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10 CFR 50.90  
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HDI PNP 2022-016

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

Subject: License Amendment Request: Proposed Permanently Defueled Emergency Plan and Permanently Defueled Emergency Action Level Scheme

Palisades Nuclear Plant  
NRC Docket No. 50-255  
Renewed Facility Operating License No DPR-20

- References:
1. Letter from Entergy Nuclear Operations, Inc. to U.S. Nuclear Regulatory Commission, "Certifications of Permanent Cessation of Power Operations and Permanent Removal of Fuel from the Reactor Vessel," dated June 13, 2022 (ADAMS Accession No. ML22164A067)
  2. U.S. Nuclear Regulatory Commission letter to Entergy Nuclear Operations, Inc., "Palisades Nuclear Plant – Issuance of Amendment Re: Changes to the Emergency Plan for Permanently Defueled Condition (CAC No. MG0198; EPID L-2017-LLA-0305)," dated September 24, 2018 (ADAMS Accession No. ML18170A219)
  3. Letter from Holtec Decommissioning International, LLC to U.S. Nuclear Regulatory Commission, "Request for Exemptions from Certain Emergency Planning Requirements of 10 CFR 50.47; 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E," dated July 11, 2022 (ADAMS Accession No. ML22192A134)

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.90, *Application for amendment of license, construction permit, or early site permit*, Holtec Decommissioning International, LLC (HDI), on behalf of Holtec Palisades, LLC, hereby requests an amendment to the PNP license. The proposed amendment would revise the PNP Post-Shutdown Emergency Plan (PSEP) and Emergency Action Level (EAL) scheme for the permanently defueled condition. The proposed changes are being submitted to the U.S. Nuclear Regulatory Commission (NRC) for approval prior to implementation, as required by 10 CFR 50.54, *Conditions of licenses*, paragraph (q)(4) and 10 CFR Part 50, Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities*, Section IV, *Content of Emergency Plans*, paragraph B.2.

By letter dated June 13, 2022, Entergy certified to the NRC that power operations ceased at PNP on May 20, 2022, and that the fuel was permanently removed from the reactor vessel and placed in the PNP spent fuel pool (SFP) on June 10, 2022, in accordance with 10 CFR 50.82, *Termination of License*, paragraphs (a)(1)(i) and (a)(1)(ii) (Reference 1). It is understood and acknowledged that upon the NRC's docketing of these certifications, in accordance with 10 CFR 50.82(a)(2), the license for PNP no longer authorizes operation of the reactor, nor emplacement or retention of fuel into the reactor vessel. The irradiated fuel will be stored in the SFP and in dry cask storage at an onsite independent spent fuel storage installation (ISFSI) until it is shipped offsite.

To address the transition from an operating facility to a permanently defueled facility, by letter dated September 24, 2018, the NRC issued Amendment No. 267 (PSEP) (Reference 2), approving changes to the PNP Emergency Plan to support the planned permanent cessation of operations and permanent removal of fuel from the reactor vessel. Upon implementation of the PSEP, on June 15, 2022, the PNP emergency response organization (ERO) on-shift and augmented staffing were revised commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled nuclear power reactor facility.

In Reference 3, Holtec requested exemptions from portions of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E. The Permanently Defueled Emergency Plan (PDEP) and Permanently Defueled Emergency Action Level (EAL) scheme, proposed within this amendment request, are predicated on the NRC granting approval of the requests for exemptions submitted in Reference 3. The proposed PDEP reduces the scope of offsite and onsite emergency planning commensurate with the permanently defueled condition, following sufficient decay of the spent fuel. However, the proposed PDEP and Permanently Defueled EAL scheme satisfy the applicable standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E, for a permanently defueled reactor, as modified by the requested exemptions.

The proposed PDEP and Permanently Defueled EAL scheme are commensurate with the significantly reduced risk associated with the spent fuel stored in the PNP spent fuel pool (SFP) after it has sufficiently decayed such that the radiological impact of accidents is not expected to result in radioactive releases that exceed U.S. Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs) beyond the site boundary. The proposed changes are necessary to properly reflect the conditions of the facility while continuing to preserve the PNP Decommissioning Trust Funds and the effectiveness of the emergency plan.

The analyses provided to the NRC in Reference 3 demonstrate that approximately 12 months following shutdown of the PNP reactor, the spent fuel stored in the PNP SFP will have decayed to the point where the PDEP and Permanently Defueled EAL scheme may be implemented. The analyses demonstrate that approximately 12 months after permanent cessation of power operations of the PNP reactor, there is sufficient time to mitigate events that could lead to a zirconium fire.

The Enclosure to this letter provides a description, technical and regulatory evaluation, significant hazards determination, and environmental considerations evaluation for the proposed license amendment.

Attachment 1 to the Enclosure contains the proposed PDEP.

Attachment 2 to the Enclosure contains the Permanently Defueled EAL Technical Bases Document.

Attachment 3 to the Enclosure contains a comparison of the proposed PNP Permanently Defueled EAL Technical Bases to the corresponding information contained in Nuclear Energy Institute (NEI) 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6.

In support of the proposed changes to the PSEP, PNP personnel have had discussions with cognizant state and local response organizations regarding the regulatory exemption requests to be submitted to the NRC. PNP personnel will continue to meet with representatives from the State of Michigan; local emergency preparedness personnel with Berrien County, Allegan County, and Van Buren County; and regional leadership from the U.S. Federal Emergency Management Agency.

Attachment 4 to this Enclosure contains documentation of Offsite Response Organization (ORO) concurrence with the proposed transition to the PDEP.

HDI requests review and approval of the proposed license amendment by April 29, 2023, with an effective date of May 31, 2023 (i.e., approximately 12 months following the permanent shutdown of PNP). The license amendment will not be implemented until the certifications required by 10 CFR 50.82(a)(1)(i) and (ii) have been docketed in accordance with 10 CFR 50.82(a)(2) and the decay time requirement established in Reference 3 has been met.

This letter contains no new regulatory commitments or updates to existing commitments.

In accordance with 10 CFR 50.91, *Notice for public comment; State consultation*, paragraph (b), a copy of this license amendment request, with enclosure, is being provided to the designated State Officials.

If you have any questions regarding this submittal, please contact Jim Miksa, Regulatory Assurance Engineer, at (269) 764-2945.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 12, 2022.

Respectfully,

Jean A. Fleming  
Vice President, of Licensing, Regulatory Affairs & PSA  
Holtec International, LLC

Enclosure: Description and Evaluation of Proposed Changes

Attachments to Enclosure:

1. Permanently Defueled Emergency Plan

1. Permanently Defueled Emergency Plan
2. Permanently Defueled Emergency Action Level Technical Bases
3. Comparison Matrix for Permanently Defueled Emergency Action Levels Based on NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6
4. Offsite Response Organization Acknowledgment and Concurrence

cc:

U.S. NRC Regional Administrator (Region III)  
NRC Senior Resident Inspector – PNP  
NRC Project Manager - PNP  
Designated Michigan State Official

**Enclosure**

**HDI PNP 2022-016**

**Description and Evaluation of Proposed Changes**

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## **Description and Evaluation of Proposed Changes**

### **1.0 SUMMARY DESCRIPTION**

In accordance with Title 10 of the Code of Federal Regulations (10 CFR) 50.90, *Application for amendment of license, construction permit, or early site permit*, Holtec Decommissioning International, LLC. (HDI), on behalf of Holtec Palisades, LLC, requests U.S. Nuclear Regulatory Commission (NRC) review and approval of a revision to the Palisades Nuclear Plant (PNP) Post-Shutdown Emergency Plan (PSEP). The proposed changes would revise the PNP PSEP and Emergency Action Level (EAL) scheme to support the permanently defueled condition following a sufficient decay of the spent fuel, such that the risk of an offsite radiological release is significantly lower, and the types of possible accidents are significantly fewer.

HDI has submitted a separate request for exemptions from portions of 10 CFR 50.47, *Emergency Plans*, paragraphs (b) and (c)(2); and 10 CFR Part 50, Appendix E, *Emergency Planning and Preparedness for Production and Utilization Facilities*, by letter dated July 11, 2022 (Reference 1). The proposed PDEP and Permanently Defueled EAL scheme satisfy the applicable standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E, for the permanently defueled condition, as modified by the exemptions requested in Reference 1. The exemption request contains an analysis for the PNP spent fuel pool (SFP) for beyond design basis events, which demonstrates that approximately 12 months after permanent cessation of power operations of the PNP reactor, the spent fuel stored in the SFP will have decayed to the extent that the requested exemptions are appropriate, and the PDEP and the Permanently Defueled EAL scheme may be implemented. The analysis demonstrates that approximately 12 months after permanent cessation of power operations of the PNP reactor, a minimum of 10 hours is available to mitigate events that could lead to a zirconium fire. Implementation of the PDEP and Permanently Defueled EAL scheme is based on this approximate 12-month decay period. Based on the shutdown date of May 20, 2022, approximately 12 months following permanent cessation of power operations of PNP would occur on May 31, 2023.

### **2.0 DETAILED DESCRIPTION AND BASIS FOR THE CHANGE**

This license amendment request would modify the PNP license by revising the PSEP and the associated EAL scheme to reflect the permanently shutdown and defueled condition of the PNP reactor, and the anticipated conditions following approximately 12 months of decay of the spent fuel in the PNP SFP.

By letter dated June 13, 2022, Entergy certified to the NRC that power operations ceased at PNP on May 20, 2022, and that the fuel was permanently removed from the reactor vessel and placed in the PNP SFP on June 10, 2022, in accordance with 10 CFR 50.82, *Termination of License*, paragraphs (a)(1)(i) and (a)(1)(ii) (Reference 2). Upon the NRC's docketing of these certifications, in accordance with 10 CFR 50.82(a)(2), the license for PNP no longer authorizes operation of the reactor, or emplacement or retention of fuel into the reactor vessel. The irradiated fuel will be stored in the SFP and in dry cask storage at an onsite independent spent fuel storage installation (ISFSI) until it is shipped offsite.

To address the transition from an operating plant to a permanently defueled facility, by letter dated September 24, 2018, the NRC issued Amendment No. 267 (PSEP) (Reference 3), approving changes to the PNP emergency plan to support the planned permanent cessation of operations and permanent removal of fuel from the reactor vessel. Upon implementation of the PSEP on June 15, 2022, the PNP emergency response organization (ERO) on-shift and

augmented staffing were revised commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled nuclear power reactor facility.

When PNP was licensed for power operations, Chapter 14 of the PNP Updated Final Safety Analysis Report (UFSAR) describes accident analyses for postulated design basis accidents (DBAs) and transient scenarios under which PNP is licensed. The most severe postulated DBA involves damage to the nuclear reactor core and the release of large quantities of fission products. Many of these accident scenarios involve failures or malfunctions of systems, which could affect the fuel in the reactor vessel. With the termination of reactor operations and the permanent removal of fuel from the reactor vessel, such accidents are no longer possible. Therefore, the postulated accidents involving failure or malfunction of the reactor, reactor coolant system, steam system, or turbine generator, are no longer applicable. The only remaining DBAs will be the Fuel Handling Accident (FHA) in the SFP, the liquid waste incident, the waste gas incident, and the postulated cask drop accident. Because PNP is permanently shut down and the reactor is defueled, an FHA in the reactor cavity is no longer applicable because all irradiated spent fuel is stored in the SFP or an ISFSI. Therefore, because an FHA can only occur during movement of spent fuel in the SFP, the FHA event will be limited to the SFP.

The offsite radiological consequences of accidents possible at PNP, described in Reference 1, will be substantially lower than during plant operation. The analyses of the potential radiological impact of accidents while the facility is in a permanently defueled condition indicate that no DBA or reasonably conceivable beyond design basis accident would result in radioactive releases that exceed U.S. Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs) (Reference 4) beyond the exclusion area boundary (EAB).

The slow progression rate of postulated event scenarios indicate sufficient time is available to initiate appropriate mitigating actions to protect the health and safety of the public. Therefore, the proposed PDEP states that HDI will maintain the ability to assess, classify, and declare an emergency within 30 minutes after the availability of indications that an EAL threshold has been reached. Emergency classifications are to be made as soon as conditions warranting classification are present and recognizable for the classification in accordance with the applicable EALs, but within 30 minutes after the availability of indications that an EAL has been reached. The proposed PDEP also states that notification of an emergency declaration will be made to appropriate State of Michigan and Van Buren County authorities within 60 minutes of an emergency declaration or change in classification. The proposed PDEP reduces the scope of onsite and offsite emergency planning activities commensurate with the reduced spectrum of credible accidents that can occur in a permanently shutdown and defueled condition and continues to meet the applicable standards of 10 CFR 50.47(b) and requirements of 10 CFR Part 50, Appendix E, as modified by the exemptions requested in Reference 1.

The current PNP EAL scheme is based on the guidance presented in Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels," Revision 5 (Reference 5). A revision to the PNP EAL scheme to implement the EAL scheme contained in guidance presented in Appendix C of NEI 99-01, Revision 6 (Reference 6), Recognition Category "PD" (Permanently Defueled), is appropriate for the permanently shutdown and defueled condition of the PNP reactor. This determination is based on the analyses presented in Reference 1. Additionally, the guidance associated with the ISFSI Recognition Category "E," presented in Section 8 of NEI 99-01, Revision 6, is included because it will remain applicable. NEI 99-01, Revision 6, was endorsed by the NRC in a letter dated March 28, 2013 (Reference 7).

### **3.0 TECHNICAL EVALUATION**

#### **3.1 Accident Analysis Overview**

10 CFR 50.82(a)(2) specifies that the 10 CFR Part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel after docketing the certifications for permanent cessation of power operations and permanent removal of fuel from the reactor vessel, in accordance with 10 CFR 50.82(a)(1). Following the termination of reactor operations at PNP, 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 (SSCs) are no longer applicable. Summaries of the radiological accidents analyzed for the permanently shutdown and defueled condition, and supporting this license amendment request, are presented below.

Section 5.0 of Interim Staff Guidance (ISG) NSIR/DPR-ISG-02, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants, issued May 11, 2015 (Reference 8) indicates that site-specific analyses should demonstrate that: (1) the radiological consequences of remaining applicable DBAs would not exceed the limits of the EPA PAGs at the EAB; (2) in the event of a beyond design basis event resulting in the partial drain down of the SFP to the point that cooling is not effective, there is at least 10 hours (assuming an adiabatic heat up) from the time that the fuel is no longer being cooled until the hottest fuel assembly reaches 900°C; (3) adequate physical security is in place to assure implementation of security strategies that protect against spent fuel sabotage; and (4) in the unlikely event of a beyond design basis event resulting in a loss of all SFP cooling, there is sufficient time to implement pre-planned mitigation measures to provide makeup or spray to the SFP before the onset of a zirconium cladding ignition.

These analyses are described in Reference 1. Specific analyses are summarized in the following sections.

#### **3.2 Consequences of Design Basis Events**

As described in Amendment No. 272, issued by the NRC on May 13, 2022 (PNP - Issuance of Amendment No. 272 Re: Permanently Defueled Technical Specifications), the applicable remaining DBAs are (1) the FHA in the SFP, (2) the Liquid Waste Incident, (3) a Waste Gas Incident, and (4) a Postulated Cask Drop Accident (Reference 9).

The DBAs that remain applicable to PNP are discussed in the following paragraphs.

##### **3.2.1 Fuel Handling Accident**

Following permanent cessation of power operations and permanent removal of fuel from the PNP reactor, an FHA in the reactor cavity is no longer applicable because all irradiated spent fuel will either be stored in the PNP SFP or an ISFSI. Therefore, because an FHA can only occur during movement of spent fuel in the SFP, the FHA event is limited to the SFP.

The FHA analysis assumed 22.5 feet of water above the stored fuel, which resulted in an effective decontamination factor of 183.07 and an overall decontamination factor for elemental iodine of 252 (Reference 10). The FHA utilizes the Alternate Source Term (AST) methodology described in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors" (Reference 11).

The analysis demonstrates that after a decay time of 60 days following permanent cessation of power operations of the PNP reactor, with no credit taken for the operability of mitigating structures, systems, or components (SSCs), the FHA in the SFP results in a dose of 0.014 rem TEDE at the EAB (Reference 12). This is less than the EPA PAG criterion of 1 rem TEDE and below the 10% EPA PAG threshold for declaration of a Site Area Emergency (SAE), based on the NRC guidance provided in NEI 99-01, Rev.6 (Reference 6).

### **3.2.2 Liquid Waste Incident**

A liquid tank failure remains a viable accident following the reactor being permanently defueled since liquid tanks may continue to store radioactive liquid. The accidents discussed in the DSAR include an accidental discharge to the circulating water discharge canal, or failure of the primary system makeup storage tank or the utility water storage tank. The primary makeup storage tank and the utility water storage tank have administrative controls that maintain tank activity concentration such that 10 CFR Part 20, *Standards for Protection Against Radiation*, dose limits would not be exceeded in the event of a tank failure. These concentration limits will be maintained in the permanently defueled condition.

HDI has concluded that the PNP design and administrative controls ensure that radioactive liquid leakage or spillage will be retained within the facility or within 10 CFR Part 20 dose limits. Also, administrative controls and automatic interlocks, together with the fail-safe design of the instrumentation and control devices, provide assurance against any discharge of liquid wastes to the environs in excess of 10 CFR Part 20 limits and would not approach the EPA PAG criteria of 1 rem TEDE after a 90-day fuel decay period.

### **3.2.3 Waste Gas Incident**

The PNP DSAR evaluates the accidental release of waste gas. The atmospheric dispersion coefficients and the source term for the FHA, discussed in Section 5.2.1 of this Enclosure, bound those of the design basis gas decay tank rupture (GDTR).

The volume control tank rupture accident is no longer applicable in the permanently defueled condition because primary coolant letdown will no longer be required to support primary coolant system operation. In addition, inputs into the volume control tank rupture accident discussed in UFSAR Section 14.21.2, such as letdown flow and dose equivalent iodine-131 requirements will no longer be applicable in the permanently defueled condition. In the event that the volume control tank continues to hold reactor coolant fluid in the permanently defueled condition, the source term would be lower than during normal operation due to radioactive decay. In addition, the primary coolant iodine and noble gas concentrations released to the atmosphere from the volume control tank after 17 days of decay would be significantly less than the source term from the FHA with 17 days of decay and the CR doses from the FHA.

