200 Exelon Way
Kennett Square, PA 19348
www.ConstellationEnergy.com

10 CFR 50.4
10 CFR 50.54(q)(5)
10 CFR 72.44(f)

TMI-23-002

February 23, 2023

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

Three Mile Island Nuclear Station, Unit 1
Renewed Facility License No. DPR-50
NRC Docket No. 50-289 and 72-077

Three Mile Island Nuclear Station, Unit 2
Facility Possession-Only License No. DPR-73
NRC Docket No. 50-320

Subject: Constellation Radiological Emergency Plan Document Revision

In accordance with 10 CFR 50.4(b)(5), *"Emergency Plan and related submissions,"* Constellation Energy Generation, LLC (CEG) is submitting the Emergency Plan document revision listed in the table below for the Three Mile Island Nuclear Station (TMI).

| Document | Revision | Title |
|---|---|---|
| EP-TM-1002, Addendum 1 | 1 | *Constellation Three Mile Island Nuclear Station Independent Spent Fuel Storage Installation Only Emergency Action Levels and Technical Bases* |

The changes to the Emergency Plan document noted in the table above were evaluated under the requirements of 10 CFR 50.54(q) and were determined not to result in a reduction in the effectiveness of the Emergency Plan for TMI. This notification is being submitted within 30 days of implementation of the changes as required by 10 CFR 50.54(q)(5). The changes continue to meet the applicable emergency Planning Standards established in 10 CFR 50.47(b), 10 CFR 50, Appendix E, and the Program Element guidance in NUREG-0654.

In addition, as required by 10 CFR 50.54(q)(5), Attachment 1 of this submittal includes a summary analysis of the changes to the noted Emergency Plan document. This submittal also satisfies the reporting requirements associated with 10 CFR 72.44(f), which stipulates that within six months after any change is made to the Emergency Plan, the licensee shall submit a report containing a description of the changes to the Director, Division of Fuel Management, Office of Nuclear Material Safety and Safeguards.

A copy of the applicable Emergency Plan document and supporting change summary analysis are included in the attachments to this letter.

There are no regulatory commitments in this submittal.

If you have any questions or require additional information, please contact Richard Gropp at Richard.Gropp@constellation.com.

Respectfully,

David P. Helker
Sr. Manager, Licensing
Constellation Energy Generation, LLC

Attachments: 1) 10 CFR 50.54(q)(5) Procedure Change Summary Analysis
2) EP-TM-1002, Addendum 1, Revision 1, "Constellation *Three Mile Island Nuclear Station Independent Spent Fuel Storage Installation Only Emergency Action Levels and Technical Bases*"

cc: w/ Attachment 1 only
Regional Administrator - NRC Region I
Director, NRC Division of Spent Fuel Management, ONMSS
NRC Project Manager, NMSS -Three Mile Island Nuclear Station
Dwight A. Shearer, Director PA DEP, Bureau of Radiation Protection
W. DeHaas, PA DEP, Bureau of Radiation Protection

# Attachment 1

## 10 CFR 50.54(q)(5) Procedure Change Summary Analysis

# Attachment 1

## 10 CFR 50.54(q)(5) Procedure Change Summary Analysis

### I. Procedure/Title

Constellation Energy Generation, LLC (CEG) has issued the Emergency Plan document revision for the Three Mile Island Nuclear Station (TMI) as noted below.

- EP-TM-1002, Addendum 1, Revision 1, *"Constellation Three Mile Island Nuclear Station Independent Spent Fuel Storage Installation Only Emergency Action Levels and Technical Bases"*

### II. Description of Procedure

EP-TM-1002, Addendum 1

This document supports the implementation of the Independent Spent Fuel Storage Installation (ISFSI) only Emergency Plan (IOEP) for the TMI facility. The IOEP encompasses both TMI-1 and TMI-2 and establishes emergency planning requirements after all spent fuel has been transferred from the TMI-1 SFPs to dry cask storage at the ISFSI. CEG maintains the emergency planning responsibilities for TMI-2, which is owned by TMI-2 Solutions (subsidiary of Energy Solutions), through a service agreement.

This document provides the detailed set of Emergency Action Levels (EALs) applicable to the TMI facility and the associated Technical Bases using the EAL development methodology found in NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6. As a permanently defueled facility, TMI will use the Recognition Category "PD" (Permanently Defueled) to provide a site-specific emergency classification scheme including a set of Initiating Conditions (ICs) and EALs associated with the permanently defueled condition and a Recognition Category "E" IC/EAL for the ISFSI. Permanently defueled station ICs and EALs are addressed in Appendix C of NEI 99-01, Revision 6. All recommendations for changes to this document or associated implementing procedures are reviewed in accordance with 10 CFR 50.54(q).

