuration changes which could cause challenges in removing the cask or fuel from storage.

The existence of "damage" is determined by radiological survey. The Technical Specification multiple of two times is used here to distinguish between non-emergency and emergency conditions. The emphasis for this classification is the degradation in the level of safety of the spent fuel cask and not the magnitude of the associated dose or dose rate. It is recognized that in the case of extreme damage to a loaded cask, the fact that the dose rate limit is exceeded may be determined based on measurement of a dose rate at some distance from the cask.

Because the VY ISFSI contains casks loaded under Amendments 2 and 10 of the Holtec International HI-STORM 100 Cask System Certificate of Compliance (CoC) No. 72-1014, this EAL utilizes the allowable levels of Amendment 2 as these are comparable to Amendment 10 and would be the first to be reached in the case of a confinement boundary failure issue. It is noted that, under the provisions of 10 CFR 72.212, applying the changes authorized by an amended CoC to a cask loaded under an earlier amended CoC may result in a corresponding change to the applicable site-specific cask specific technical

specification allowable radiation levels, which would be subject to the change process at 10 CFR 50.54(q)(3)

Security-related events for ISFSIs are covered under IC PD-HU1 and PD-HA1.

EMERGENCY CLASSIFICATION TABLE

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

CATEGORY	UNUSUAL EVENT (HU1)	ALERT (HA1)
ISFSI Malfunction **(E)**	Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY. E-HU1.1 Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than two times the ISFSI Technical Specification allowable levels. Two times the ISFSI Technical Specification allowable levels equate to: • ~~14.80~~ 40 mR/hr on the top of the overpack or • ~~16.62~~ 220 mR/hr on the side of the overpack, excluding inlet and outlet ducts	**Not Applicable**