Therefore, it can be concluded that the dose consequences of the FHA bound the dose consequences of the GDTR with the same decay period.

### **3.2.4 Postulated Cask Drop Accident**

The PNP DSAR evaluates the postulated cask drop accidents. The analysis included a scenario in which a cask is dropped onto spent fuel which has decayed for 90 days. The scenario assumes the Fuel Handling Building (FHB) charcoal filter is not operating and all

radiation is released unfiltered from the FHB. The accident results in a dose of 0.08 rem at the EAB 90 days following permanent cessation of power operations of the PNP reactor. This is less than the EPA PAG criterion of 1 rem TEDE and below the 10% EPA PAG threshold for declaration of a SAE, based on the NRC guidance provided in NEI 99-01, Rev.6 (Reference 6).

### **3.3 Consequences of a Beyond Design Basis Event**

#### **3.3.1 Hottest Fuel Assembly Adiabatic Heatup**

An adiabatic heatup analysis was performed comparing the heat load limits for the hottest fuel assembly and for a 2X2 group of assemblies stored in the PNP SFP to a criterion proposed in Commission Paper SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," (Reference 13) that is applicable to offsite emergency response for nuclear power reactors in the decommissioning process. This criterion considers the time for the hottest assembly to heat up from 30°C to 900°C adiabatically. A heat up time of 10 hours from the time the spent fuel is uncovered, was determined to be sufficient time to take mitigating actions and, if necessary, offsite protective measures without offsite emergency preplanning addressing the facility.

The analysis for the PNP SFP for beyond design basis events demonstrates that approximately 12 months after shutdown, a minimum of 10 hours is available before the fuel cladding temperature of the hottest fuel assembly in the SFP reaches 900°C with a complete loss of SFP water inventory. As stated in NUREG-1738 (Reference 14), 900°C is an acceptable temperature to use for assessing the onset of fission product release under transient conditions (to establish the critical decay time for determining availability of 10 hours to evacuate) if fuel and cladding oxidation occurs in air. Based on the results of the analysis, in the unlikely event of a beyond design basis event, 10 hours is available to initiate appropriate mitigating actions to restore a means of heat removal to the spent fuel and, if governmental officials deem warranted, for authorities to implement offsite protective actions using a comprehensive approach to emergency planning to protect the health and safety of the public before the hottest fuel assembly reaches the rapid oxidation temperature.

Because of the time it would take for the adiabatic heat up to occur, there is ample time to respond to any partial drain down event that might cause such an occurrence by restoring cooling or makeup, or providing spray. As a result, the likelihood that such a scenario would progress to a zirconium fire is not deemed credible.

These analyses were provided to the NRC in Reference 1.

#### **3.3.2 Spent Fuel Pool Drain Down Event**

NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," (Reference 15) Supplement 1, Section 4.3.9.2, identifies that a SFP drain down event is a beyond design basis event. The analyses provided in Reference 1 demonstrated that, under adiabatic conditions, a significant release of radioactive material from the spent fuel is not possible within 10 hours from the time the spent fuel is uncovered after approximately 12 months following the permanent cessation of power operation. However, the potential exists for radiation exposure if shielding of the spent fuel in the PNP SFP is lost.

The SFP water and the concrete SFP structure serve as radiation shielding. Therefore, a loss of water shielding above the fuel could increase the offsite radiation levels because of the

gamma rays streaming up out of the pool being scattered back to a receptor at the site boundary.

In preparation for the originally planned October 2018 shutdown of the PNP reactor, the radiological consequences of a postulated complete loss of SFP water at the EAB and Control Room were analyzed. It was determined that the gamma radiation dose rate at the EAB would be limited to small fractions of the EPA PAG exposure levels. Based on the analysis, the dose rate to a receptor at the EAB and the limiting dose rate in the PNP Control Room one year after shutdown are less than 0.20 mrem/hour (hr) and 2.5 mrem/hr, respectively. It was determined that this analysis is applicable to the May 2022 shutdown of the PNP reactor (Reference 16).

The EPA PAGs were developed to respond to a mobile airborne plume that could transport and deposit radioactive material over a large area. In contrast, the radiation field formed by scatter from a drained SFP would be stationary rather than moving and would not cause transport or deposition of radioactive materials. The extended period required to exceed the integrated EPA PAG limit of 1 rem TEDE would allow sufficient time to develop and implement onsite mitigative actions and provide confidence that additional offsite measures could be taken without planning if efforts to reestablish shielding over the fuel are delayed.

### **3.4 Design and Operational Characteristics of the Spent Fuel Pool**

Although the limited scope of DBAs and the associated dose consequences, and the significant time available to complete actions necessary to mitigate a beyond design basis accident that remain applicable to PNP justify a reduction in the necessary scope of emergency response capabilities, the Industry Decommissioning Commitments (IDCs) and Staff Decommissioning Assumptions (SDAs) contained in NUREG-1738 (Reference 14) were also evaluated.

The IDCs and SDAs are listed in Tables 4.1-1 and 4.1-2, respectively, of NUREG-1738. Tables 4 and 5 of Reference 1 identify how the PNP SFP meets or compares with each of these IDCs and SDAs.

### **3.5 Consequences of a Beyond Design Basis Earthquake**

In addition to an evaluation of each IDC and SDA, an analysis demonstrating that there is a High Confidence of Low Probability of Failure (HCLPF) of the PNP SFP was also performed. Based on this analysis, the probability of seismically induced structural failure of the SFP and rapid loss of inventory is less than the generic bounding value of  $1 \times 10^{-5}$  per year. This analysis was provided to the NRC as Attachment 4 to Reference 1.

## **4.0 EMERGENCY PLAN AND EMERGENCY ACTION LEVEL SCHEME**

### **4.1 Permanently Defueled Emergency Plan**

The PDEP, describing HDI's plan for responding to emergencies that may arise while in a permanently shutdown and defueled configuration, is provided as Attachment 1 to this Enclosure. The PDEP was developed considering the guidance contained within Attachment 1 of ISG-02 (Reference 8).

The analyses of the potential radiological impact of accidents while the facility is in a permanently defueled condition indicate that no DBA or reasonably conceivable beyond design basis accident would result in radioactive releases that exceed EPA PAGs (Reference 4)

beyond the site boundary or 10% of the EPA PAG, presented as guidance in NEI 99-01, Revision 6, as the threshold to declare a SAE.

The slow progression rate of postulated event scenarios indicate sufficient time is available to initiate appropriate mitigating actions to protect the health and safety of the public. Therefore, the proposed PDEP states that HDI will maintain the ability to assess, classify, and declare an emergency within 30 minutes after the availability of indications that an EAL threshold has been reached. Emergency classifications are required to be made as soon as conditions warranting classification are present and recognizable for the classification in accordance with the applicable EALs, but within 30 minutes after the availability that an EAL has been reached. The proposed PDEP also states that notification of an emergency declaration will be made to appropriate State of Michigan and Van Buren County authorities within 60 minutes of an emergency declaration or change in classification.

Based on the results of the accident analyses described in Reference 1 and Section 3.0 of this Enclosure, the proposed changes to the emergency declaration and notification times and the reduced scope of onsite and offsite emergency response plans can be implemented without undue risk to public health and safety, commensurate with the reduced offsite radiological consequences associated with the permanently defueled and decommissioning status of the facility.

The PDEP addresses the applicable regulations contained in 10 CFR 50.47 and 10 CFR Part 50, Appendix E that remain applicable after modified by the requested exemptions (Reference 1) and is consistent with the applicable guidance established in ISG-02 (Reference 8).

#### **4.1.1 On-Shift and Emergency Response Organization Staffing**

The PDEP modifies the PNP Post-Shutdown Emergency Plan (PSEP) on-shift and augmenting ERO positions previously approved by the NRC in Reference 3. The proposed on-shift staffing for the PDEP consists of one (1) Shift Manager, one (1) Non-Certified Operator (NCO), and one (1) Radiation Protection Technician. Security personnel are maintained in accordance with the Security Plan. The minimum staff required to conduct routine and immediate emergency mitigation is maintained on-shift on a continuous, 24-hour-per-day basis. The on-shift organization is described in Part 2, Section B, of Attachment 1 to this Enclosure.

In the PDEP, the on-shift organization continues to provide the initial response to an emergency. The Shift Manager declares the initial emergency classification and assumes the role of Emergency Director. The Emergency Director is responsible for directing and coordinating the integrated emergency response effort during the emergency. The PDEP also specifies the non-delegable and delegable responsibilities of the Emergency Director. Members of the on-shift organization are trained on their responsibilities and duties in the event of an emergency and can perform necessary response actions until augmenting personnel arrive or the event is terminated. The on-shift staffing assignments include the roles and responsibilities for their emergency response functions. The relationship between normal and emergency response positions for the on-shift personnel is unchanged when an event occurs. The on-shift staff can perform all required response actions until the augmenting ERO staff arrives.

The PNP ERO is activated at the Alert classification and will augment the on-shift staff within approximately 2 hours of an Alert declaration. However, the ERO may be activated, in part or in whole, at any time at the discretion of the Shift Manager/Emergency Director. The minimum

augmenting ERO positions consist of a Radiation Protection (RP) Coordinator and a Technical Coordinator.

The staffing proposed in the PDEP is commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled facility.

The PDEP further provides that in the event of an emergency at PNP requiring additional personnel and other support resources, the ERO can be augmented with personnel and equipment support from additional facility personnel and offsite organizations. Arrangements will be in place through letters of agreement for ambulance services, treatment of contaminated and injured patients, fire support services, and law enforcement response, as requested by PNP.

#### **4.1.2 Emergency Communications**

While PNP must maintain the capability to notify offsite government agencies within a specified period, previous exemptions have allowed for extending the time to notify the State and local government agencies to 60 minutes, based on the site-specific justification. HDI proposes to complete emergency notification to the contiguous jurisdictions of the State of Michigan and Van Buren County within 60 minutes after an emergency declaration or a change in classification. This timeframe is appropriate because there is no need for State or local response organizations to implement pre-planned protective actions. Therefore, commercial communication methods (public/private telephone service and wireless communications) are adequate primary and back-up methods of providing offsite notifications.

As described in the proposed PDEP, offsite notifications will be made via commercial telephone, with wireless communications serving as the backup means of communications with State of Michigan and Van Buren County authorities.

For beyond design basis events, the deployment of offsite resources, including law enforcement, ambulance, and fire/rescue services may be requested by PNP to assist with the onsite response. These requests would be made via direct contact with local response agencies using established communications methods, including the 911 system.

#### **4.1.3 Letters of Agreement**

Criterion B.9 in Attachment 1 to ISG-02 (Reference 8) states that reference to the arrangements and agreements with support agencies be appended to the plan. As such, Appendix 1 to the proposed PDEP identifies offsite response organizations (ORO) with which HDI will enter into agreements. Details of ORO responsibilities are described in Part 2, Section C of the proposed PDEP, provided as Attachment 1 to this Enclosure. These agreements will identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information. The agreement between these organizations and HDI will be maintained on file in the PNP Emergency Planning Department.

#### **4.2 Permanently Defueled Emergency Action Level Scheme**

The current PNP EAL scheme was developed based on the guidance presented in NEI 99-01, Rev. 5 (Reference 5). Attachment 2 to this Enclosure provides the proposed Permanently Defueled EAL Technical Bases Document, containing the site-specific EALs and technical

bases for the proposed Permanently Defueled EAL scheme based on guidance provided in NEI 99-01, Rev. 6 (Reference 6).

#### **4.2.1 Operating Modes and Applicability**

The proposed Permanently Defueled EALs are only applicable in the permanently shutdown and defueled condition, with all irradiated fuel permanently removed from the reactor vessel (and placed in the SFP and ISFSI) and after approximately 12 months having elapsed following the permanent shutdown of the PNP reactor.

#### **4.2.2 Differences and Deviations**

Attachment 3 to this Enclosure provides a cross-reference between each generic EAL contained in NEI 99-01, Revision 6 (Reference 6), and the proposed PNP Permanently Defueled EALs. Differences are identified in accordance with the guidance provided in NRC Regulatory Issue Summary (RIS) 2003-18, "Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels," Revision 4, dated January 2003, (and Supplements 1 and 2) (Reference 17).

RIS 2003-18, Supplement 1 defines *differences* as follows:

"A *difference* is an EAL change where the basis scheme guidance (NUREG, NUMARC, and NEI) *differs in wording but agrees in meaning and intent*, such that classification of an event would be the same, whether using the basis scheme guidance or the site-specific proposed EAL. Examples of *differences* include the use of site-specific terminology or administrative reformatting of site-specific EALs."

An explanation for each *difference* between the Permanently Defueled EALs and the guidance presented in NEI 99-01, Revision 6, is included in Attachment 3 to this Enclosure. The *differences* do not alter the meaning or intent of the Initiating Conditions or EALs.

RIS 2003-18, Supplement 1, defines *deviations* as follows:

"A *deviation* is an EAL change where the basis scheme guidance *differs in wording and is altered in meaning or intent*, such that classification of the event could be different between the basis scheme guidance and the site-specific proposed EAL. Examples of *deviations* include the use of altered mode applicability, altering key words or time limits, or changing words of physical reference (protected area, safety-related equipment, etc.)."

There are no *deviations* between the Permanently Defueled EALs and the guidance presented in NEI 99-01, Revision 6.

#### **4.3 Coordination with State and Local Governments**

Because of the geographic location of PNP, emergency planning and responsibilities have historically involved coordination with the State of Michigan; Van Buren, Berrien, and Allegan Counties; and the Covert Township. Decommissioning-related Emergency Plan submittals for PNP have been discussed with cognizant officials from these organizations. These meetings have included discussions of the proposed changes to the PNP PSEP described in this submittal. These discussions have addressed changes to onsite and offsite emergency

preparedness throughout the decommissioning process, including the proposed changes pertaining to those agencies that are provided emergency notifications, the proposed 30-minute emergency declaration time, the proposed 60-minute notification time, those agencies participating in the annual review of EALs, and those agencies that would be invited to participate in drills and exercises. The proposed changes to the declaration and notification times were presented to the cognizant officials from the OROs, and no objections to the proposed changes were received.

Attachment 4 to this Enclosure contains documentation of ORO concurrence with the proposed changes to the PNP PSEP.

Following NRC approval, and prior to implementation of the proposed Permanently Defueled EAL scheme, HDI personnel will provide a review of the emergency classification scheme to State and local government authorities in accordance with 10 CFR Part 50, Appendix E, Section IV.B.1.

## **5.0 REGULATORY EVALUATION**

The proposed PDEP and Permanently Defueled EAL scheme are predicated on the NRC granting approval of requests for exemptions from portions of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E, Section IV, submitted in Reference 1, and as such, they do not meet all of the standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. Upon approval of the exemptions requested in Reference 1, the PNP PDEP and Permanently Defueled EAL scheme will meet the remaining applicable planning standards of 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E.

### **5.1 Applicable Regulatory Requirements and Criteria**

HDI intends to meet the applicable regulatory requirements, discussed below, with the exemptions previously requested in Reference 1. The exemptions requested in Reference 1 are identified using "strikeout" text in the following discussion.

In 10 CFR 50.47, requirements for emergency plans are set forth for nuclear power plant facilities. The regulations in 10 CFR 50.47(a)(1)(i) state, in part:

*"...no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency."*

In 10 CFR 50.47(b), the standards are established that the onsite and offsite emergency response plans must meet for the NRC to make a positive finding that there is reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency. Planning Standard (4) of this Section (e.g., 10 CFR 50.47(b)(4)) requires that a licensee's emergency response plan contain the following (with exemption):

*"A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures."*

The process for revising Emergency Plans where the changes reduce the effectiveness of the plan is specified in 10 CFR 50.54, *Conditions of licenses*, paragraph (q)(4). This regulation states the following:

*"The changes to a licensee's emergency plan that reduce the effectiveness of the plan as defined in paragraph (q)(1)(iv) of this section may not be implemented without prior approval by the NRC. A licensee desiring to make such a change after February 21, 2012 shall submit an application for an amendment to its license. In addition to the filing requirements of §§ 50.90 and 50.91, the request must include all emergency plan pages affected by that change and must be accompanied by a forwarding letter identifying the change, the reason for the change, and the basis for concluding that the licensee's emergency plan, as revised, will continue to meet the requirements in appendix E to this part and, for nuclear power reactor licensees, the planning standards of § 50.47(b)."*

Section IV.B.1 of Appendix E to 10 CFR Part 50 states, in part (with exemption):

*"The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite [and offsite] monitoring. ~~By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant.~~ The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC. Thereafter, emergency action levels shall be reviewed with the State and local governmental authorities on an annual basis."*

Section IV.B.2 of Appendix E states that:

*"A licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change."*

Section IV.C.1 of Appendix E (with exemption) requires each Emergency Plan to define the emergency classification levels that determine the extent of the participation of the emergency response organization. EALs are used by plant personnel in determining the appropriate emergency classification level to declare. This Section states, in part (with exemption):

*"Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, ~~(3) site area emergency, and (4) general emergency.~~"*

In November 2012, NEI published NEI 99-01, Revision 6 (Reference 6). The EAL scheme changes requested herein are based on the guidance presented in Revision 6 to NEI 99-01. The NRC endorsed NEI 99-01, Revision 6, by letter dated March 28, 2013 (Reference 7). The analyses of the potential radiological impact of accidents with PNP in a permanently shutdown and defueled condition indicate that no DBA or reasonably conceivable beyond design basis accident would result in radioactive releases that exceed EPA PAGs beyond the site boundary. The slow progression rate of postulated event scenarios indicates sufficient time is available to initiate appropriate mitigating actions to protect the health and safety of the public. Therefore, the Permanently Defueled EALs, detailed in NEI 99-01, Revision 6, will be adopted, with certain differences and deviations. Pursuant to 10 CFR Part 50, Appendix E, Section IV.B.2, a revision to an entire EAL scheme must be approved by the NRC prior to implementation.

ISG-02 (Reference 8) contains guidance for NRC staff evaluation of decommissioning Emergency Plans.

The proposed license amendment for PNP is being submitted to the NRC pursuant to 10 CFR 50.90, *Application for amendment of license, construction permit, or early site permit*, for the purpose of revising the PNP PSEP to establish an Emergency Plan appropriate for a permanently shutdown and defueled facility and to implement a Permanently Defueled EAL scheme.