### III. Description of Changes

EP-TM-1002, Addendum 1

As noted above, this document implements a detailed set of EALs applicable to the TMI facility.

NEI 99-01 Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," Appendix C, "Permanently Defueled Station ICs/EALs," provides the following guidance for the development of Emergency Action Level (EAL) E-HU1, "Independent Spent Fuel Storage Installation (ISFSI) Damage to a loaded cask CONFINEMENT BOUNDARY":

***ECL:*** *Notification of Unusual Event*

***Initiating Condition:*** *Damage to a loaded cask CONFINEMENT BOUNDARY.*

***Operating Mode Applicability:*** *All*

***Example Emergency Action Levels:***

*(1) Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than (2 times the site-specific cask specific technical specification allowable radiation level) on the surface of the spent fuel cask.*

***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 “2 times”, which is also used in Recognition Category A IC AU1, 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 “on-contact” dose rate limit is exceeded may be determined based on measurement of a dose rate at some distance from the cask.*

*Security-related events for ISFSIs are covered under ICs HU1 and HA1.*

***Developer Notes:***

*The results of the ISFSI Safety Analysis Report (SAR) [per NUREG 1536], or a SAR referenced in the cask Certificate of Compliance and the related NRC Safety Evaluation Report, identify the natural phenomena events and accident conditions that could potentially affect the CONFINEMENT BOUNDARY. This EAL addresses damage that could result from the range of identified natural or man-made events (e.g., a dropped or tipped over cask, EXPLOSION, FIRE, EARTHQUAKE, etc.). The allowable radiation level for a spent fuel cask can be found in the cask’s technical specification located in the Certificate of Compliance.*

*ECL Assignment Attributes: 3.1.1.B*

TMI-1 has installed the MAGNASTOR® Canister System. The governing Technical Specifications are in Certificate of Compliance (CoC) No. 1031 Amendment No. 9, Appendix A, ″Technical Specifications and Design Features for the MAGNASTOR® System. ″ The current EAL threshold was submitted to the NRC in License Amendment Request (LAR) dated March 4, 2021, and subsequently approved by the U.S. Nuclear Regulatory Commission (NRC) in a letter and supporting Safety Evaluation Report (SER) dated April 7, 2022. The current EAL threshold was written and approved generically as ″Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading > 2-times the ISFSI Technical Specification allowable levels.″ Subsequently, the CEG Nuclear Oversight (NOS) group identified an apparent inconsistency in keeping with the remainder of the CEG fleet where the actual 2-times the Technical Specification allowable values are provided within the threshold itself. This apparent inconsistency was documented in a Corrective Action Program (CAP) issue report related to providing EAL dose values for TMI EAL E-HU1.

The information below provides the allowable peak dose rates for a MAGNASTOR® Canister System governed by Certificate of Compliance (CoC) No. 1031 Amendment No. 9 Appendix A.

MAGNASTOR SYSTEM Radiation Protection Section 3.3.1, “Concrete Cask Maximum Surface Dose Rate,” specifies that the maximum surface dose rates for the Concrete Cask, shall not exceed:

- 120 mrem/hour gamma and 5 mrem/hour neutron on the vertical concrete surfaces.
- 450 mrem/hour (neutron + gamma) on the top.

As approved by the NRC, the NEI 99-01, Revision 6, guidance specifies using 2-times the allowable radiation level as the EAL threshold basis. TMI-1 EAL E-HU1 was revised to include threshold values for the use of the MAGNASTOR® Canister System governed by Certificate of Compliance (CoC) No. 1031 Amendment No. 9, Appendix A, as follows:

- 240 mrem/hour gamma on the vertical concrete surfaces.
- 10 mrem/hour neutron on the vertical concrete surfaces.
- 900 mrem/hour (neutron + gamma) on the top.

## IV. Description of How the Changes Still Comply with Regulations

EP-TM-1002, Addendum 1

The changes were evaluated in accordance with the requirements of 10 CFR 50.54(q) and were determined not to require prior NRC approval. The changes to EAL E-HU1 reflect the use of MAGNASTOR® Canister System governed by Certificate of Compliance (CoC) No. 1031, Amendment No. 9, Appendix A, at the TMI facility ISFSI. CoC No. 1031, Amendment No. 9, Appendix A, “Technical Specifications and Design Features for the MAGNASTOR® System documents the allowable peak dose rates for the MAGNASTOR® Canister System.”