## **5.2 No Significant Hazards Consideration Determination**

The proposed changes would revise the PNP Emergency Plan and Emergency Action Level (EAL) scheme commensurate with the hazards associated with the permanently shutdown and defueled condition of PNP.

In accordance with 10 CFR 50.92, *Issuance of Amendment*, HDI has reviewed the proposed changes and concludes that the changes do not involve a significant hazards consideration because the proposed changes satisfy the criteria in 10 CFR 50.92(c). These criteria require that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The discussion below addresses each of these criteria and demonstrates that the proposed license amendment for PNP (hereinafter referred to as "facility" or "the facility") does not constitute a significant hazard.

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

Response: No.

The proposed changes to the PNP Post-Shutdown Emergency Plan (PSEP) and EAL scheme do not impact the function of facility structures, systems, or components. The proposed changes do not affect accident initiators or precursors, nor do they alter design assumptions that could increase the probability or consequences of previously evaluated accidents. The proposed changes do not prevent the ability of the on-shift staff and emergency response organization to perform their intended functions to mitigate the

consequences of any accident or event that will be credible in the permanently shutdown and defueled condition.

The probability of occurrence of previously evaluated accidents is not increased because most previously analyzed accidents can no longer occur and the probability of the few remaining credible accidents are unaffected by the proposed changes.

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

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

Response: No.

The proposed changes reduce the scope of the PNP PSEP and EAL scheme commensurate with the hazards associated with a permanently shutdown and defueled facility. The proposed changes do not involve installation of new equipment or modification of existing equipment that could create the possibility of a new or different kind of accident. Hence, the proposed changes do not result in a change to the way the facility or equipment is operated in a manner which could cause a new or different kind of accident initiator to be created.

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

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

Response: No.

Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. The proposed changes are associated with the PNP PSEP and EAL scheme and do not impact operation of the facility or its response to transients or accidents. The changes do not affect the Technical Specifications or involve a change in the method of facility operation. No accident analyses or safety analyses acceptance criteria will be affected by the proposed changes. The revised Emergency Plan will continue to provide the necessary response staff commensurate with the reduction in consequences of radiological events at PNP when the facility is in the permanently shutdown and defueled condition, and thus, there is no reduction in the margin of safety.

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

Based on the above, HDI concludes that the proposed changes to the PNP PSEP and EAL scheme present no significant hazards consideration under the standards set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

### 5.3 Precedent

The changes to the PNP PSEP and associated EAL scheme, including the change to assess, classify, and declare an emergency within 30 minutes, and the change to notify responsible state and local governmental agencies no longer than 60 minutes after the emergency classification, are consistent with changes to Emergency Plans and EALs that have recently been approved by the NRC for other nuclear power facilities transitioning to a permanently shutdown and defueled condition. Specifically, the NRC approved similar changes to: 1) NextEra Energy for Duane Arnold Energy Center on April 28 2021 (Reference 18); 2) Exelon Generation's (Exelon) Three Mile Island Nuclear Station, Unit 1 (TMI-1) (Reference 19), and 3) Entergy for the Pilgrim Nuclear Power Station (Pilgrim) on January 2, 2020 (Reference 20).

### 5.4 Conclusion

Based on the analyses and considerations described above: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## 6.0 ENVIRONMENTAL CONSIDERATIONS

This amendment request meets the eligibility criteria for categorical exclusion from environmental review set forth in 10 CFR 51.22, *Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review*, paragraph (c)(9) as follows:

- (i) The amendment involves no significant hazard consideration.

As described in Section 5.2 of this evaluation, the proposed amendment involves no significant hazards consideration.

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

The proposed amendment does not involve any physical alterations to the facility configuration that could lead to a change in the type or amount of effluent release offsite.

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

The proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above, HDI concludes that the proposed amendment meets the eligibility criteria for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

## 7.0 REFERENCES

1. Holtec Decommissioning International, LLC (HDI) letter to U.S. Nuclear Regulatory Commission (NRC), "Request for Exemptions from Certain Emergency Planning Requirements of 10 CFR 50.47 and 10 CFR Part 50, Appendix E," dated July 11, 2022 (ADAMS Accession No. ML22192A134)
2. Entergy Nuclear Operations, Inc. letter to U.S. Nuclear Regulatory Commission, "Certifications of Permanent Cessation of Power Operations and Permanent Removal of Fuel from the Reactor Vessel," dated June 13, 2022 (ADAMS Accession No. ML22164A067)
3. U.S. Nuclear Regulatory Commission letter to Entergy Nuclear Operations, Inc., "Palisades Nuclear Plant – Issuance of Amendment Re: Changes to the Emergency Plan for Permanently Defueled Condition (CAC No. MG0198; EPID L-2017-LLA-0305)," dated September 24, 2018 (ADAMS Accession No. ML18170A219)
4. U.S. Environmental Protection Agency, "Protective Action Guides and Planning Guidance for Radiological Incidents," EPA-400/R-17-001 (EPA PAG Manual), dated January 2017
5. Nuclear Energy Institute (NEI) 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," dated February 22, 2008 (ADAMS Accession No. ML080450149)
6. NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 21, 2012 (ADAMS Accession No. ML12326A805)
7. NRC letter, Mark Thaggard to Susan Perkins-Grew (NEI), "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, dated November 2012 (TAC No. D92368)," dated March 28, 2013 (ADAMS Accession No. ML12346A463)
8. NRC NSIR/DPR-ISG-02, Interim Staff Guidance, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," dated May 11, 2015 (ADAMS Accession No. ML14106A057)
9. U.S. Nuclear Regulatory Commission letter to Entergy Nuclear Operations, Inc., "Palisades Nuclear Plant – Issuance of Amendment No. 272 Re: Permanently Defueled Technical Specifications (EPID L-2021-LLA-0099)," dated May 13, 2022 (ADAMS Accession No. ML22039A198)
10. Entergy Nuclear Operations, Inc. letter to U.S. Nuclear Regulatory Commission, "License Amendment Request to Revise Renewed Facility Operating License and Technical Specifications for Permanently Defueled Condition," dated June 1, 2021 (ADAMS Accession No. ML21152A109)
11. NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," dated July 31, 2000 (ADAMS Accession No. ML003716792)
12. EC-92748, Clarify Implications of PPTS FHA Analysis EA-EC89582-01 for PDEP

13. NRC, Commission Paper SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," dated June 30, 1999 (ADAMS Accession No. ML992800087)
14. NRC NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," dated February 28, 2001 (ADAMS Accession No. ML010430066)
15. NRC NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," dated November 2002 (ADAMS Accession Nos. ML023470304, ML023470323, ML023500187, ML023500211, ML023500223)
16. EC-92900, Clarify Applicability of EA-EC72870-01 to May 2022 Shutdown
17. NRC Regulatory Issue Summary 2003-18, "Use of Nuclear Energy Institute (NEI) 99-01, 'Methodology for Development of Emergency Action Levels,'" Revision 4 dated January 2003 (ADAMS Accession No. ML032580518), Supplement 1 dated July 13, 2004 (ADAMS Accession No. ML041550395), and Supplement 2 dated December 12, 2005 (ADAMS Accession No. ML051450482)
18. NRC letter to NextEra Energy, "Duane Arnold Energy Center - Issuance of Amendment No. 313 Regarding Changes To The Emergency Plan To Reflect The Permanently Defueled Condition And Make Changes To The Emergency Action Level Scheme (EPID L-2020-LLA-01113)," dated April 28, 2021 (ADAMS Accession No. ML21098A166)
19. NRC letter to Exelon Generation Company, LLC, "Three Mile Island Nuclear Station, Units 1 and 2 – Issuance of Amendment No. 299 for Unit 1 Re: Permanently Defueled Emergency Plan and Emergency Action Level Scheme Changes (EPID L-2019-LLA-0144)," dated December 2, 2020 (ADAMS Accession No. ML20261H925)
20. NRC letter to Entergy, "Pilgrim Nuclear Power Station – Issuance of Amendment No. 251 Re: Changes to the Emergency Plan for Permanently Defueled Emergency Plan and Emergency Action Level Scheme (EIPD L-2018-LLA-0221)," dated January 2, 2020 (ADAMS Accession No. ML19274C674)

**Attachment 1 to Enclosure**

**HDI PNP 2022-016**

**Permanently Defueled Emergency Plan**

**Procedure No PDEP  
Revision 0  
Effective Date: TBD**

**PALISADES NUCLEAR PLANT  
PERMANENTLY DEFUELED EMERGENCY PLAN**

**TITLE: PERMANENTLY DEFUELED EMERGENCY PLAN**

**Approved:** \_\_\_\_\_ / \_\_\_\_\_  
**Procedure Sponsor** **Date**

**Process Applicability Exclusion**

New Procedure/Revision Summary:

Issued the Permanently Defueled Emergency Plan (PDEP) to incorporate NRC's approval of the exemptions requested by letter dated July 11, 2022, whereby Holtec Decommissioning International, LLC. (HDI), on behalf of Holtec Palisades, LLC, requested exemptions from portions of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E reflecting the reduced scope of the emergency planning requirements consistent with the permanently shutdown and defueled condition of the Palisades Nuclear Plant (PNP) reactor.

The NRC has docketed certification that all fuel has been permanently removed from the PNP reactor vessel and placed into the spent fuel pool (SFP), in accordance with 10 CFR 50.82(a)(2). The license for PNP no longer authorizes operation of the reactor, nor emplacement or retention of fuel into the reactor vessel. The irradiated fuel will be stored in the SFP and in dry cask storage at the onsite Independent Spent Fuel Storage Installations (ISFSIs) until it is shipped offsite.

**TITLE: PERMANENTLY DEFUELED EMERGENCY PLAN**

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**SOURCES AND REFERENCES**

SOURCE DOCUMENTS

1. U.S. Nuclear Regulatory Commission (NRC), NSIR/DPR-ISG-02, Interim Staff Guidance, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," (ADAMS Accession No. ML14302A490), dated May 11, 2015
2. Nuclear Energy Institute (NEI) 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," (ADAMS Accession No. ML12326A805), dated November 2012

REFERENCE DOCUMENTS

1. Palisades Nuclear Plant Emergency Implementing Procedure
2. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"
3. Palisades Defueled Safety Analysis Report
4. Palisades Safeguards Contingency Procedures
5. Palisades Health Physics Procedures
6. Palisades Fire Protection Plan
7. Palisades Administrative Procedure 4.00, "Operations Organization, Responsibilities and Conduct"
8. EN-OM-119, "On-Site Safety Review Committee"

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**INFORMATIONAL USE**

- **Procedure is available and referenced for review, but not necessarily at the work location.**
- **Procedure may be performed from memory or referred to as needed.**
- **User remains responsible for procedure adherence.**

**Part I: INTRODUCTION**

**Section A: Purpose**

The purpose of this Permanently Defueled Emergency Plan (PDEP) is to assure an adequate level of response to cope with the spectrum of emergencies, including the means to minimize radiation exposure to facility personnel. This PDEP integrates the necessary elements to provide effective emergency response considering cooperation and coordination of organizations expected to respond to potential emergencies.

**Section B: Background**

Description of the Palisades Nuclear Plant

The Palisades Nuclear Plant (PNP) is located in Covert Township, Van Buren County, Michigan. The Plant is bordered to the north by the Van Buren State Park and to the west by Lake Michigan. Areas to the south and east of PNP are sparsely populated, underdeveloped, or used for farming. Interstate 196 and the Blue Star Highway lie within one mile east of the site. Much of the area around the site is devoted to recreation and tourism, which produces a fluctuating and seasonal population.

PNP was permanently shut down on May 20, 2022, and permanently defueled on June 10, 2022. The 10 CFR 50.82(a)(1) certifications for PNP have been submitted to, and docketed by, the NRC. Therefore, the PNP Renewed Facility License no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel. A detailed description of PNP is contained in the PNP Defueled Safety Analysis Report (DSAR).

Exclusion Area

HDI has the authority within the Exclusion Area to determine all activities including the exclusion or removal of personnel and property. Provisions for control of access to the PNP site have been included in the Safeguards Contingency Procedures to address personnel entering for business purposes and for those who might inadvertently enter. Access to the exclusion areas of PNP is controlled by the facility's security force.

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Highway access to PNP is provided from the Blue Star Highway (A-2) via the plant access road.

Protected Area

A Security fence marks the perimeter of the Protected Areas of the site. Access beyond the fence is restricted to badged employees or escorted visitors. The permanently shut down reactor and the Independent Spent Fuel Storage Facilities (ISFSIs) are located within the Protected Area boundaries.

A PNP Site Map is included as Figure 1.

**Section C: Scope**

The PDEP has been developed to respond to potential emergencies at PNP considering the permanently shut down and defueled status of the reactor. There are no postulated design basis accidents (DBAs) that would result in dose consequences that are large enough to require pre-planned offsite protective actions. In the unlikely event of a beyond design basis event, a minimum of 10 hours is available to initiate appropriate mitigating actions to restore a means of heat removal to the spent fuel and, if governmental officials deem warranted, for authorities to implement offsite protective actions using a comprehensive approach to emergency planning to protect the health and safety of the public before the hottest fuel assembly reaches the rapid oxidation temperature. Therefore, the overall scope of this PDEP delineates the actions necessary to safeguard onsite personnel and minimize damage to property.

If an emergency were to occur, the PNP Emergency Response Organization (ERO) (as defined in this PDEP) would be put in place and maintained until such time that PNP is returned to a stable condition.

This PDEP describes the operation of the PNP ERO. It does not, nor is it intended to provide guidance for plant equipment manipulations.

An emergency recovery phase is also described in this PDEP.

The concepts presented in this PDEP address the applicable regulations stipulated in 10 CFR 50.47, "Emergency Plans" and 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," as exempted.

Exemptions from select portions of 10 CFR 50.47 and 10 CFR 50, Appendix E, were granted by the NRC on *[insert date]* (ADAMS Accession Number: ML*[insert #]*). The PDEP is consistent with guidelines established in NRC staff guidance for the evaluation of Permanently Defueled Emergency Plans provided in Attachment 1 of NSIR/DPR-ISG-02, "Interim Staff Guidance: Emergency Planning Exemption Requests for

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Decommissioning Nuclear Power Plants” (ISG-02). Appendix 2 of this PDEP contains a cross-reference to PNP Emergency Implementing Procedures and the applicable guidance in ISG-02.

Abbreviations and acronyms used in this PDEP are included in Appendix 3.

**Section D: Planning Basis**

Irradiated fuel is stored in the PNP ISFSIs and in the PNP spent fuel pool (SFP). No reactor operations can take place and the facility is prohibited from emplacement or retention of fuel in the reactor vessel.

The analyses of the potential radiological impacts of postulated DBAs indicate that any releases beyond the Site Boundary would be below the Environmental Protection Agency (EPA) Protective Action Guide (PAG) exposure levels, as detailed in the EPA’s “PAG Manual: Protective Action Guides and Planning Guidance for Radiological Incidents,” (EPA-400/R-17/001) dated January 2017. Additionally, the slow progression rate of beyond design basis accidents indicate sufficient time is available to initiate appropriate mitigating actions to protect the health and safety of the public.

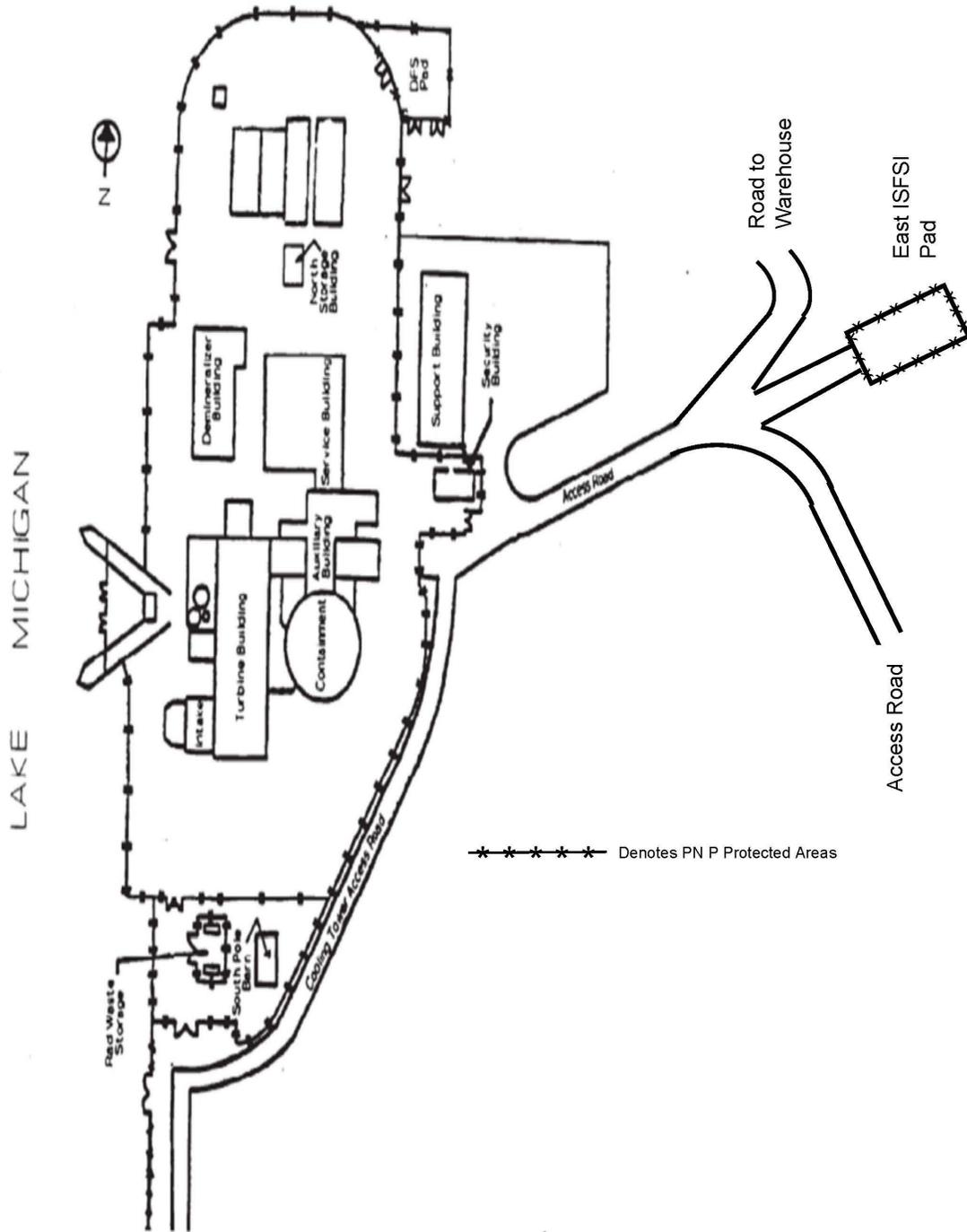
The PNP ISFSI contains multiple spent fuel storage cask system designs which are designed to ensure protection of public health and safety through use of physical barriers to guard against the uncontrolled release of radioactivity and through the use of shielding to minimize radiation dose to the public from both normal and off-normal conditions of operation. The analyses summarized in each cask system’s applicable Final Safety Analysis Report (FSAR) demonstrate that under assumed accident conditions, the consequences of accidents challenging the integrity of the barriers will not exceed limits established in 10 CFR 72.106. The regulatory requirements for an ISFSI emergency plan are specified in 10 CFR 72.32. In accordance with 10 CFR 72.32(c)(1), the emergency plan required by 10 CFR 50.47 satisfies the requirements for an emergency plan for an ISFSI which is located onsite, and therefore a separate ISFSI emergency plan is not required.