NEI 99-01, Revision 6, provides the guidance for the development of the EAL E-HU1 threshold as 2-times the allowable peak dose rates. This provides threshold values of:

- 240 mrem/hour gamma on the vertical concrete surfaces
- 10 mrem/hour neutron on the vertical concrete surfaces
- 900 mrem/hour (neutron + gamma) on the top

Updating the EAL threshold values based on an approved Certificate of Compliance does not alter the meaning or intent of the basis of the approved EAL. No existing Emergency Preparedness (EP) requirements have been deleted or minimized under this revision. The applicable regulations and commitments to the NRC continue to be met.
NRC Regulatory Guide (RG) 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," provides the following guidance related to adding the threshold values for the approved ISFSI cask:

*f. The following examples would <u>generally not require</u> prior NRC approval:*

*(1) A change to an EAL numeric threshold to reflect an approved change in a technical specification, provided that the basis of the approved EAL is unchanged (e.g., an EAL basis refers to a particular technical specification but not a limiting condition for operation value) …*

## V. <u>Description of Why the Changes are Not a Reduction in Effectiveness (RIE)</u>

<u>EP-TM-1002, Addendum 1</u>

Based on the changes described in Sections III and IV above for the IOEP for TMI, emergency response capabilities are maintained and are not adversely impacted by the changes. The implementation of this revision to EP-TM-1002 does not alter the meaning or intent of the basis of the NRC-approved IOEP for TMI. The changes described are consistent with the guidance specified in RG 1.219 and, therefore, prior NRC approval is not required. Existing requirements and capabilities for the TMI IOEP have not been deleted or reduced as a result of the changes described. A review of existing regulatory commitments was made to ensure any applicable existing commitments continue to be met. The changes described for the TMI IOEP meet applicable regulatory requirements established in 10 CFR 50.47, 10 CFR 50, Appendix E, and the Program Element guidance of NUREG-0654 for a permanently defueled facility where the spent fuel has been removed from the TMI-1 SFPs and transferred to dry cask storage within the onsite TMI-1 ISFSI. Therefore, the changes described do not constitute a reduction in effectiveness in support of implementing the IOEP for TMI.

**Attachment 2**

Emergency Plan Document Revision

**EP-TM-1002, Addendum 1, Revision 1, *"Constellation Three Mile Island Nuclear Station Independent Spent Fuel Storage Installation Only Emergency Action Levels and Technical Bases"***

Constellation

# THREE MILE ISLAND NUCLEAR STATION
# INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) ONLY
# EMERGENCY ACTION LEVELS
# AND TECHNICAL BASES

## REVISION HISTORY

| | | |
|---|---|---|
| Rev. 0, August 2022 | | |
| Rev. 1, February 2023 | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

## TABLE OF CONTENTS

## 1.0 PURPOSE

This document provides the detailed set of EMERGENCY ACTION LEVELS (EALs) applicable to the Three Mile Island Nuclear Station (TMI) and the associated Technical Bases using the EAL development methodology found in NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6 (NEI 99-01, Rev. 6). As a permanently defueled facility, TMI will use the Recognition Category "PD" (Permanently Defueled) to provide a site-specific emergency classification scheme including a set of Initiating Conditions (ICs) and EALs associated with the permanently defueled condition and a Recognition Category "E" IC/EAL for the INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI). Permanently defueled station ICs and EALs are addressed in Appendix C of NEI 99-01, Rev. 6. All recommendations for changes to this document or associated implementing procedures are reviewed in accordance with 10 CFR 50.54(q).

This document should be used to facilitate review of the TMI EALs, provide historical documentation for future reference, and serve as a resource for training. Individuals responsible for the classification of events will refer to the ICs and EALs contained in the matrix of this document. They may use the information in the associated "Basis" and "Notes" sections as a reference in support of EAL interpretation. An EAL matrix may be provided as a user aid.

Emergency classifications are to be made as soon as conditions are present and recognizable for the classification in accordance with the applicable EALs; but within 30 minutes in all cases after the availability of indications to operators that an EAL threshold has been reached. Use of this document for assistance is not intended to delay the emergency classification.

## 2.0 DISCUSSION

### 2.1 Permanently Defueled Facility

NEI 99-01, Appendix C, Rev. 6, provides guidance for an emergency classification scheme applicable to a permanently defueled facility. This is a facility that generated spent fuel under a 10 CFR Part 50 license, has permanently ceased operations, has removed all irradiated fuel from the Spent Fuel Pool (SFP), and will store the spent fuel onsite for an extended period of time in an ISFSI. The EMERGENCY CLASSIFICATION LEVELS applicable to permanently defueled facility are consistent with the requirements of 10 CFR Part 50 and NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Rev. 1" (NUREG-0654).