This PDEP documents the methods by which the PNP Emergency Preparedness Program meets the criteria set forth in 10 CFR Part 50, Section 47(b), and Appendix E, as exempted.

The PDEP, Revision 0, was approved per NRC Safety Evaluation in License Amendment *[insert #]* dated *[Insert date]*.

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FIGURE 1  
Palisades Nuclear Plant Site Map



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**Part II: PLANNING STANDARDS AND CRITERIA**

**Section A: Assignment of Responsibility**

Primary responsibilities for emergency response have been assigned. The emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

1. PNP Emergency Response and Responsibilities

HDI has established an ERO, consisting of on-shift and augmenting positions, to respond to emergencies. During an emergency, the normal on-shift organization initially functions as the ERO and is referred to as the On-Shift ERO. The minimum on-shift PDEP staffing requirements are described in Part 2, Section B of this Plan.

The On-Shift ERO performs the following functions:

- Control and operation of facility activities
- Mitigation of the emergency condition
- Protection of facility personnel
- Emergency event classification
- Radiological monitoring and dose assessment
- Emergency notification to, and ongoing communications with, Federal, State, and local emergency response organizations
- Coordination of emergency support for firefighting, security, and rescue/first aid

The on-shift staff can perform all required Emergency Plan functions until augmented by additional personnel.

In accordance with Permanently Defueled Technical Specifications (PDTs), one (1) Shift Manager is assigned on a continuous 24-hour-per-day basis and is the senior management position at PNP during off-hours. This position is responsible for monitoring facility conditions and managing the activities at PNP.

When an off-normal, natural phenomenon, or accident event becomes apparent, the Shift Manager shall assess the condition; make an emergency declaration, if appropriate; and assume the position of Emergency Director, with the overall responsibility to direct and control the emergency response. The Emergency Director does not have concurrent duties which conflict with these responsibilities.

The on-shift staff positions described in Part 2, Section B of this Plan are staffed on a continuous 24-hour-per-day basis.

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Upon declaration of an Alert emergency classification, or at the direction of the Emergency Director, additional personnel will be activated to augment the On-Shift ERO.

The functions assigned to the On-Shift and Augmenting ERO positions are specified in Part 2, Section B of this Plan. The ERO maintains the depth, qualifications, and capability for continuous 24-hour coverage of the emergency response for a protracted period. The Emergency Director has the authority and is responsible for maintaining and ensuring the continuity of personnel and resources.

**2. Offsite Response Organizations**

Offsite Response Organizations (OROs) (i.e., local law enforcement support; medical and ambulance services, including hospital support; and fire/rescue support) may be requested to respond to an emergency at PNP. The Emergency Director is responsible for requesting and coordinating the response provided by the OROs with the onsite activities. The OROs described in this PDEP are capable of 24-hour emergency response. Details related to the anticipated support from each ORO are described in Part 2, Section C of this Plan.

Letters of Agreement (LOAs) are listed in Appendix 1 and are addressed in Part 2, Section C of this Plan.

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## Section B: Emergency Response Organization

Key ERO positions and associated responsibilities for each position are outlined below. The PNP ERO provides for an initial emergency response and timely augmentation of on-shift personnel, when required. The interface among PNP response personnel and OROs has been previously arranged.

### 1. PNP Emergency Response Organization

Table B-1, Emergency Response Organization Minimum Staffing Requirements, outlines the minimum staffing required for emergency response. The ERO may be activated, in part or in whole, at any time at the discretion of the Emergency Director.

Figure B-1 illustrates the overall ERO.

#### 1.1 Normal Plant Organization

The normal on-shift staff organization for PNP is specified in PDTS and detailed in Site Administrative Procedures. The normal plant organization functions 24 hours-per-day, seven days-per-week. Members of the on-shift staff are trained on their responsibilities and duties in the event of an emergency and can perform initial emergency response actions until augmented by additional staff.

The minimum staff required to conduct routine tasks and immediate emergency mitigation is maintained at the facility on a continuous basis. The following positions comprise the On-Shift ERO, and are the minimum on-shift staff positions required to implement the PDEP:

##### (1) Shift Manager

In accordance with PDTS, one (1) Shift Manager is assigned. The Shift Manager is qualified as a Certified Fuel Handler (CFH) and manages on-shift personnel during the shift.

The position is responsible for assuring that all activities are conducted in accordance with approved procedures and the limitations set forth in the PDTS. This position is responsible for monitoring facility conditions and approving onsite activities. The position has the authority, management ability, and technical knowledge to classify and declare an emergency and assume the position of Emergency Director upon declaration of an emergency.

Upon declaration of an emergency, the Emergency Director is responsible for directing and coordinating the integrated emergency response effort during the emergency.

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Specific responsibilities include:

- Declaring and upgrading the emergency as warranted (non-delegable);
- Reviewing and approving notifications to the State and Local authorities (non-delegable);
- Authorizing emergency radiological exposure in excess of 10 CFR Part 20 limits (non-delegable);
- Maintaining command and control of the emergency;
- Ensuring proper communications between the ERO and OROs;
- Reviewing all radiological, meteorological, and operational data and updating the offsite authorities, as necessary;
- Requesting any special assistance or services;
- Directing actions to mitigate the accident;
- Authorizing the mobilization of search and rescue teams;
- Directing accountability within the protected area;
- Releasing non-essential personnel from the site; and
- Initiating the recovery phase when appropriate.

The Emergency Director is assisted in these activities by the On-Shift and Augmenting ERO. However, those tasks which the Emergency Director cannot delegate to others are identified above.

The Emergency Director has the authority to suspend any security measure described in the Physical Security Plan as necessary to facilitate response to emergency conditions.

(2) Non-Certified Operator

In accordance with the PDTs, one (1) Non-Certified Operator (NCO) is assigned to the duty shift.

The NCO performs facility operations, minor maintenance activities, and monitoring under the direction of the Shift Manager. Upon declaration of an emergency, the NCO assists the Emergency Director with implementation of this Plan.

(3) Radiation Protection Technician

One (1) on-shift Radiation Protection (RP) Technician is on-shift at PNP on a continuous basis. The on-shift RP Technician performs radiation monitoring, surveillance, and decontamination as necessary. The on-shift RP Technician can perform emergency duties for any declared emergency

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at PNP. Upon declaration of emergency, the on-shift RP Technician reports to the Emergency Director to support implementation of this Plan.

(4) Security staff (per Security Plan)

The Security organization maintains site security and access in accordance with site security procedures, while working under the direction of the Emergency Director and the Security Shift Leader.

1.2 Augmenting ERO

Personnel designated to augment the on-shift ERO are part of the Augmenting ERO. The Augmenting ERO is established to assure that qualified personnel are available on a 24-hour-per-day, 7-day-per-week basis to respond to emergency situations.

During an emergency at PNP, the initial phase of the response is managed by the On-Shift ERO. Following an Alert emergency declaration, or at the discretion of the Emergency Director, the Augmenting ERO is notified using a callout process, including onsite public address announcements.

Personnel assigned to the Augmenting ERO augment the On-Shift ERO within 120 minutes of an Alert declaration.

A partial or complete activation of the Augmenting ERO may be implemented at a Notification of Unusual Event (Unusual Event) classification (refer to Part 2, Section D of this Plan), at the discretion of the Emergency Director.

The Augmenting ERO consists of the following positions:

(1) Technical Coordinator

Upon activation, the Technical Coordinator, reports to the Emergency Director. The responsibilities of the Technical Coordinator when implementing this Plan include:

- evaluating technical data pertinent to facility conditions;
- augmenting the ERO staff as deemed necessary;
- designating engineering support, as necessary, to evaluate facility conditions and provide technical support;
- recommending mitigation and corrective actions;
- assisting with search and rescue;
- coordinating maintenance and equipment restoration;

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- establishing and maintaining communications with offsite organizations as desired by the Emergency Director; and
- maintaining a record of event activities.

(2) Radiation Protection Coordinator

Upon activation, the Radiation Protection Coordinator reports to the Emergency Director. The responsibilities of the Radiation Protection Coordinator when implementing this Plan include:

- monitoring personnel accumulated dose;
- advising the Emergency Director concerning Radiological Emergency Action Levels (EALs);
- augmenting the ERO staff as deemed necessary;
- establishing radiological controls;
- directing radiological monitoring analysis;
- performing dose assessment;
- coordinating decontamination activities; and
- maintaining a record of event activities.

2. Offsite Emergency Assistance

Offsite organizations may respond to a declared emergency at PNP. Each of these organizations are capable of 24-hour-per-day, 7-day-per-week response and operation. The details of their responsibilities are described in Part 2, Section C of this Plan, and are contained in their respective LOAs, listed in Appendix 1.

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**Table B-1**

**Emergency Response Organization Minimum Staffing Requirements**

MAJOR FUNCTIONAL AREA	MAJOR TASKS	POSITION	# ON-SHIFT	AUGMENTING CAPABILITY (120 MIN.)
Plant Operations and Assessment of Operational Aspects	Plant Operations	Shift Manager NCO	1* a 1* b	-
Emergency Direction & Control	Emergency Director	Shift Manager	***	-
Notification/Communication	Notify offsite personnel and maintain communications	Shift Manager	***	-
Radiological Accident Assessment and Support of Operational Accident Assessment	Onsite Dose Assessment and Monitoring	Radiation Protection Coordinator	***	1
Protective Actions (In-Facility)	In-Plant Surveys Radiation Protection a. Access Control b. Health Physics Coverage for Repair, Corrective Actions, Search and Rescue, First Aid, and Firefighting c. Personnel Monitoring d. Dosimetry	RP Technician	1*	As needed
Engineering Support	Technical Direction	Technical Coordinator	-	1
Plant Condition Evaluation, Repair, and Corrective Action	Repair, Mitigation, and Corrective Action		***	
Firefighting	Firefighting	Per the Fire Protection Plan		Offsite Response Organizations**
Rescue Operations/First Aid	Rescue and First Aid	***		
Security	Security	Per the Security Plan		-

a Upon declaration of an emergency, the Shift Manager assumes the role of Emergency Director.

b Upon declaration of an emergency, the NCO assists the Emergency Director with implementation of the PDEP.

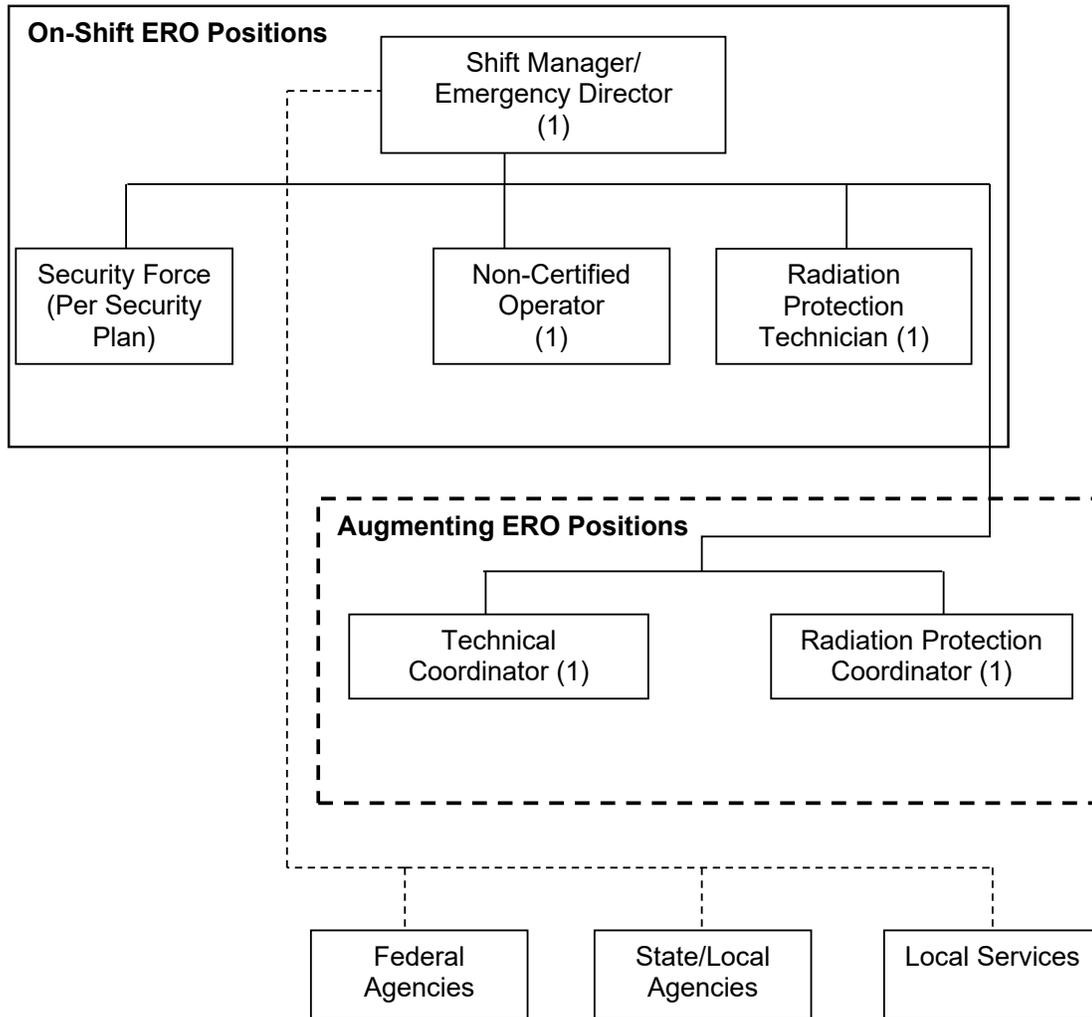
\* On-shift personnel required to direct or perform site-specific mitigation strategies required for a catastrophic loss of SFP inventory.

\*\* Response time is based on the response capability of the ORO.

\*\*\* Provided by on-shift personnel assigned other functions.

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**FIGURE B-1**  
**Emergency Response Organization**



(#) Denotes number of staff assigned to position

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**Section C: Emergency Response Support and Resources**

Arrangements for requesting and effectively using resources have been made and other organizations capable of augmenting the planned response have been identified.

1. Support Provided by Local Organizations

The availability of local support services to assist with the emergency response has been ascertained and LOAs from each organization described below have been obtained. All support is provided utilizing the National Incident Management System (NIMS) and the Incident Command System (ICS).

1.1 Law Enforcement

When notified that assistance is required, the Michigan State Police, Van Buren County Sheriff Department, and the Covert Township Police Department may provide law enforcement assistance. Coordination of security matters is addressed in the Security Safeguards Contingency Plan and Incident Response Plan.

1.2 Ambulance Service

Ambulance service for the transportation of accident victims, including radioactively contaminated victims, is provided by the Covert Fire Department. This service is available on a 24-hour-per-day basis. Onsite procedures contain instructions that cover the call for assistance and the handling of the ambulance service personnel.

1.3 Hospital

The Bronson South Haven Hospital, located in South Haven, Michigan, approximately 6 miles from PNP, has agreed to accept patients from PNP who have been injured, contaminated, or irradiated. The hospital provides facilities such as an emergency room, a laboratory, a radiology department, and a nuclear medicine department.

1.4 Fire

Fire protection response will be provided by the Covert Fire Department with mutual aid provided by the Van Buren County Mutual Aid Pact.

2. State and County (Local) Government Response

Except for emergency notifications described in Part 2, Section E of this Plan, and the services described in Part 2, Section C, Paragraph 1 of this Plan, no specific coordination with the State of Michigan or the counties surrounding PNP is required. State and local response to an emergency will be performed in accordance with each organization's plans and procedures.

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3. Federal Response Support and Resources

The NRC is notified via a dedicated telephone line (Emergency Notification System (ENS)) from the Control Room within one hour of an emergency classification. The NRC is responsible for the coordination of the federal government's technical response activities and will act as the lead Federal agency providing coordination and support in response to a nuclear incident, in accordance with the National Response Framework (NRF). This PDEP does not rely upon NRF resources. However, the Emergency Director is authorized to request Federal assistance, as needed.

The PNP Control Room has space available to accommodate limited NRC response team members.

4. Letters of Agreement

Local support service arrangements have been made with offsite groups to provide onsite aid in the event of an emergency situation. Support services encompass such areas as medical assistance, fire control, ambulance services, and law enforcement. Written agreements are entered into to assure these individuals'/agencies'/organizations' availability and capabilities. In the written agreements, the agencies have outlined their responsibilities or have agreed to their responsibilities as outlined in this section. A listing of the letters of agreement, contracts, or signature pages has been included in Appendix 1. In those cases where agency assistance is mandated by law (i.e., the State of Michigan), a letter of agreement may be excluded from the PDEP.

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**Section D: Emergency Classification System**

A standard emergency classification and EAL scheme is in use and is based on a variety of criteria including instrument readings and status indications; observable events; results of calculations and analyses; entry into procedures; and the occurrence of natural phenomena. This section describes the emergency classification and EAL scheme used to determine the minimum response to an abnormal event at PNP. This scheme is based on systems, effluent parameters, and operating procedures.