In order to relax the emergency plan requirements applicable to an operating station, the owner of a permanently defueled station must demonstrate that no credible event can result in a significant radiological release beyond the site boundary. Exelon has confirmed that the source term and motive force available in the permanently defueled condition are insufficient to warrant classifications of a Site Area Emergency or General Emergency.

Therefore, the generic ICs and EALs applicable to a permanently defueled facility may only result in either a Notification of UNUSUAL EVENT (UNUSUAL EVENT) or ALERT classification.

## 2.2 Independent Spent Fuel Storage Installation

Selected guidance in NEI 99-01, Rev. 6, is applicable to licensees electing to use their 10 CFR Part 50 emergency plan to fulfill the requirements of 10 CFR 72.32 for a stand-alone INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI). The EMERGENCY CLASSIFICATION LEVELS applicable to an ISFSI are consistent with the requirements of 10 CFR Part 50. The initiating conditions germane to a 10 CFR 72.32 emergency plan (as described in NUREG-1567, "Spent Fuel Dry Storage Facilities") are subsumed within the classification scheme for a 10 CFR 50.47 emergency plan.

The analysis of potential onsite and offsite consequences of accidental releases associated with the operation of an ISFSI is contained in NUREG-1140, "A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees" (NUREG-1140). NUREG-1140 concluded that the postulated worst-case accident involving an ISFSI has insignificant consequences to public health and safety. This evaluation shows that the maximum offsite dose to a member of the public due to an accidental release of radioactive materials would not exceed 1 Rem Total Effective Dose Equivalent (TEDE).

Regarding the above information, the expectations for an offsite response to an ALERT classified under a 10 CFR 72.32 emergency plan are generally consistent with those for an UNUSUAL EVENT in a 10 CFR 50.47 emergency plan (e.g., to provide assistance if requested). Also, the licensee's Emergency Response Organization (ERO) required for 10 CFR 72.32 emergency plan is different from that prescribed for a 10 CFR 50.47 emergency plan (e.g., there is no emergency technical support function required).

# 3.0 KEY TERMINOLOGY USED

There are several key terms that appear throughout the NEI 99-01, Rev. 6, methodology. These terms are introduced in this section to support understanding of subsequent material.

## 3.1 Emergency Classification Levels (ECLs)

One of a set of names or titles established by the U.S. Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The ECLs that remain applicable to TMI, in ascending order of severity, are:

### 3.1.1 UNUSUAL EVENT (UE)

**EVENTS ARE IN PROGRESS OR HAVE OCCURRED WHICH INDICATE A POTENTIAL DEGRADATION OF THE LEVEL OF SAFETY OF THE FACILITY OR INDICATE A SECURITY THREAT TO FACILITY PROTECTION HAS BEEN INITIATED. NO RELEASES OF RADIOACTIVE MATERIAL REQUIRING OFFSITE RESPONSE OR MONITORING ARE EXPECTED UNLESS FURTHER DEGRADATION OF SAFETY SYSTEMS OCCURS.**

**Purpose:** The purpose of this classification is to assure that the first step in future response has been carried out, to bring the operations staff to a state of readiness, and to provide systematic handling of UNUSUAL EVENT information and decision-making.

3.1.2 ALERT

**EVENTS ARE IN PROGRESS OR HAVE OCCURRED WHICH INVOLVE AN ACTUAL OR POTENTIAL SUBSTANTIAL DEGRADATION OF THE LEVEL OF SAFETY OF THE FACILITY OR A SECURITY EVENT THAT INVOLVES PROBABLE LIFE-THREATENING RISK TO SITE PERSONNEL OR DAMAGE TO SITE EQUIPMENT BECAUSE OF A HOSTILE ACTION. ANY RELEASES ARE EXPECTED TO BE LIMITED TO SMALL FRACTIONS OF THE ENVIRONMENTAL PROTECTION AGENCY (EPA) PROTECTIVE ACTION GUIDES (PAG) EXPOSURE LEVELS.**

**Purpose:** The purpose of this classification is to assure that emergency personnel are readily available to respond or to perform confirmatory radiation monitoring, if deemed necessary, and provide offsite authorities current information on facility status and parameters.

### 3.2 Initiating Condition (IC)

**An event or condition that aligns with the definition of one of the two ECLs by virtue of the potential or actual effects or consequences.**

**Discussion:** An IC describes an event or condition, the severity or consequences of which meets the definition of an ECL. An IC can be expressed as a continuous, measurable parameter (e.g., radiation monitor readings) or an event (e.g., a SECURITY CONDITION).