**1. Emergency Classification System**

The emergency classification system is based on consideration of conceivable consequences of potential situations ranging from incidents where effects on the facility and personnel are negligible to highly unlikely releases of radioactivity. The emergency classification of these conditions, both radiological and non-radiological, indicates the relative severity for immediate implementation of response actions. The emergency classification levels (ECL) applicable to PNP, in order of increasing severity, are: Unusual Event and Alert.

The permanently defueled emergency classification system is developed consistent with guidance presented in NEI 99-01, "Development of EALs for Non-Passive Reactors," Revision 6. Appendix C of NEI 99-01, Revision 6, contains a set of Initiating Conditions (ICs)/EALs for permanently defueled nuclear power plants that had previously operated under a 10 CFR Part 50 license and have permanently ceased operations. The emergency classification system referenced in NEI 99-01, Revision 6, has been endorsed by the NRC and provides a standard method for classifying emergencies.

HDI maintains the capability to assess, classify, and declare an emergency condition within 30 minutes after the availability of indications to plant personnel that an EAL threshold has been exceeded. The Shift Manager promptly declares the emergency condition as soon as possible following identification of the appropriate ECL.

Once an emergency is declared it shall remain in effect until:

1. Conditions warrant termination of the event and entry into the Recovery Phase.
2. The event is re-classified at a higher level. Incidents may be classified as a Unusual Event first, and then upgraded to an Alert if the situation deteriorates.

The following subsections summarize each ECL. Refer to the Permanently Defueled Emergency Action Level Technical Bases Document for parameter values,

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annunciators, and equipment status used by the Shift Manager / Emergency Director to classify emergencies.

1.1 Unusual Event

A Unusual Event classification is used to denote events that 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 occurs.

The purpose of this classification is to assure that the first step in future response has been carried out, to bring the PNP staff to a state of readiness, and to provide systematic handling of Unusual Event information and decision-making.

1.2 Alert

An Alert classification indicates 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 Hostile Action. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels.

The purpose of this classification is to assure that emergency personnel respond to the Control Room to support the emergency response.

2. Postulated Accidents

The PNP DSAR and the ISFSI FSARs describe the postulated accidents applicable to PNP.

Methods for detecting and evaluating these events and declaring emergencies include the use of installed systems, instrumentation, alarms, approved procedures, and field observation.

3. State and Local Governmental Authorities

The EALs have been discussed with the State of Michigan and Van Buren County. Further, State and local governmental authorities are provided the opportunity to review the Permanently Defueled EALs on an annual basis.

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**Section E: Notification Methods and Procedures**

Procedures are established for notification to the State of Michigan and Van Buren County and PNP ERO personnel. The content of initial and follow-up messages to these organizations has been established.

1. ORO Notification

HDI, in cooperation with State and local authorities, has established mutually agreeable methods for notification of response organizations consistent with the emergency classification and EAL scheme. Notification methods to offsite agencies include a means of verification or authentication such as the use of dedicated communications networks (NRC-ENS) or providing call back verification phone numbers. Notification of an emergency declaration is the responsibility of the Emergency Director.

The content of the initial notification and follow-up messages have been coordinated with, and agreed upon by, the State of Michigan and Van Buren County.

1.1 Initial Notification

For all classified events, Initial Notification shall be provided to the State of Michigan and Van Buren County promptly following the declaration of the emergency, and within 60 minutes of the emergency declaration.

The initial emergency message will include the following information if it is known and appropriate:

- 1) Authenticity, i.e. "This is NOT an Exercise (Drill)" or "This is an Exercise (Drill)";
- 2) Location of incident
- 3) Name and telephone number (or other applicable contact information) of the individual providing the notification;
- 4) Date and time of the incident;
- 5) Emergency classification and EAL;
- 6) Emergency response actions underway;
- 7) Whether a release is in progress;
- 8) Wind direction, speed, and stability class;
- 9) Any request for onsite support from OROs; and
- 10) Prognosis for worsening or termination of the event based on available facility information

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1.2 Follow-up Messages

Follow-up messages will be provided to the State of Michigan and Van Buren County within 60 minutes of a change in emergency classification or a change in radioactive release condition.

Additionally, follow-up messages should be provided as needed or on agreed upon intervals established with the offsite authorities. The content of follow-up messages is consistent with that provided for initial notifications described above, as known and appropriate.

2. Notification of the NRC

The ENS is a dedicated telephone system used to contact the NRC Operations Center. The NRC will be notified as soon as possible after State and local notifications and within 60 minutes of event classification or change in classification. In the event that ENS fails, commercial phone lines will be used to notify the NRC. Notification to the NRC is the responsibility of the Emergency Director.

3. Notification of the PNP ERO

At the Unusual Event classification, the ERO is notified and can be activated at the discretion of the Emergency Director.

At the Alert classification level, the ERO is notified and activated.

All onsite personnel are notified of the emergency declaration, escalation, or termination of an emergency by an announcement over the PNP Public Address System. Onsite ERO personnel and the PNP ERO personnel away from the site at the time of the PNP ERO activation are notified via an electronic notification system and/or phone calls.

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**Section F: Emergency Communications**

Provisions exist for prompt communications between principal response organizations and emergency response personnel. The communication systems provide the capability for 24-hour-per-day onsite and offsite communications. This section describes the emergency communications equipment available to support the PNP ERO. It outlines the available communications equipment to:

- Notify the PNP ERO;
- Provide initial and follow-up notifications to governmental agencies;
- Communicate among PNP site personnel;
- Communicate with the NRC, State, and local response agencies; and
- Communicate with medical support, fire/rescue support, law enforcement, and other agencies providing offsite assistance to PNP.

1. Description of Primary and Backup Communications Systems

Communications may be established by different means (radio, phone, public address system) within plant buildings and between Control Room personnel and offsite support groups.

1.1 Public Address System

The PNP Public Address System is designed to provide alarms and announcements from the Control Room. This system is used to call personnel and notify onsite personnel of the declaration, escalation, or termination of an emergency, and to instruct personnel on actions to be taken upon an emergency declaration.

1.2 Commercial Telephone Systems

The commercial telephone system is available in the PNP Control Room and throughout PNP. The commercial telephone system is used for onsite and offsite communications; including the means for requesting medical, law enforcement, and fire/rescue services via 911; and as the primary means of notifying and activating the augmenting PNP ERO positions.

Commercial telephones serve as the primary means of providing emergency notifications to the State of Michigan and Van Buren County and is used to provide initial and follow-up notifications and for general information flow between these organizations.

In the event the commercial telephone system is unavailable, wireless communications can be used as a backup means to make emergency notifications

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and maintain continuous communications with the state and county, and can serve as a backup means of notifying and activating the PNP ERO.

The Federal Telephone System (FTS) consists of the ENS dedicated telephone system used to notify the NRC Operations Center. The ENS is used for the dissemination of operational conditions as well as the initial notification from PNP to the NRC. In the event the ENS system is unavailable, commercial telephones (including wireless telephones) provide backup means to communicate with the NRC.

1.3 Radio System

A radio system is also available for communication between individuals onsite, including individuals in the PNP Control Room.

2. Medical Communications

HDI establishes communications with Bronson South Haven Hospital, via commercial telephone. The Control Room obtains direct ambulance dispatch via 911. The Dispatcher provides for a coordinated communications link to the ambulances responding to PNP or transporting contaminated and/or injured personnel from PNP.

3. Communications Drills and Testing

Communications drills between HDI, the State of Michigan, Van Buren County, and the NRC are conducted in accordance with criteria contained in Part 2, Section N of this Plan. Also, Part 2, Section N of this Plan describes surveillances to determine the working condition and availability of communications equipment. Deficiencies are identified and reported for prompt corrective action.

Communications equipment is operationally checked in accordance with Part 2, Section N of this Plan, to ensure reliable operation.

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**Section G: Public Education and Information**

The principal points of contact with the news media for dissemination of information during an emergency are established in advance, and procedures for coordinated dissemination of information to the public are established.

Communications personnel will be notified of an emergency declaration and will serve as a spokesperson. The spokesperson function could also be performed by plant or corporate management. Upon receiving notification of an emergency declaration, the spokesperson contacts the Control Room and receives a brief description of the event.

The spokesperson monitors media activity and coordinates with senior management to address rumors and disseminate information to the public. The spokesperson will participate in news conferences as appropriate.

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**Section H: Emergency Facilities and Equipment**

Adequate emergency facilities and equipment to support the emergency response are provided and maintained to aid in the timely and accurate response by the ERO. Following declaration of an emergency, the activities of the ERO are coordinated from the Control Room.

This section of the PDEP also describes the surveillance programs used to monitor and ensure that facilities and equipment are maintained in a high degree of constant readiness.

1. Control Room

During a declared emergency, the Control Room is designated as the location from which evaluation and coordination of all activities related to the emergency are performed. The Control Room contains the necessary instrumentation to monitor facility systems and equipment parameters under normal and accident conditions.

The Control Room is continuously staffed in accordance with PDTs, so there is no need to activate the facility following an emergency declaration. When notified, the Augmenting ERO reports to the Control Room within 2 hours of declaration of an Alert classification, or at the discretion of the Emergency Director.

From the Control Room, the Emergency Director will assess conditions; evaluate the magnitude and potential consequences of abnormal conditions; initiate preventative, mitigating, and corrective actions; perform onsite and offsite notifications; and maintain communications.

2. Emergency Onsite Monitoring Systems

2.1 Radiological Monitors

(1) Fixed Monitors

Fixed process (air, liquid, or gas) monitors and area radiation monitors are installed at key locations with remote readouts and alarm indications in the Control Room. Key fixed radiation-monitoring equipment is identified in the DSAR, and in the Permanently Defueled EAL Technical Bases Document.

(2) Portable Survey Instruments

In addition to installed monitoring systems, onsite portable radiation and contamination monitoring equipment is available. Emergency Implementing Procedures describe type, locations, and the amount of equipment available to the ERO.

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2.2 Process Instrumentation

Annunciator and computer alarms are provided for a variety of parameters including the SFP and the SFP systems to indicate SFP level and temperature. The manner in which process monitors are used for accident recognition and classification is detailed in the PNP Permanently Defueled EAL Technical Bases Document.

2.3 Fire Detection

Heat and smoke detectors are located at key locations in the plant with alarms annunciated in the Control Room. The Fire Protection System, including monitoring devices and fire suppression equipment, is completely detailed in the Fire Protection Implementing Procedures.

2.4 Meteorological Monitoring

Meteorological data is available in the Control Room. The data is used to determine the projected radiological consequences in the event of an accidental release of radioactivity to the environment.

3. Facility and Equipment Readiness

The Control Room and emergency equipment are inspected and inventoried in accordance with Emergency Implementing Procedures. The inspections include an operational check of instruments and equipment. Equipment, supplies, and parts that have a shelf life are identified, checked, and replaced as necessary. Sufficient reserves of instruments/equipment are maintained to replace those that are removed for calibration or repair.

At a minimum, instruments and equipment will be calibrated as recommended by the manufacturer or in accordance with applicable procedures.

Primary and backup equipment in place to ensure communications between Federal, State and local government agencies is described in Part 2, Section F of this Plan and are checked periodically in accordance with Part 2, Section N of this Plan.

4. Emergency Equipment and Supplies

Table H.1, "Typical Emergency Equipment," lists equipment that is typically provided for emergency response. Emergency Implementing Procedures provide the equipment details relating to the specific type, location, and content, and are used to inventory emergency supplies.

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**Table H-1**

**Typical Emergency Equipment**

Emergency equipment and supplies are stored at various locations throughout the site for immediate use by emergency forces. The following is a listing of the types of equipment and supplies stored at various locations.

- |                                    |   |
|------------------------------------|---|
| Protective Equipment:              | - Anti-Contamination Clothing           |
|                                    | - Respirators                           |
| Radiological Monitoring Equipment: | - Air Samplers                          |
|                                    | - Ionization Chamber Survey Instruments |
|                                    | - G-M Friskers                          |
|                                    | - Dosimetry                             |
| Emergency Supplies:                | - First Aid Kits                        |
|                                    | - Stretchers / Blankets                 |
|                                    | - Resuscitators                         |
|                                    | - Backboards / Splints                  |
| Communications Equipment:          | - Telephones                            |
|                                    | - Radios                                |

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**Section I: Accident Assessment**

Adequate methods and equipment are in use for assessing and monitoring actual or potential consequences of a radiological emergency condition.

The assessment activities required to evaluate a particular emergency depend on the specific nature and classification of the emergency. The Emergency Director is responsible for accident assessment efforts throughout the emergency.

HDI maintains and operates onsite monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment, including dose assessment. System and effluent parameter values are utilized in the determination of accident severity and subsequent emergency classification. Environmental and meteorological events are also determining factors in emergency classification.

The specific symptoms, parameter values or events for each level of emergency classification are detailed in the Permanently Defueled EAL Technical Bases Document. Classification of events is performed by the Shift Manager / Emergency Director in accordance with the EAL scheme.

1. Radiological Assessment

PNP has Area Radiation Monitors (ARMs) for the direct measurement of in-plant exposure rates and Process Radiation Monitors (PRMs) for the continuous measurement of facility effluents. The ARM readings allow continuous exposure rate determinations to be made remotely without requiring local hand-held meter surveys. This information may be used, initially, to aid in the determination of accessibility. The PRMs provide an immediate indication of a radiological release of effluents and can be used as an input into dose assessment.

2. Dose Assessment

Dose assessment utilizes radiological instrumentation readings and meteorological data to provide a rapid method of determining the magnitude of a radioactive release during an emergency. HDI can perform dose assessment on a 24-hour-per-day basis. Dose assessment is the responsibility of the Emergency Director and can initially be performed by any qualified on-shift individual. CFHs are qualified to perform dose assessment. HDI maintains at least one CFH-qualified individual on-shift on a 24-hour-per-day basis. When augmented, the Radiation Protection Coordinator assumes the dose assessment responsibilities.

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3. Corrective Actions

Facility procedures and Emergency Implementing Procedures provide preventative and/or corrective actions that mitigate the consequences of events. Instrumentation, control systems, and radiation monitoring systems provide indications related to the safe and orderly implementation of corrective actions. These systems provide indication of SFP storage inventory, temperature, cooling, and supporting systems.

HDI maintains procedures and strategies for the movement of any necessary portable equipment that will be relied upon for mitigating the loss of SFP water. Events involving a loss of SFP cooling and/or water inventory can be addressed by implementation of SFP inventory makeup strategies required under 10 CFR 50.155(b)(2). These capabilities are maintained as a license condition. These diverse strategies provide defense-in-depth and ample time to provide makeup water or spray to the SFP prior to the onset of zirconium cladding ignition when considering very low probability beyond design basis events affecting the SFP.

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**Section J: Protective Actions**

A range of protective actions has been developed for onsite individuals and individuals within the Exclusion Area Boundary. Protective actions for personnel onsite are provided for their health and safety. Procedures also provide protective actions to protect personnel during security events.

1. Notification of Onsite Personnel

Facility personnel, contractors, and visitors are notified of an emergency using the PNP Public Address System. Announcements include instruction related to response actions to be taken by onsite and contractor personnel. Additionally, the announcements describe any necessary actions for visitors.

The PNP Security Force will ensure that individuals in the Exclusion Area are notified as necessary of any emergency and the response actions to be taken.

2. Assembly

During an Alert, or as directed by the Emergency Director, non-essential personnel (personnel not assigned emergency response functions, contractors, and visitors) are directed to relocate and assemble at a pre-designated assembly area outside the Protected Area. The Emergency Director may release non-essential personnel from PNP. Personnel assigned emergency response functions respond to the Control Room.

3. Accountability

The Emergency Director has the authority to initiate personnel accountability. Accountability should be considered and used as a protective action whenever a risk to health or safety exists, or at the discretion of the Emergency Director. If personnel accountability is required, at the direction of the Emergency Director, all individuals at the facility (including employees without emergency assignments, visitors, and contractor personnel) shall be notified of the emergency and provided with instructions.

Accountability of all personnel inside the Protected Area should be accomplished within 60 minutes after event declaration and maintained thereafter at the discretion of the Emergency Director. Following announcement of an emergency declaration, onsite personnel are responsible for reporting to designated areas and aiding the accountability process. If personnel are not accounted for, the Emergency Director is notified, and onsite announcements are made. If personnel are still unaccounted for following the onsite announcements, search and rescue operations are initiated.

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Accountability is coordinated between the Emergency Director or Technical Coordinator and Security.

Assembly and accountability could be suspended or delayed if movement of personnel would place them in more danger than leaving them in place, such as outside weather conditions or security events.

Accountability of persons located within the Site Boundary, but outside the Protected Area, is not required.

4. Radiological Monitoring

In the event of a radiological release, or a suspected radiological release, personnel are monitored for radioactive contamination prior to leaving the Protected Area. Monitoring will be performed by Radiation Protection staff or trained monitoring personnel using instrumentation that is normally available or specifically assigned for this purpose.

5. Provisions for the Protection of Onsite Personnel

HDI maintains an inventory of respiratory protection equipment, and anti-contamination clothing that is made available to emergency workers remaining onsite should conditions warrant.

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## **Section K: Radiological Exposure Control**

The means for controlling radiological exposures during an emergency are established for emergency workers. Exposure guidelines in this section are consistent with the EPA PAG Manual (EPA-400/R-17/001).

The general guideline for emergency personnel exposure will be to keep it as low as reasonably achievable (ALARA). All reasonable measures shall be taken to control the radiation exposure to emergency response personnel providing rescue, first aid, decontamination, emergency transportation, medical treatment services, or corrective or assessment actions within applicable limits specified in 10 CFR Part 20.

### **1. Emergency Exposure Guidelines**

Radiation exposure in an emergency is controlled taking every reasonable effort to minimize exposure. However, circumstances may warrant exposure in excess of 10 CFR Part 20 limits. Saving a life, measures to circumvent substantial exposures to the general public, or the prevention of damage to critical equipment may be sufficient cause for above normal exposures. The Emergency Director is responsible for authorizing personnel to receive doses in excess of 10 CFR Part 20 limits, if necessary.

Exposure guidelines for emergency activities are presented in Table K-1.

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**Table K-1  
 Emergency Exposure Criteria  
 (Refer to Note 1)**

<b>Guideline</b>	<b>Activity</b>	<b>Condition</b>
5 rem	All occupational exposures	All reasonably achievable actions have been taken to minimize dose.
10 rem <sup>(a)</sup>	Protecting critical infrastructure necessary for public welfare	Exceeding 5 rem is unavoidable and all appropriate actions have been taken to reduce dose. Monitoring available to project or measure dose.
25 rem <sup>(b)(c)</sup>	Lifesaving or Protection of Large Population	Exceeding 5 rem is unavoidable and all appropriate actions have been taken to reduce dose. Monitoring available to project or measure dose.
>25 rem <sup>(b)(c)</sup>	Lifesaving or protection of large populations	All conditions above and only for people fully aware of the risks involved.

**NOTES:**

1. Reference for this table is Table 3-1 of the EPA PAG Manual.
  - (a) For potential doses > 5 rem, medical monitoring programs should be considered.
  - (b) In the case of a very large incident, consider the need to raise the property and lifesaving Response Worker Guideline to prevent further loss.
  - (c) Only on a voluntary basis. Response actions that could cause exposures in excess of 25 rem should only be undertaken with an understanding of the potential acute effects of radiation to the exposed responder and only when the benefits of the action clearly exceed the associated risks.

**2. Emergency Radiological Control Program**

The augmenting Radiation Protection Coordinator ensures that proper radiological monitoring equipment is provided to personnel during emergency conditions, exposure accountability is maintained, and personnel are not allowed to enter known or potential high radiation areas unless their exposure has been properly evaluated.

Emergency Implementing Procedures detail the emergency radiological controls utilized during emergencies. Radiation protection guidelines during emergencies include the following:

- Persons undertaking any emergency operation in which the dose will exceed 25 Rem Total Effective Dose Equivalent (TEDE) should do so only on a voluntary basis and with full awareness of the risks involved including the

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numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.

- In the context of the emergency limits, exposure of workers that is incurred for the protection of critical infrastructure, lifesaving or protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.
- Exposure accountability is maintained, and proper personnel radiological monitoring equipment is provided for personnel during emergency conditions.
- Access to high radiation areas is only permitted with prior approval of the Emergency Director, and personnel are not allowed to enter known or potential high radiation areas unless their exposure has been properly evaluated.
- Habitability surveys of the Control Room are performed during an emergency. If the facility is determined to be uninhabitable, the facility is evacuated in order to prevent or minimize exposure to radiation and radioactive materials. Alternate areas can be established, as necessary, to relocate and monitor personnel.

3. Personnel Monitoring

If abnormal radiological conditions exist outside the Radiologically Controlled Area (RCA), exposure to emergency response personnel not issued personal radiation dosimetry will be tracked by use of surveys and time spent in radiation areas.

Workers who would be expected to enter the RCA are trained and issued personal radiation dosimetry. High range or electronic dosimeters and/or alarming self-indicating dosimetry are used to monitor emergency workers exposure during an accident. Emergency workers are instructed to read self-indicating dosimeters frequently, and dosimetry may be processed with increased periodicity.

Emergency worker dose records are maintained in accordance with procedures.

4. Decontamination and First Aid

Normal decontamination measures and contamination control limits apply in emergency conditions. However, these limits may be modified by the Radiation Protection Coordinator should conditions warrant.

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Decontamination materials and portable first-aid kits are available. Actions for personnel injury onsite involving possible radioactive contamination is described in Part 2, Section L.

5. Contamination Control Measures

Areas in the plant found to be contaminated are isolated in accordance with plant procedures with appropriate radiological protection and access control as directed by the Radiation Protection Coordinator.

In order to preclude the spread of contamination from these areas, all personnel and equipment are monitored for radioactive contamination at the nearest monitoring station upon exiting the contaminated areas. Contaminated personnel are decontaminated.

6. Drinking Water and Food Supplies

Measures will be taken to control onsite access to potentially contaminated potable water and food supplies. Under emergency conditions when uncontrolled releases of activity have occurred, eating and drinking are prohibited until such time as habitability surveys indicate that such activities are permissible.

7. Return of Areas and Items to Normal Use

Restricted areas and contaminated items will be returned to normal use when contamination levels have been returned to acceptable levels. Contamination control criteria for returning areas and items to normal use are contained in the plant procedures.

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**Section L: Medical and Public Health Support**

Arrangements are made for medical services for contaminated injured individuals. On-shift personnel and equipment are available to provide first aid for personnel working at the site. Medical emergency supplies are located at various locations onsite.

If urgent professional medical help is needed, local ambulance services are available to transport seriously ill, injured, or radioactively contaminated injured personnel. Arrangements have been made for transporting injured, contaminated and irradiated personnel to the hospital via the Covert Fire Department.

An agreement is in place with Bronson South Haven Hospital for medical treatment of patients from PNP who have injuries complicated by radioactive contamination. The hospital has trained personnel for handling radioactively contaminated patients from PNP.

Part 2, Section C of this Plan contains details of the ambulance and hospital arrangements and capabilities.

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**Section M: Re-Entry and Recovery Planning**

General plans are developed for recovery and re-entry. The Recovery Organization would be based upon the normal PNP organization. The Shift Manager / Emergency Director would initiate the Recovery Phase.

1. Re-Entry

During a declared emergency, immediate actions are directed toward limiting the consequences of the accident, to afford maximum protection to PNP personnel and the general public. After any necessary corrective measures have been taken and effective control of the plant has been re-established, a more methodical approach to re-entry is taken. This PDEP divides re-entry into two categories:

- As directed by the Emergency Director, re-entry during the emergency phase of an accident may be performed to save a life, control a release of radioactive material, prevent further damage to plant equipment, or to restore plant equipment. If necessary, this category of re-entry may be performed using emergency exposure limits described in Part 2, Section K. Briefings and emergency forms, rather than written radiation protection procedures, operating procedures, and maintenance procedures, can be used when making these entries.
- As directed by the Emergency Director or the Recovery Organization, re-entry during the recovery phase is performed using normal exposure limits and normal procedures, or procedures developed specifically for each re-entry are utilized. Survey results and all other pertinent information collected from logs and other records, or other indicators may be used to evaluate the advisability and the timing of re-entry to affected areas.

2. Recovery

Recovery is defined as those steps taken to return the facility to its pre-accident condition. Radiation exposure to personnel involved in the recovery will be kept ALARA and within the stated limits of 10 CFR Part 20. Radiation areas will be roped off and posted with warning signs and controlled in accordance with plant procedures. Access to these areas will be controlled, and exposures to personnel entering such areas documented. Shielding will be fully employed, to the extent possible.

The plan is to return facility conditions to within Technical Specification limits. A nuclear safety/review committee reviews and approves recovery operations in accordance with its charter and the Technical Specifications.

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The Shift Manager / Emergency Director has the responsibility for determining when an emergency is stable, and the facility is prepared to enter the recovery phase.

Prior to terminating an emergency and entering the recovery phase, the conditions listed below are considered. It is not necessary that all conditions listed below be met. However, all items must be considered prior to entering the recovery phase. For example, it is possible after severe accidents that some conditions remain which exceed an EAL, but entry into the recovery phase is appropriate.

- Do conditions still meet an EAL? If so, does it appear unlikely that conditions will deteriorate?
- Radioactive releases are under control and are no longer in excess of Technical Specification limits.
- In-plant radiation levels are stable or decreasing, and acceptable, given the plant conditions.
- The potential for uncontrolled radioactive release is acceptably low.
- The SFP is in a stable condition and long-term cooling is available and adequate. There is no foreseeable danger of losing heat removal capability.
- Any fire, flood, earthquake or similar emergency condition no longer exists.
- All required notifications have been made.
- Any contaminated-injured person has been treated and/or transported to a medical care facility.
- Offsite conditions do not unreasonably limit access of outside support to the facility.

3. Recovery Organization

Once the decision is made to enter the recovery phase, the extent of the staffing required for the Recovery Organization is determined. For events of a minor nature, (i.e., Unusual Event classifications) the normal on-shift organization is normally adequate to perform necessary recovery actions.

The specific members of the Recovery Organization are selected based on the sequence of events that preceded the recovery activities as well as the requirements of the recovery phase. The Site Recovery Director, as appointed by senior management, is charged with the responsibility for directing the activities of the Recovery Organization. These responsibilities include:

- Ensuring an Event Summary Report is prepared and transmitted to offsite authorities.
- Overseeing the development of, and approving, a Recovery Plan and any special recovery procedures.

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- Deactivating any of the PNP ERO positions that were retained to aid in recovery, in the appropriate manner. Depending upon the type of accident, certain ERO positions may remain in place after initiation of the recovery phase.
- Approving information released by the public information organization that pertains to the emergency or the recovery phase of the accident.
- Maintaining a record/log of specific recovery actions taken.
- Working with senior company management in providing for assistance to employees affected by the event.
- Determining when the recovery phase is terminated. Recovery will be terminated when actions identified in the Recovery Plan have been completed.
- Identifying and documenting issues relating to Recovery operations.
- Coordinating the development and implementation of the recovery plan and procedures.
- Directing all onsite activities in support of recovery.
- Designating other recovery positions required in support of onsite recovery activities.
- Investigating the event in accordance with the Corrective Action Program.

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**Section N: Drill and Exercise Program**

Periodic exercises are conducted to evaluate major portions of emergency response capabilities. Periodic drills are conducted to develop and maintain key emergency response skills. Deficiencies identified during drills and exercises are documented and corrected.

1. Exercises

Biennial exercises shall be conducted to test the integration, timing, and content of Emergency Implementing Procedures and methods to ensure that emergency personnel are familiar with their duties.

Offsite organizations are invited and offered the opportunity to participate to the extent assistance would be expected during an emergency declaration. However, participation by offsite organizations is not required, nor are offsite response organizations evaluated.

2. Drills

In addition to the exercises described above, HDI conducts drills for the purpose of training, testing, developing, and maintaining the proficiency of emergency responders. Equipment and proficiency drills may be performed as part of an exercise, as part of a drill, or as an independent drill.

Drills and/or surveillance tests are conducted at PNP for the following:

2.1 Communication Drills or Surveillances

- (1) The ENS used to communicate with the NRC is tested monthly.
- (2) The communication links between the Control Room and the State of Michigan and Van Buren County will be tested monthly.
- (3) The communication systems listed below, as detailed in Part 2, Section F of this Plan, are used on a frequent basis. Therefore, periodic testing of these systems is not necessary.
  - a. Public Address System
  - b. Commercial Telephone Systems
  - c. Radio System

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2.2 Fire Drills

Drills are conducted in accordance with the PNP Fire Protection Plan which has been reviewed and approved by the NRC.

2.3 Medical Emergency Drills

On an annual basis, Medical Emergency Drills are conducted and involve an individual who is simulated to be injured and contaminated. The Covert Fire Department and Bronson South Haven Hospital are invited to participate to demonstrate and practice the receipt and treatment of contaminated patients.

2.4 Radiation Protection Drills

On an annual basis, Radiation Protection Drills are conducted which involve response to, and analysis of, simulated airborne samples with elevated levels of activity. These drills also involve direct measurements of radiation levels in the Facility. Normal and emergency radiation procedures and processes are followed for the simulated conditions.

3. Conduct of Drills and Exercises

For each emergency preparedness exercise or drill conducted, a scenario package is developed. The information included in the scenario package is in accordance with facility procedures.

Controllers/Observers are assigned to evaluate the drill or exercise performance.

Following each drill or exercise, a critique is conducted to evaluate the ability of the participants to implement the PDEP and Emergency Implementing Procedures. Biennially, representatives from the NRC observe and evaluate an exercise including an evaluation of the licensee's ability to conduct an adequate self-critical critique.

Identified areas of the Emergency Preparedness Program that require improvement are entered, tracked, and resolved in the Corrective Action Program. Feedback is provided to participants through critiques, drills, exercise reports, or in accordance with training program requirements.

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**Section O: Emergency Response Training**

Radiological emergency response training is provided to those who may be called on to assist in an emergency. Emergency response training is provided to employees and offsite support personnel requiring site access.

1. Emergency Response Training

Emergency response personnel in the following categories receive initial training and annual retraining.

1.1 ERO Training

Training and qualification of PNP ERO personnel is implemented via the ERO Training Program. PNP ERO personnel receive initial, specialized, and periodic continuing training. Training program details are maintained in Training Department Procedures and are tailored to ensure proficiency in the assigned ERO position.

New ERO personnel receive an initial overview course that familiarizes them with the PDEP by providing basic information in the following areas as well as specific information as delineated in the sections below:

- Planning Basis
- Emergency Classifications
- ERO and Responsibilities
- Activation of the ERO

(1) Emergency Directors

Personnel qualified as an Emergency Director receive specialized training in the areas of:

- Emergency Notifications
- Emergency Classification
- EALs
- Mitigative and Protective Actions
- Emergency Exposure Control

(2) Personnel Responsible for Accident Assessments

The skills and knowledge required to perform plant stabilization and mitigation are a normal function of operations specific positions. Subsequent stabilization and restoration is pursued utilizing facility

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procedures. Operations personnel receive periodic training to ensure proficiency in this area.

Additional personnel that are called to assist operators with accident assessment, corrective actions, protective actions, and related activities will receive appropriate training.

(3) Personnel Responsible for Radiological Assessment

In addition to the training received to qualify for their normal duties, personnel responsible for radiological assessment receive periodic training on the following topics, as applicable to their assigned emergency response roles:

- Dose Assessment
- Basic Meteorology
- Transportation of contaminated injured individuals

1.2 First Aid Response

First aid and rescue personnel are trained to respond to medical emergencies.

1.3 Fire Response

Fire Training is conducted in accordance with the PNP Fire Protection Plan.

1.4 Security

Security Response is based upon a normal daily security function that is to safeguard the site. Security personnel receive specialized training in the following areas:

- Assembly / Accountability
- Site Evacuation
- Search and Rescue

2. General, Initial, and Periodic Training Program Maintenance

Personnel assigned to work at PNP receive initial and periodic refresher training on general facility procedures and policy. This training includes required actions to be taken if an emergency is declared.

3. Local Support Service Personnel Training

Training is offered annually to support organizations (fire, ambulance, medical, and law enforcement agencies) that may be called upon to assist in the event of an

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emergency. The training shall be structured to meet the needs of that organization with respect to the nature of their support. Topics of event notification, site access and orientation, basic radiation protection, and interface activities are included in the training.

4. Training Records

Records associated with training of PNP personnel are documented and maintained in accordance with plant procedures. Records associated with training offered and/or provided to OROs is documented and maintained in accordance with plant procedures.

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**Section P: Responsibility for the Maintenance of the Planning Effort**

Responsibilities for development, review, and distribution of the PDEP and actions that must be performed to maintain the PDEP are established, and personnel who perform the planning are properly trained.

1. Responsibility for Development and Maintenance of the PDEP

1.1 Palisades Nuclear Plant Vice President

The PNP Vice President has overall authority and responsibility for the Emergency Preparedness Program. This includes the authority to provide the necessary resources to ensure the continuous state of readiness for the PNP ERO.

1.2 Manager Responsible for Emergency Planning

This Manager is responsible for the maintenance of the PNP Emergency Preparedness Program. In maintaining the program, the Manager ensures the following:

- Development, maintenance, and revision of the PDEP and Emergency Implementing Procedures are accomplished in accordance with applicable regulations and industry standards.
- LOAs listed in Appendix 1 are reviewed annually and updated as necessary.
- Review and approve the PDEP and Emergency Implementing Procedures prior to implementation.
- Development and maintenance of 10 CFR 50.54(q) evaluations of program changes.
- Adequate support is provided to ensure the training program for offsite response personnel is in place and maintained.
- Development and maintenance of a working relationship with OROs.
- Oversee Emergency Preparedness Training Program and ensuring that proper records are maintained to document training and retraining of the ERO.
- Preparation for and conduct of the EP drill and exercise program.
- Documenting the activities of the Emergency Preparedness Program as required by law and regulations.
- EP Personnel maintain an adequate knowledge of planning techniques and applications of emergency equipment, supplies, and the Control Room.
- Corrective actions identified during the conduct of exercises, drills, training, audits, and inspections are tracked in the Corrective Action Program.

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1.3 Emergency Planning Personnel

PNP personnel who perform planning duties for the Emergency Preparedness Program receive on-going training and experiences to maintain or improve their knowledge related to emergency planning. At least once each calendar year, these personnel are involved in one of the following activities at a minimum:

- Training courses specific to emergency preparedness.
- Training courses related to emergency preparedness management, such as problem solving, stress management, or confrontation/media relations' courses.
- Observation of, or participation in, drills and/or exercises at another utility or station.
- Participation in an audit or benchmarking at another utility or station.
- Participation in industry review and evaluation programs.
- Participation in regional or national emergency preparedness seminars, committees, workshops, or forums.
- Attend training courses in related areas, such as systems, operations, or radiological protection training.
- Other personnel development as approved by the Manager responsible for Emergency Planning.

2. Emergency Plan Review and Revision

The PDEP is reviewed on an annual basis. As necessary to maintain the effectiveness of the PDEP, updates will be developed as a result of the annual reviews. The Manager responsible for Emergency Planning is responsible for determining which recommended changes are incorporated into the PDEP. Editorial changes to the PDEP can be held until the next revision. If no change to the PDEP is required, a memo to file shall be maintained to document the annual review.

All proposed changes will be evaluated in accordance with 10 CFR 50.54(q). Changes to the PDEP are made without NRC approval only if such changes do not reduce the effectiveness of the PDEP, and the PDEP as changed continues to meet the standards of 10 CFR 50.47(b) and 10 CFR Part 50, Appendix E, as exempted. Proposed changes that reduce or have a potential to reduce the effectiveness of the approved PDEP are not implemented without prior approval by the NRC.

Technical reviews of the PDEP and Emergency Implementing Procedures shall be conducted in accordance with facility procedures. The reviewer shall determine the need for cross-disciplinary reviews.

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The PDEP and Emergency Implementing Procedures are distributed on a controlled basis.

3. Emergency Implementing Procedures

Emergency Implementing Procedures (refer to Appendix 2 of this Plan) shall be developed and revised concurrent with the PDEP and reviewed in accordance with facility procedures. The Emergency Implementing Procedures are reviewed biennially and approved in accordance with approved facility procedures.