NUREG-0654 states that the ICs form the basis for establishment by a licensee of the specific facility instrumentation readings (as applicable) which, if exceeded, would initiate the emergency classification. Thus, it is the specific instrument readings that would be the EALs.

### 3.3 Emergency Action Level (EAL)

**A pre-determined, site-specific, observable threshold for an IC that, when met or exceeded, places the facility in a given ECL.**

**Discussion:** EAL statements may utilize a variety of criteria including instrument readings and status indications, observable events, results of calculations and analyses, entry into particular procedures, and the occurrence of natural phenomena.

## 4.0 GUIDANCE ON MAKING EMERGENCY CLASSIFICATIONS

### 4.1 General Considerations

When making an emergency classification, the Emergency Director (ED) must consider all information having a bearing on the proper assessment of an IC. This includes the EAL, plus Notes, and the informing Basis information.

All emergency classification assessments should be based upon valid indications, reports, or conditions. A valid indication, report, or condition is one that has been verified through appropriate means such that there is no doubt regarding the indicator's

operability, the condition's existence, or the report's accuracy. For example, validation could be accomplished through a response on related or redundant indicators or direct observation by personnel. The validation of indications should be completed in a manner that supports timely emergency declaration.

A planned work activity that results in an expected event or condition which meets or exceeds an EAL does not warrant an emergency declaration provided that 1) the activity proceeds as planned and 2) the conditions remains within the limits imposed by the license. Such activities include planned work to test, manipulate, repair, maintain, or modify a system or component. In these cases, the controls associated with the planning, preparation, and execution of the work will ensure that compliance is maintained with all aspects of the license provided that the activity proceeds and concludes as expected. Events or conditions of this type may be subject to the reporting requirements of 10 CFR 50.72.

While the EALs have been developed to address possible or anticipated events and conditions which may warrant emergency classification, a provision for classification based on the EDs experience and judgment is still necessary. The NEI 99-01, Rev. 6, scheme provides the Emergency Director with the ability to classify events and conditions based upon judgment using EALs that are consistent with the ECL definitions (refer to PD-HU3 and PD-HA3). The Emergency Director will need to determine if the effects or consequences of the event or condition reasonably meet or exceed a particular ECL definition.

### 4.2 Classification Methodology

To make an emergency classification, the user will compare an event or condition (i.e., the relevant facility indications and reports) to an EAL(s) and determine if the EAL has been met or exceeded. The evaluation of an EAL(s) must be consistent with the related Notes. If an EAL has been met or exceeded, then the IC is considered met and the associated ECL is declared in accordance with facility procedures.

### 4.3 Classification of Multiple Events and Conditions

When multiple emergency events or conditions are present, the user will identify all met or exceeded EALs. The highest applicable ECL identified during this review is declared. For example:

- If an UNUSUAL EVENT EAL and an ALERT EAL are met, an ALERT should be declared.

There is no "additive" effect from multiple EALs meeting the same ECL. For example:

- If two UNUSUAL EVENT EALs are met, an UNUSUAL EVENT should be declared.

Related guidance concerning classification of rapidly escalating events or conditions is provided in Regulatory Issue Summary (RIS) 2007-02, "Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events."

### 4.4 Classification of Imminent Conditions

Although EALs provide specific thresholds, the Emergency Director must remain alert to events or conditions that could lead to meeting or exceeding an EAL within a relatively

short period of time (i.e., a change in the ECL is IMMINENT). If, in the judgment of the Emergency Director, meeting an EAL is IMMINENT, the emergency classification should be made as if the EAL has been met.

### 4.5 Emergency Classification Level Upgrading and Termination

An ECL may be terminated when the event or condition that meets the IC and EAL no longer exists. Events will not be downgraded.

As noted above, guidance concerning classification of rapidly escalating events or conditions is provided in RIS 2007-02.

### 4.6 Classification of Short-Lived Events

Event-based ICs and EALs define a variety of specific occurrences that have potential or actual safety significance. By their nature, some of these events may be short-lived and, thus, over before the emergency classification assessment can be completed. If an event occurs that meets or exceeds an EAL, the associated ECL must be declared regardless of its continued presence at the time of declaration. Example of such events would be a SECURITY CONDITION.

### 4.7 Classification of Transient Conditions

It is important to stress that the emergency classification assessment period is not a "grace period" during which a classification may be delayed to allow the performance of a corrective action that would obviate the need to classify the event; emergency classification assessments must be deliberate and timely, with no undue delays.

### 4.8 After-the-Fact Discovery of an Emergency Event or Condition

In some cases, an EAL may be met but the emergency classification was not made at the time of the event or condition. This situation can occur when personnel discover that an event or condition existed which met an EAL, but no emergency was declared, and the event or condition no longer exists at the time of discovery. This may be due to the event or condition not being recognized at the time or an error that was made in the emergency classification process.

In these cases, no emergency declaration is warranted; however, the guidance contained in NUREG-1022, "Event Report Guidelines 10 CFR 50.72 and 50.73," is applicable. Specifically, the event should be reported to the NRC in accordance with 10 CFR 50.72 within one hour of the discovery of the undeclared event or condition. The licensee should also notify appropriate State and local agencies in accordance with the agreed upon arrangements.

### 4.9 Retraction of an Emergency Declaration

Guidance on the retraction of an emergency declaration reported to the NRC is discussed in NUREG-1022.

### 4.10 Response to a TMI-2 Emergency

TMI-2 alarms will be monitored on a 24-hour a day basis remotely from Emergency Response Facility (ERF) or by another appropriate location in the event of a failure of the

remote monitoring system. For failures of specific local alarm capabilities, local conditions will be monitored in accordance with the applicable procedures.

A TMI-2 related emergency will be reported to the ISFSI Shift Supervisor (ISS). The ISS will assess and evaluate the situation; classify the event as required based on impact to the site per the EALs; and provide the appropriate response.

## 5.0 REFERENCES

### 5.1 Developmental

5.1.1 NEI 99-01 Revision 6, Development of Emergency Action Levels for Non-Passive Reactors, November 2012

5.1.2 10 CFR Part 50, Domestic Licensing of Production and Utilization Facilities

5.1.3 RIS 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events, February 2007

5.1.4 NUREG-1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

5.1.5 10 CFR 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors

5.1.6 NUREG-0654/FEMA-REP-1, Rev. 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants

5.1.7 10 CFR 72.32, Emergency Plan

5.1.8 NUREG-1567, Spent Fuel Dry Storage Facilities

5.1.9 10 CFR 50.47, Emergency Plans

5.1.10 NUREG-1140, A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees

5.1.11 NSIR/ISG-02, Interim Staff Guidance, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants

### 5.2 Implementing

5.2.1 EP-TM-1002, Independent Spent Fuel Installation Emergency Plan

5.2.2 EP-TM-1002, Addendum 1, Emergency Action Levels and Technical Bases

### 5.3 Commitments

None

# 6.0 ACRONYMS & DEFINITIONS

## 6.1 Acronyms

CFR.....Code of Federal Regulations
DSAR ..... Defueled Safety Analysis Report
EAL .....EMERGENCY ACTION LEVEL
ECL ..... EMERGENCY CLASSIFICATION LEVEL
EPA ..... Environmental Protection Agency
FEMA ..... Federal Emergency Management Agency
ISFSI ..... INDEPENDENT SPENT FUEL STORAGE INSTALLATION
IC.....Initiating Condition
NEI ..... Nuclear Energy Institute
NRC .....Nuclear Regulatory Commission
ODCM ..... Off-site Dose Calculation Manual
PAG.....Protective Action Guide
PD .....Permanently Defueled
Rem..... Roentgen Equivalent Man
TEDE.....Total Effective Dose Equivalent

## 6.2 Definitions

NOTE: Selected terms used in IC and EAL statements are set in all capital letters (e.g., ALL CAPS).

ALERT: Refer to Section 3.1.2.

CONFINEMENT BOUNDARY: The irradiated fuel dry storage cask barrier(s) between areas containing radioactive substances and the environment.

EMERGENCY ACTION LEVEL (EAL): Refer to Section 3.3.

EMERGENCY CLASSIFICATION LEVEL (ECL): Refer to Section 3.1.

INITIATING CONDITION (IC): Refer to Section 3.2.

HOSTAGE: Person(s) held as leverage against the station to ensure that demands will be met by the facility owner.

HOSTILE ACTION: An act toward TMI-1 ISFSI or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILEs, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the TMI-1 ISFSI. Non-terrorism-based EALs should be used to address such activities.

HOSTILE FORCE: Any individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI): See definition in IOEP, Section I.

PROJECTILE: An object directed toward the TMI-1 ISFSI that could cause concern for its continued operability, reliability, or personnel safety.

PROTECTED AREA: An area that normally encompasses all controlled areas within the security protected area fence.

SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

UNUSUAL EVENT (UE): Refer to Section 3.1.1

## 7.0 ATTACHMENTS

Attachment 1: EAL Matrices

Attachment 2: EAL Bases

## Attachment 1 - EALs Matrices

### Table PD-1: Recognition Category "PD" Initiating Condition Matrix

| UNUSUAL EVENT | ALERT |
|---|---|
| **PD-HU1** Confirmed SECURITY CONDITION or threat. | **PD-HA1** HOSTILE ACTION within the TMI-1 ISFSI is occurring or has occurred. |
| **PD-HU3** Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT. | **PD-HA3** Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT. |

### Table E-1: Recognition Category "E" Initiating Condition Matrix

| UNUSUAL EVENT |
|---|
| **E-HU1** Damage to a loaded cask CONFINEMENT BOUNDARY. |

## Attachment 1 - EALs Matrices

| ALERT | UNUSUAL EVENT |
|---|---|
| **Hazards and Other Conditions Affecting Facility Safety** | |
| **Security**<br><br>**PD-HA1** HOSTILE ACTION within the TMI-1 ISFSI is occurring or has occurred.<br><br>**Emergency Action Level (EAL):**<br><br>Notification by the Security Force that a HOSTILE ACTION is occurring or has occurred within theTMI-1 ISFSI. | **PD-HU1** Confirmed SECURITY CONDITION or threat.<br><br>**Emergency Action Level (EAL):**<br><br>1. Notification of a credible security threat directed at the site as determined per SY-AA-101-132, Security Assessment and Response to Unusual Activities.<br><br>**OR**<br><br>2. Notification by the Security Force of a SECURITY CONDITION that does **not** involve a HOSTILE ACTION. |

| ALERT | UNUSUAL EVENT |
|---|---|
| **Hazards and Other Conditions Affecting Facility Safety** | |
| **Emergency Director Judgment**<br><br>**PD-HA3** Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.<br><br>**Emergency Action Level (EAL):**<br><br>Other conditions exist which, in the judgment of the Emergency Director, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the facility or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of a HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels. | **PD-HU3** Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT.<br><br>**Emergency Action Level (EAL):**<br><br>Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the facility or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of conditions occur. |

## Attachment 1 - EALs Matrices

| ALERT | | UNUSUAL EVENT |
|---|---|---|
| **ISFSI Malfunction** | | |
| **ISFSI** | | **E-HU1** Damage to a loaded cask CONFINEMENT BOUNDARY.<br>**Emergency Action Level (EAL):**<br>Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than **ANY** of the following:<br>1) **240 mrem/hour** gamma on the vertical concrete surfaces.<br>**OR**<br>2) **10 mrem/hour** neutron on the vertical concrete surfaces.<br>**OR**<br>3) **900 mrem/hour** (neutron + gamma) on the top. |

## Attachment 2 - EAL Bases

### Recognition Category PD EAL Basis

Recognition Category PD provides a stand-alone set of ICs/EALs for a Permanently Defueled nuclear facility to consider for use in developing a site-specific emergency classification scheme. For development, it was assumed that the plant had operated under a 10 CFR Part 50 license and that the operating company has permanently ceased plant operations. Further, the company intends to store the spent fuel on the ISFSI pad until the Department of Energy takes possession of the spent fuel.

When in a permanently defueled condition, the plant licensee typically receives approval from the NRC for exemption from specific emergency planning requirements. These exemptions reflect the lowered radiological source term and risks associated with spent fuel pool storage relative to reactor at-power operation. Source terms and accident analyses associated with plausible accidents are documented in the station's Defueled Safety Analysis Report (DSAR), as updated. As a result, each licensee will need to develop a site-specific emergency classification scheme using the NRC-approved exemptions, revised source terms, and revised accident analyses as documented in the station's DSAR.

The Permanently Defueled (PD) Recognition Category uses the same ECLs as operating reactors; however, the source term and accident analyses limit the ECLs to an UNUSUAL EVENT and ALERT. The UNUSUAL EVENT ICs provide for an increased awareness of abnormal conditions while the ALERT ICs are specific to actual or potential impacts to spent fuel. The source terms and release motive forces associated with a permanently defueled facility would not be sufficient to require declaration of a Site Area Emergency or General Emergency.

In NEI 99-01, Rev. 6, appropriate ICs and EALs from Recognition Categories A [R], C, F, H, and S [M] were modified and included in Recognition Category PD to address a spectrum of the events that may affect a spent fuel pool. Once all of the irradiated fuel has been removed from the spent fuel pool the spectrum of potential emergency events that may occur are again greatly reduced. Based on industry precedence, some of Hazard Recognition Category (PD-H) ICs and EALs, as reflected in this document, are being maintained.