4. Letters of Agreement

Appendix 1 of this Plan contains a listing of LOAs with support agencies which shall be reviewed annually. As a result of the annual review, agreements will be revised or recertified. Recertification may include a recertification letter/memorandum, purchase order, email, documented telephone conversation, or other correspondence. Designated management has the authority to enter into these agreements with outside organizations.

5. Cross-Reference to Planning Criteria

The Plan is formatted in the same manner as Attachment 1 of ISG-02, as detailed in Appendix 2 of this Plan. This allows for ease in auditing evaluation criteria.

6. Review of the Emergency Preparedness Program

HDI coordinates an independent review of the Emergency Preparedness Program to meet the requirements of 10 CFR 50.54(t). Results of this review are submitted to the PNP Vice President. The Manager responsible for Emergency Planning ensures that any findings that deal with offsite interfaces are reviewed with the appropriate agencies. Written notification will be provided to local agencies documenting the results of the audit and providing notice of availability of the audit records for review at PNP. Records of the review are maintained for at least five years.

7. Emergency Telephone Directory

A phone list contains telephone numbers used by the PNP ERO during an emergency. This directory contains names and phone numbers of the PNP ERO, support personnel, and applicable offsite organizations. These numbers are verified and updated at least quarterly.

8. Inventory and Maintenance of Emergency Equipment

Periodic inventory, testing, and calibration of emergency equipment and supplies are conducted in accordance with approved procedures. This equipment includes, but is not limited to:

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- Portable radiation monitoring equipment
- Emergency medical response equipment
- Dosimeters
- Portable radios

Emergency equipment and instrumentation (refer to Part 2, Section H of this Plan) shall be inventoried, inspected, and operationally checked periodically as indicated by the procedure and after each use. Sufficient reserves of equipment and instrumentation are stocked to replace emergency equipment and instrumentation removed from service for calibration and/or repair.

**TITLE: PERMANENTLY DEFUELED EMERGENCY PLAN**

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**Appendix 1 Letters of Agreement**

Copies of LOAs for the offsite emergency response supporting organizations listed below are maintained in the Emergency Planning Department files.

1. Covert Fire Department (Fire/Ambulance)
2. Bronson South Haven Hospital

Per Section P, the LOAs with outside support organizations and government agencies are reviewed and confirmed annually. These letters are updated as needed. Letters with no specific end date remain in effect until terminated in writing by either party. This has been agreed to by the applicable supporting agencies.

**TITLE: PERMANENTLY DEFUELED EMERGENCY PLAN**

**Appendix 2 Cross-Reference Sections of the PDEP to Emergency Implementing Procedures**

Cross reference table of regulations and guidance documents to the PNP Emergency Plan and Emergency Implementing Procedures.

<b>Emergency Plan Section</b>	<b>Planning Standard 10 CFR 50.47*</b>	<b>Planning Requirement Appendix E.IV*</b>	<b>ISG-02, Attachment 1 Evaluation Criteria</b>	<b>Emergency Implementing Procedure</b>
A	(b)(1)	A.1, 2, 4, 7	A	To Be Determined (TBD)
B	(b)(2)	A.1, 2, 4; C.1	B	TBD
C	(b)(3)	A.6, 7	C	TBD
D	(b)(4)	8.1, 2; C.1, 2	D	TBD
E	(b)(5)	A.6, 7; C.1; D.1, 3; E	E	TBD
F	(b)(6)	C.1; D.1, 3; E	F	TBD
G	(b)(7)	Exempt	G	TBD
H	(b)(8)	E; G	H	TBD
I	(b)(9)	A.4; 8.1; C.2; E	I	TBD
J	(b)(10)	C.1; E	J	TBD
K	(b)(11)	E	K	TBD
L	(b)(12)	A.6, 7; E	L	TBD
M	(b)(13)	H	M	TBD
N	(b)(14)	E9; F	M	TBD
O	(b)(15)	F	O	TBD
P	(b)(16)	G	P	TBD

\* Refer to the PNP exemptions from portions of 10 CFR 50.47 and 10 CFR 50, Appendix E, for specific applicability.

TITLE: PERMANENTLY DEFUELED EMERGENCY PLAN

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**Appendix 3 Abbreviations and Definitions**

**Abbreviations**

Any abbreviation followed by a lower case "s" denotes the plural form of the term.

ALARA .....	As Low As Reasonably Achievable
ARM .....	Area Radiation Monitor
CFH .....	Certified Fuel Handler
CFR .....	Code of Federal Regulations
DBA .....	Design Basis Accident
DSAR .....	Defueled Safety Analysis Report
EAL .....	Emergency Action Level
ECL .....	Emergency Classification Level
ENS .....	(NRC) Emergency Notification System
EPA .....	U.S. Environmental Protection Agency
ERO .....	Emergency Response Organization
FSAR .....	Final Safety Analysis Report
FTS .....	Federal Telephone System
IC .....	Initiating Condition
ICS .....	Incident Command System
ISFSI .....	Independent Spent Fuel Storage Installation
ISG .....	Interim Staff Guidance
LOA .....	Letter of Agreement
mRem .....	milli-Roentgen Equivalent Man
mSv .....	millisievert
NCO .....	Non-Certified Operator
NIMS .....	National Incident Management System
NRC .....	U.S. Nuclear Regulatory Commission
NRF .....	National Response Framework
ORO .....	Offsite Response Organization
PAG .....	Protective Action Guide
PDEP .....	Permanently Defueled Emergency Plan
PDTS .....	Permanently Defueled Technical Specifications
PNP .....	Palisades Nuclear Plant
PRM .....	Process Radiation Monitor
RCA .....	Radiologically Controlled Area
RP .....	Radiation Protection
SFP .....	Spent Fuel Pool
TEDE .....	Total Effective Dose Equivalent

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TITLE: PERMANENTLY DEFUELED EMERGENCY PLAN

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**Definitions**

**Accountability** - The process used by the PNP ERO to identify potentially missing and/or injured personnel within the Protected Area during an emergency.

**Annual** - Frequency of occurrence equal to once per calendar year, between January 1<sup>st</sup> and December 31<sup>st</sup>.

**Area Radiation Monitors** - Fixed radiation detectors placed in strategic locations throughout the Facility for the purpose of continuously monitoring area radiation dose rates; an integral part of the Radiation Monitoring System that provides the Control Room with remote monitoring capabilities.

**Assembly** - The process of relocating onsite personnel, during an emergency to a pre-designated location. Onsite personnel who do NOT have an emergency response assignment (non-essential personnel) may be released.

**Assembly Area** - A pre-designated area to which non-essential personnel relocate during an emergency.

**Assessment Actions** - Those actions taken during or after an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

**Biennial** - Frequency of occurrence equal to once per two calendar years.

**Classification** - The classification of emergencies is divided into TWO (2) categories or conditions, covering the postulated spectrum of emergency situations. Each emergency classification is characterized by Emergency Action Levels (EALs) or event initiating conditions. The two classifications address emergencies of increasing severity.

**Corrective Actions** - Those emergency measures taken to ameliorate or terminate an emergency situation at or near its source.

**Drill** - A supervised instruction period aimed at testing, developing, and maintaining skill in a particular operation.

**Emergency Action Level (EAL)** - A predetermined, site-specific, observable threshold for a plant initiating condition that places the plant in a given emergency class.

**Emergency Director** - A previously designated and trained individual who assumes total responsibility for directing all licensee activities related to an emergency at the site.

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**Emergency Notification System (ENS)** - The NRC Emergency Notification System is a dedicated telephone system (part of the Federal Telephone System). It connects the plant with NRC headquarters. It is used for reporting emergency conditions to NRC personnel.

**Emergency Implementing Procedures** - Procedures that provide detailed information necessary to maintain the Emergency Preparedness Program and implement required tasks during an emergency.

**Essential Personnel** - Those individuals needed to achieve the goals and tasks as deemed necessary by the Shift Manager or Emergency Director during an emergency. Unless otherwise directed, initially all members of the Emergency Response Organization (ERO) are considered essential personnel.

**Exclusion Area** - The area surrounding the PNP reactor in which the licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. (10 CFR Part 100)

**Facility** – The Palisades Nuclear Plant, located in Covert Township, Van Buren County, Michigan.

**Manager responsible for Emergency Planning** - Individual responsible for reviewing and updating the emergency plan and supporting documents and coordinating all onsite and offsite emergency planning efforts.

**Offsite** - Locations outside of the Palisades Nuclear Plant Site boundary.

**Onsite** - The area within the Palisades Nuclear Plant Site boundary.

**Owner Controlled Area** - The fenced area containing licensee property.

**Process Radiation Monitors** - Radiation detectors which continuously monitor plant systems or specific effluent release points and provide the Control Room with remote monitoring capabilities and in some cases provide initiation of automatic termination of a specific effluent release.

**Protective Action Guide (PAG)** - Projected radiological dose values to individuals in the general population who warrant protective action. Protective Action Guides contain criteria used to determine whether the general population needs protective action due to projected radiological doses or from actual committed (measured) dose values.

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**Protected Area** - The area surrounding PNP encompassed by physical barriers and to which access is controlled.

**Quarterly** - Frequency of occurrence equal to once in each of the following periods: January 1<sup>st</sup> through March 31<sup>st</sup>, April 1<sup>st</sup> through June 30<sup>th</sup>, July 1<sup>st</sup> through September 30<sup>th</sup>, October 1<sup>st</sup> through December 31<sup>st</sup>.

**Radiation Area** - An area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 5 mRem (0.05 mSv) in one hour at 30 cm (~ 12 inches) from the radiation source or from any surface that the radiation penetrates.

**Radiologically Controlled Area** - Any area within plant buildings or on plant property where access is restricted and monitored for the purpose of radiation protection.

**Recovery Actions** - Those actions taken after the emergency to restore the plant as nearly as possible to its pre-emergency condition.

**Shift Manager** - Management person responsible for the shift command function and shall be a Certified Fuel Handler.

**Site Boundary** - That line beyond which the land is neither owned, leased, nor otherwise controlled by the site licensee. For Dose Assessment purposes the Site Boundary is the closest distance at which members of the public would be exposed to a radioactive release.

**Site Recovery Director** - The individual who reports to senior management of the Company and who directs the Response Organization during the recovery stage. The Site Recovery Director is responsible for the technical direction and control of the integrated recovery effort.

**Attachment 2 to Enclosure**

**HDI PNP 2022-016**

**Permanently Defueled Emergency Action Level Technical Bases**

**PD EAL BASES**  
**Revision 0**  
**Effective Date TBD**

**PALISADES NUCLEAR PLANT**  
**EMERGENCY IMPLEMENTING PROCEDURE**

**TITLE: PERMANENTLY DEFUELED EMERGENCY ACTION LEVEL  
TECHNICAL BASES**

**Approved:** \_\_\_\_\_ / \_\_\_\_\_ **TBD**  
**Procedure Sponsor** **Date**

**Process Applicability Exclusion**



New Procedure/Revision Summary:

Issued the Permanently Defueled Emergency Action Level Technical Bases to incorporate NRC's approval of the exemptions requested by letter dated July 11, 2022, whereby Holtec Decommissioning International, LLC (HDI), on behalf of Holtec Palisades, LLC, requested exemptions from portions of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E reflecting the reduced scope of the emergency planning requirements consistent with the permanently shutdown and defueled condition of the Palisades Nuclear Plant (PNP) reactor.

The NRC has docketed certification that all fuel has been permanently removed from the PNP reactor vessel and placed into the spent fuel pool (SFP), in accordance with 10 CFR 50.82(a)(2). The license for the PNP no longer authorizes operation of the reactor, nor emplacement or retention of fuel into the reactor vessel. The irradiated fuel will be stored in the SFP and in dry cask storage at the onsite independent spent fuel storage installation (ISFSI) until it is shipped offsite.

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## **1.0 PURPOSE**

This document provides the detailed set of EMERGENCY ACTION LEVELs (EALs) applicable to the Palisades Nuclear Plant (PNP) and its Independent Spent Fuel Storage Installations (ISFSIs). The associated Technical Bases uses 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) (Reference 5.1.1). As a permanently defueled facility, Recognition Category "PD" (Permanently Defueled) was used to develop the site-specific emergency classification scheme, including a set of INITIATING CONDITIONS (ICs) and EALs associated with the permanently defueled condition. Recognition category "PD" addresses spent fuel stored in the PNP Spent Fuel Pool (SFP). Because spent fuel at PNP is also stored in ISFSIs, this document also includes the applicable Recognition Category "E" EAL presented in Section 8 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 PNP EALs, provide historical documentation for future reference, and serve as a resource for training. Individuals responsible for emergency classification (Shift Manager and Emergency Director) may refer to the ICs and EALs contained in the matrix of this document. These individuals may also use the information in the associated "Basis" of each EAL as a technical reference in support of EAL interpretation.

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

## **2.0 DISCUSSION**

### **2.1 Permanently Defueled Facility**

NEI 99-01, Rev. 6, provides guidance for an emergency classification scheme applicable to a permanently defueled station, which is a facility that generated spent fuel under a 10 CFR Part 50 license, has permanently ceased operations, and will store the spent fuel onsite for an extended period. The EMERGENCY CLASSIFICATION LEVELs (ECLs) applicable to a permanently defueled facility are consistent with requirements of 10 CFR Part 50 (Reference 5.1.2), as exempted (Reference 5.1.3), and the guidance presented in NSIR/DPR-ISG-02, "Interim Staff Guidance, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," (ISG-02) (Reference 5.1.4).

The regulations in 10 CFR Part 50 do not distinguish between an operating plant and a plant that has permanently ceased power operations. To relax the emergency plan requirements, the owner of a permanently defueled station must demonstrate that no

credible event can result in a significant radiological release beyond the site boundary. Holtec Decommissioning International, LLC (HDI) 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 station may result in either a NOTIFICATION of UNUSUAL EVENT (UNUSUAL EVENT) or an 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 ISFSI. The ECLs applicable to an ISFSI are consistent with the requirements of 10 CFR Part 50. The ICs germane to a 10 CFR 72.32 emergency plan (as described in NUREG-1567 (Reference 5.1.5)) 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," (Reference 5.1.6). 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 Roentgen Equivalent Man (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 (Reference 5.1.7) are generally consistent with those for an UNUSUAL EVENT in a 10 CFR 50.47 emergency plan (Reference 5.1.8) (e.g., to provide assistance, if requested).

## **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 Level**

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 are applicable to the PNP, in ascending order of severity, are:

### **3.1.1 UNUSUAL EVENT**

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

### **3.1.2 ALERT**

The purpose of this classification is to assure that emergency personnel respond to the Control Room to support the emergency response.

## **3.2 Initiating Condition**

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., an earthquake).

Each IC is given a unique identification code consisting of letter combinations and one number. The first letter(s) establish the scope of the IC followed by hyphen. The next letter identifies the recognition category. The final letter identifies the ECL. Finally, a number identifies the sequence of the IC within the recognition category. The EAL identification codes are developed as follows:

### Permanently Defueled Recognition Categories

- PD-A – Abnormal Rad Levels / Radiological Effluent
- PD-H – Hazards and Other Conditions Affecting Plant Safety
- PD-S – System Malfunctions

### ISFSI Recognition Category

- E-H – Hazards and Other Conditions Affecting ISFSI

## **3.3 Emergency Action Level**

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

## **4.0 GUIDANCE ON MAKING EMERGENCY CLASSIFICATIONS**

### **4.1 General Considerations**

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 an instrument channel check, response on related or redundant indicators, or direct observation by facility personnel. The validation of indications should be completed in a manner that supports timely emergency declaration.

For ICs and EALs that have a stipulated time duration (e.g., 15 minutes, 60 minutes, etc.), the Shift Manager / Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time. If an ongoing radiological release is detected and the release start time is unknown, it should be assumed that the release duration specified in the IC/EAL has been exceeded, absent data to the contrary.

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 facility 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 (Reference 5.1.9).

The assessment of some EALs is based on the results of analyses that are necessary to ascertain whether a specific EAL threshold has been exceeded (e.g., gaseous and liquid effluent sampling, etc.); the EAL and/or the associated basis discussion will identify the necessary analysis. In these cases, the declaration period starts with the availability of the analysis results that show the threshold to be exceeded (i.e., this is the time that the EAL information is first available).

While the EALs have been developed to address a full spectrum of possible events and conditions which may warrant emergency classification, a provision for classification based on operator/management experience and judgment is still necessary. The NEI 99-01 scheme provides the Shift Manager / 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 Shift Manager / 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 Shift Manager / Emergency Director 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.

When assessing an EAL that specifies a time duration for the off-normal condition, the EAL time duration runs concurrently with the emergency classification time duration.

## **4.3 Classification of Multiple Events and Conditions**

When multiple emergency events or conditions are present, the Shift Manager / Emergency Director 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,” (RIS 2007-02) (Reference 5.1.10).

## **4.4 Classification of Imminent Conditions**

Although EALs provide specific thresholds, the Shift Manager / 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 IMMIDENT). If, in the judgment of the Shift Manager / Emergency Director, meeting an EAL is IMMIDENT, the emergency classification should be made as if the EAL has been met. While applicable to all ECLs, this approach is particularly important at the higher ECL since it provides additional time for implementation of protective measures.

## **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.

As noted above, guidance concerning classification of rapidly escalating events or conditions is provided in RIS 2007-02 (Reference 5.1.10).

#### **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. Examples of such events would be an earthquake or an explosion.

#### **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 allowing 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,” (NUREG-1022) (Reference 5.1.11) 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 (Reference 5.1.11).