Table PD-1: Recognition Category "PD" Initiating Condition Matrix, provides a summary of initiating conditions associated with Recognition Category PD.

### Recognition Category E EAL Basis

Recognition Category E provides an IC/EAL for an ISFSI. A significant amount of the radioactive material contained within a cask must escape its packaging and enter the atmosphere for there to be a significant environmental effect resulting from an accident involving the dry storage of spent nuclear fuel. Formal offsite planning is not required because the postulated worst-case accident involving an ISFSI has insignificant consequences to the public health and safety.

# PD-HA1

**Initiating Condition:**

HOSTILE ACTION within the TMI-1 ISFSI is occurring or has occurred.

**Emergency Action Level (EAL):**

Notification by the Security Force that a HOSTILE ACTION is occurring or has occurred within the TMI-1 ISFSI.

**Basis:**

This IC addresses an occurrence of a HOSTILE ACTION within the TMI-1 ISFSI.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

As time and conditions allow, these events require a heightened state of readiness by the facility staff and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The ALERT declaration will also heighten the awareness of Offsite Response Organizations (ORO), allowing them to be better prepared should it be necessary to consider further actions.

This IC does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc. Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR § 73.71 or 10 CFR § 50.72.

This EAL is applicable for any HOSTILE ACTION occurring, or that has occurred, in theTMI-1 ISFSI.

**Basis Reference(s):**

1. NEI 99-01 Rev 6, PD-HA1
2. Station Security Plan

# PD-HU1

## Initiating Condition:

Confirmed SECURITY CONDITION or threat.

## Emergency Action Level (EAL):

1. Notification of a credible security threat directed at the site as determined per SY-AA-101-132, Security Assessment and Response to Unusual Activities.

   **OR**

2. Notification by the Security Force of a SECURITY CONDITION that does **not** involve a HOSTILE ACTION.

## Basis:

This IC addresses events that pose a threat to facility personnel and thus represent a potential degradation in the level of facility safety. Security events which do not meet one of these EALs are adequately addressed by the requirements of 10 CFR § 73.71 or 10 CFR § 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under ICs PD-HA1.

Classification of these events will initiate appropriate threat-related notifications to facility personnel and OROs.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

EAL #1 Basis:

Addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with SY-AA-101-132.

EAL #2 Basis:

References Security Force because these are the individuals trained to confirm that a security event is occurring or has occurred. Training on security event confirmation and classification is controlled due to the nature of Safeguards and 10 CFR § 2.39 information.

Escalation of the EMERGENCY CLASSIFICATION LEVEL would be via IC PD-HA1.

## Basis Reference(s):

1. NEI 99-01 Rev 6, PD-HU1
2. Station Security Plan
3. SY-AA-101-132, Security Assessment and Response to Unusual Activities

# PD-HA3

## Initiating Condition:

Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.

## Emergency Action Level (EAL):

Other conditions exist which, in the judgment of the Emergency Director, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the facility or a security event that involves probable life-threatening risk to site personnel or damage to facility equipment because of a HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

## Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the EMERGENCY CLASSIFICATION LEVEL description for an ALERT.

## Basis Reference(s):

1. NEI 99-01, Rev 6, PD-HA3

**Attachment 2 - EAL Bases**

# PD-HU3

**Initiating Condition:**

Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT.

**Emergency Action Level (EAL):**

Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the facility or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of equipment required for spent fuel storage occurs.

**Basis:**

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the EMERGENCY CLASSIFICATION LEVEL description for an UNUSUAL EVENT.

**Basis Reference(s):**

1. NEI 99-01, Rev 6, PD-HU3

# E-HU1

## Initiating Condition

Damage to a loaded cask CONFINEMENT BOUNDARY.

## Emergency Action Level (EAL):

Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than **ANY** of the following:

1) **240 mrem/hour** gamma on the vertical concrete surfaces.

**OR**

2) **10 mrem/hour** neutron on the vertical concrete surfaces.

**OR**

3) **900 mrem/hour** (neutron + gamma) on the top.

## 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 word cask, as used in this EAL, refers to the storage container in use at the site for dry storage of irradiated fuel. The issues of concern are the creation of a potential or actual release path to the environment, degradation of any 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 cask technical specification multiple of "2 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 on-contact dose rate limit is exceeded may be determined based on measurement of a dose rate at some distance from the cask.

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

## Basis Reference(s):

1. NEI 99-01, Rev 6, E-HU1
2. Certificate of Compliance 1031 NAC MAGNASTOR® Canister