## **5.0 REFERENCES**

### **5.1 Developmental References**

- 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 Holtec Decommissioning International, LLC (HDI) letter to NRC, "Request for Exemptions from Certain Emergency Planning Requirements of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E," (HDI PNP 2022-017), dated DATE [*Upon issuance of the requested exemptions, this Reference will be eliminated and replaced by Implementing Reference 5.2.3 citing the NRC document approving exemptions*]
- 5.1.4 NSIR/DPR-ISG-02, Interim Staff Guidance, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants
- 5.1.5 NUREG-1567, Spent Fuel Dry Storage Facilities
- 5.1.6 NUREG-1140, A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees
- 5.1.7 10 CFR 72.32, Emergency Plan
- 5.1.8 10 CFR 50.47, Emergency Plans
- 5.1.9 10 CFR 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors
- 5.1.10 RIS 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events, February 2007
- 5.1.11 NUREG-1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73

### **5.2 Implementing References**

- 5.2.1 PNP Permanently Defueled Emergency Plan
- 5.2.2 Procedure Number [*TBD*], "*Emergency Classification and Actions*"

### **5.3 Commitments**

None

## 6.0 ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

### 6.1 Acronyms and Abbreviations

CAS	Central Alarm Station
CDE	Committed Dose Equivalent
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
cpm	counts per minute
EAL	Emergency Action Level
ECL	Emergency Classification Level
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
HOO	Headquarters Operations Officer
hr	Hour
ISFSI	Independent Spent Fuel Storage Installation
IC	Initiating Condition
MPC	Multi-Purpose Canister
mRem	milli-Roentgen Equivalent Man
NEI	Nuclear Energy Institute
NORAD	North American Aerospace Defense Command
NRC	Nuclear Regulatory Commission
OCA	Owner Controlled Area
ODCM	Offsite Dose Calculation Manual
ORO	Offsite Response Organization
PAG	Protective Action Guide
PD	Permanently Defueled
PNP	Palisades Nuclear Plant
rem	Roentgen Equivalent Man
SFP	Spent Fuel Pool
TEDE	Total Effective Dose Equivalent
UFSAR	Updated Final Safety Analysis Report

## 6.2 Definitions

- 6.2.1 **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 HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels.
- 6.2.2 **CONFINEMENT BOUNDARY:** The irradiated fuel dry storage cask barrier(s) between areas containing radioactive substances and the environment.
- 6.2.3 **EMERGENCY ACTION LEVEL (EAL):** A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the facility in a given ECL.
- 6.2.4 **EMERGENCY CLASSIFICATION LEVEL (ECL):** One of a set of names or titles established by the 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, in ascending order of severity, are UNUSUAL EVENT and ALERT:
- 6.2.5 **EXPLOSION:** A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or over pressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.
- 6.2.6 **FIRE:** Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is not required if large quantities of smoke and heat are observed.
- 6.2.7 **HOSTAGE:** A person(s) held as leverage against the licensee to ensure that demands will be met by the facility.

**NOTE**

A Hostile Action-Based program is not necessary for decommissioned nuclear power reactors; however, the consideration of HOSTILE ACTIONS for EAL purposes is still applicable.

- 6.2.8 **HOSTILE ACTION:** An act toward a facility 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 facility. Non-terrorism-based EALs should be used to address such activities, (i.e., this may include violent acts between individuals in the Owner Controlled Area (OCA)).
- 6.2.9 **HOSTILE FORCE:** One or more 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.
- 6.2.10 **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.
- 6.2.11 **INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI):** A complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.
- 6.2.12 **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.
- 6.2.13 **NORMAL LEVELS:** As applied to radiological IC/EALs, the highest reading in the past twenty-four hours excluding the current peak value.
- 6.2.14 **OWNER CONTROLLED AREA (OCA):** The fenced area containing licensee property.
- 6.2.15 **PROJECTILE:** An object directed toward a facility that could cause concern for its continued operability, reliability, or personnel safety.
- 6.2.16 **PROTECTED AREA:** The area surrounding PNP encompassed by physical barriers and to which access is controlled.

- 6.2.17 **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 facility. A SECURITY CONDITION does not involve a HOSTILE ACTION.
- 6.2.18 **UNPLANNED:** A parameter change or an event that is not: 1) the result of an intended evolution; or 2) an expected facility response to a transient. The cause of the parameter change or event may be known or unknown.
- 6.2.19 **UNUSUAL EVENT (NOTIFICATION OF UNUSUAL EVENT):** 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 occurs.
- 6.2.20 **VISIBLE DAMAGE:** Damage to a component or structure that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected component or structure.

## **7.0 ATTACHMENTS**

Attachment 1, EAL Matrices

Attachment 2, EAL Bases

**Attachment 1**  
**EAL Matrices**

**Table PD-1: Recognition Category “PD” Initiating Condition Summary Matrix**

UNUSUAL EVENT	ALERT
<b>PD-AU1</b> Release of gaseous or liquid radioactivity greater than 2 times the Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer.	<b>PD-AA1</b> Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mRem TEDE or 50 mRem thyroid CDE.
<b>PD-AU2</b> UNPLANNED rise in facility radiation levels.	<b>PD-AA2</b> UNPLANNED rise in facility radiation levels that impedes facility access required to maintain spent fuel integrity.
<b>PD-HU1</b> Confirmed SECURITY CONDITION or threat.	<b>PD-HA1</b> HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.
<b>PD-HU2</b> Hazardous event affecting equipment necessary for spent fuel cooling.	
<b>PD-HU3</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT.	<b>PD-HA3</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.
<b>PD-SU1</b> UNPLANNED spent fuel pool temperature rise.	

**Table E-1: Recognition Category “E” Initiating Condition Summary Matrix**

UNUSUAL EVENT
<b>E-HU1</b> Damage to a loaded cask CONFINEMENT BOUNDARY.

	ALERT	UNUSUAL EVENT																								
<b>Abnormal Rad Levels / Radiological Effluents</b>																										
Radiological Effluents	<p><b>PD-AA1</b> Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mRem TEDE or 50 mRem thyroid CDE.</p> <p><b>EMERGENCY ACTION LEVEL (EAL): (1 or 2 or 3 or 4)</b></p> <p><b>NOTES</b></p> <ul style="list-style-type: none"> <li>• The Emergency Director should declare the ALERT promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</li> <li>• If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.</li> <li>• If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> <li>• The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.</li> </ul> <p>1. Valid reading on <b>ANY</b> of the following effluent radiation monitors greater than the reading shown for 15 minutes or longer.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th colspan="3" style="text-align: center;">Effluent Monitor Classification Thresholds - ALERT</th> </tr> <tr> <th colspan="2" style="text-align: center;">Monitor</th> <th style="text-align: center;">ALERT Threshold</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Gaseous</td> <td style="text-align: center;">RIA-2326</td> <td style="text-align: center;">9.00E+06 cpm</td> </tr> <tr> <td style="text-align: center;">Liquid</td> <td style="text-align: center;">RIA-1049</td> <td style="text-align: center;">8.92E+06 cpm</td> </tr> </tbody> </table> <p style="text-align: center;"><b>OR</b></p> <p>2. Dose assessment using actual meteorology indicates doses greater than 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary.</p> <p style="text-align: center;"><b>OR</b></p> <p>3. Confirmed analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary for one hour of exposure.</p> <p style="text-align: center;"><b>OR</b></p> <p>4. Field survey results indicate <b>EITHER</b> of the following at or beyond the site boundary:</p> <ul style="list-style-type: none"> <li>• Closed window dose rates greater than 10 mRem/hr expected to continue for 60 minutes or longer.</li> <li>• Analyses of field survey samples indicate thyroid CDE greater than 50 mRem for one hour of inhalation.</li> </ul>	Effluent Monitor Classification Thresholds - ALERT			Monitor		ALERT Threshold	Gaseous	RIA-2326	9.00E+06 cpm	Liquid	RIA-1049	8.92E+06 cpm	<p><b>PD-AU1</b> Release of gaseous or liquid radioactivity greater than 2 times the Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer.</p> <p><b>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</b></p> <p><b>NOTES</b></p> <ul style="list-style-type: none"> <li>• The Emergency Director should declare the UNUSUAL EVENT promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.</li> <li>• If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes.</li> <li>• If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> </ul> <p>1. Valid reading on <b>ANY</b> of the following effluent radiation monitors greater than the reading shown for 60 minutes or longer.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th colspan="3" style="text-align: center;">Effluent Monitor Classification Thresholds – UNUSUAL EVENT</th> </tr> <tr> <th colspan="2" style="text-align: center;">Monitor</th> <th style="text-align: center;">UNUSUAL EVENT Threshold</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Gaseous</td> <td style="text-align: center;">RIA-2326</td> <td style="text-align: center;">2.30E+04 cpm</td> </tr> <tr> <td style="text-align: center;">Liquid</td> <td style="text-align: center;">RIA-1049</td> <td style="text-align: center;">2 X High Alarm</td> </tr> </tbody> </table> <p style="text-align: center;"><b>OR</b></p> <p>2. Confirmed sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times the ODCM limits for 60 minutes or longer.</p>	Effluent Monitor Classification Thresholds – UNUSUAL EVENT			Monitor		UNUSUAL EVENT Threshold	Gaseous	RIA-2326	2.30E+04 cpm	Liquid	RIA-1049	2 X High Alarm
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<b>ALERT</b>		<b>UNUSUAL EVENT</b>	
<b>Abnormal Rad Levels / Radiological Effluents</b>			
<b>Area Rad Levels</b>	<p><b>PD-AA2</b> UNPLANNED rise in facility radiation levels that impedes facility access required to maintain spent fuel integrity.</p> <p><b>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</b></p> <ol style="list-style-type: none"> <li>UNPLANNED dose rate greater than 15 mRem/hr in <b>ANY</b> of the following areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.           <ul style="list-style-type: none"> <li>Control Room (RIA-2310)</li> <li>Central Alarm Station (CAS) (RIA-2311/by survey)</li> </ul> </li> <li>OR</li> <li>UNPLANNED Area Radiation Monitor readings or survey indicate a rise by 100 mRem/hr over <b>NORMAL LEVELS</b> that impedes access to <b>ANY</b> of the following areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.           <ul style="list-style-type: none"> <li>SFP Room</li> <li>SFP Heat Exchanger Room</li> </ul> </li> </ol>	<p><b>PD-AU2</b> UNPLANNED rise in facility radiation levels.</p> <p><b>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</b></p> <ol style="list-style-type: none"> <li> <ol style="list-style-type: none"> <li>UNPLANNED water level drop in the SFP as indicated by <b>ANY</b> of the following:               <ul style="list-style-type: none"> <li>EK-1309</li> <li>Visual observation of SFP water level</li> <li>Manual SFP water level measurement</li> </ul> </li> </ol> </li> <li>OR</li> <li>UNPLANNED rise in area radiation levels as indicated by spent fuel pool area radiation monitor (RIA-5709 or RIA-2313).</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>Area radiation monitor reading or survey result indicated an UNPLANNED rise of 25 mRem/hr over <b>NORMAL LEVELS</b>.</li> </ol>	
<b>Hazards and Other Conditions Affecting Facility Safety</b>			
<b>Security</b>	<p><b>PD-HA1</b> HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p><b>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</b></p> <ol style="list-style-type: none"> <li>A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Leader.</li> <li>OR</li> <li>A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.</li> </ol>	<p><b>PD-HU1</b> Confirmed SECURITY CONDITION or threat.</p> <p><b>EMERGENCY ACTION LEVEL (EAL): (1 or 2 or 3)</b></p> <ol style="list-style-type: none"> <li>A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Leader.</li> <li>OR</li> <li>Notification of a credible security threat directed at the site.</li> <li>OR</li> <li>A validated notification from the NRC providing information of an aircraft threat.</li> </ol>	
<b>Hazardous Event</b>	<b>None</b>	<p><b>PD-HU2</b> Hazardous event affecting equipment necessary for spent fuel cooling.</p> <p><b>EMERGENCY ACTION LEVEL (EAL):</b></p> <ol style="list-style-type: none"> <li> <ol style="list-style-type: none"> <li>The occurrence of <b>ANY</b> of the following hazardous events:               <ul style="list-style-type: none"> <li>Seismic event (earthquake)</li> <li>Internal or External flooding event</li> <li>High winds or tornado strike</li> <li>FIRE</li> <li>EXPLOSION</li> <li>Other events with similar hazard characteristics as determined by Shift Manager</li> </ul> </li> </ol> </li> <li>OR</li> <li>The event has damaged at least one SFP cooling pump <b>AND</b> one SFP heat exchanger.</li> <li>OR</li> <li>The damaged system cannot, or potentially cannot, perform its design function based on <b>EITHER</b>:           <ul style="list-style-type: none"> <li>Indications of degraded performance</li> <li>VISIBLE DAMAGE</li> </ul> </li> </ol>	

<b>ALERT</b>		<b>UNUSUAL EVENT</b>	
<b>Emergency Director Judgment</b>	<p><b>PD-HA3</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.</p> <p><b><u>EMERGENCY ACTION LEVEL (EAL):</u></b>            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 HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.</p>	<b>Emergency Director Judgment</b>	<p><b>PD-HU3</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT.</p> <p><b><u>EMERGENCY ACTION LEVEL (EAL):</u></b>            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 systems needed to maintain spent fuel integrity occurs.</p>
<b>System Malfunctions</b>			
<b>Spent Fuel Pool</b>	<b>None</b>	<b>Spent Fuel Pool</b>	<p><b>PD-SU1</b> UNPLANNED spent fuel pool temperature rise.</p> <p><b><u>EMERGENCY ACTION LEVEL (EAL):</u></b>            1. UNPLANNED spent fuel pool temperature rise to greater than 140°F.</p>
<b>ISFSI Malfunctions</b>			
<b>ISFSI</b>	<b>None</b>	<b>ISFSI</b>	<p><b>E-HU1</b> Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p><b><u>EMERGENCY ACTION LEVEL (EAL):</u></b>            1. Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than the applicable values shown on Table E-1 on the spent fuel cask.</p>

**Attachment 2**  
**EAL Bases**

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**INITIATING CONDITION:**

Release of gaseous or liquid radioactivity greater than 2 times the Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer.

**EMERGENCY ACTION LEVELS (EALs): (1 or 2)**

**Notes:**

- The Emergency Director should declare the UNUSUAL EVENT promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.
  - If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes.
  - If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.
1. Valid reading on **ANY** of the following effluent radiation monitors greater than the reading shown for 60 minutes or longer.

Effluent Monitor Classification Thresholds – UNUSUAL EVENT		
Monitor		UNUSUAL EVENT Threshold
<b>Gaseous</b>	RIA-2326	2.30E+04 cpm
<b>Liquid</b>	RIA-1049	2 X High Alarm

**OR**

2. Confirmed sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times the ODCM limits for 60 minutes or longer.

**Basis:**

This IC addresses a potential decrease in the level of safety of the facility as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any uncontrolled gaseous or liquid radiological release, monitored or un-monitored, including those for which a radioactivity discharge permit is normally prepared.

PNP incorporates design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent

unintentional releases, and to control and monitor intentional releases. The occurrence of an extended, uncontrolled radioactive release to the environment is indicative of degradation in these features and/or controls.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of facility conditions alone. The inclusion of both facility condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.

The 2 x ODCM limit multiples are specified only to distinguish between emergency and non-emergency conditions. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate.

Releases should not be prorated or averaged. For example, a release exceeding 4 times release limits for 30 minutes does not meet the EAL.

EAL #1 - This EAL addresses radioactivity releases that cause effluent radiation monitor readings to exceed 2 times the limit established by a radioactivity discharge permit. This EAL will typically be associated with planned batch releases from non-continuous release pathways (e.g., radwaste, waste gas).

EAL #2 - This EAL addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.).

Escalation of the ECL would be via IC PD-AA1.

#### Additional PNP Site-Specific Bases Information

Gaseous and liquid releases in excess of two times the ODCM instantaneous limits that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the UNUSUAL EVENT emergency class) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes.

The values shown for each monitor represents two times the calculated monitor alarm set-points (Reference 2) which are set in accordance with the ODCM (Reference 3).

Collecting liquid and gaseous effluent samples to ensure that release conditions above nominal steady state conditions are detected and reported. Confirmed sample analyses in excess of two times the ODCM (Reference 3) that continue for 60 minutes or longer represent an uncontrolled situation and, hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the UNUSUAL EVENT emergency class) is not the primary concern here; it is the degradation in facility control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. For example, a release of 4 times the ODCM limit for 30 minutes does not exceed this initiating condition. Further, the ED should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes.

At low classification levels, the concern for classification is the continuing, uncontrolled release of radioactivity and not the magnitude of the release. When the liquid release is isolated, the release is no longer continuing nor is it uncontrolled. Therefore, the classification is not appropriate when the liquid release is isolated.

EAL #2 addresses collecting liquid and gaseous effluent samples to ensure that release conditions above nominal steady state conditions are detected and reported.

Sample analyses are considered "confirmed" when samples have been obtained and analyzed in accordance with plant procedures and the results reported to the Shift Manager or Emergency Director according to established practices. Preliminary sample results that may become available prior to completion of the relevant procedural requirements are not "confirmed" and are not to be used in assessing this EAL.

**Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-AU1
2. Enercon Calculation No. ENTGPAL164-CALC-001, Permanently Defueled Gaseous and Liquid Effluent EAL Threshold Calculation Rev. 1, Table 2-1
3. PNP Offsite Dose Calculation Manual

**EMERGENCY CLASSIFICATION LEVEL:**

ALERT

**INITIATING CONDITION:**

Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mRem TEDE or 50 mRem thyroid CDE.

**EMERGENCY ACTION LEVEL (EALs): (1 or 2 or 3 or 4)**

**Notes:**

- The Emergency Director should declare the ALERT promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.
  - If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.
  - If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.
  - The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.
1. Valid reading on **ANY** of the following effluent radiation monitors greater than the reading shown for 15 minutes or longer.

Effluent Monitor Classification Thresholds – ALERT		
Monitor		ALERT Threshold
<b>Gaseous</b>	RIA-2326	9.00E+06 cpm
<b>Liquid</b>	RIA-1049	8.92E+06 cpm

**OR**

2. Dose assessment using actual meteorology indicates doses greater than 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary.

**OR**

3. Confirmed analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary for one hour of exposure.

**OR**

4. Field survey results indicate **EITHER** of the following at or beyond the site boundary:

- Closed window dose rates greater than 10 mRem/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 50 mRem for one hour of inhalation.

**Basis:**

This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude represent an actual or potential substantial degradation of the level of safety of the facility as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of facility conditions alone. The inclusion of both facility condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 1% of the EPA PAG of 1,000 mRem while the 50 mRem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.

Additional PNP Site-Specific Bases Information

The calculated EAL threshold value for RIA-2326 exceeds the operating range for the effluent monitor (Reference 2). Therefore, a value equal to 90% of the maximum accurate reading of the monitor is used as the threshold to declare an Alert. This value is not based on any particular dose value. However, it ensures that an accurate monitor reading is available, and that an actual or potential substantial degradation of the level of safety of the facility is addressed.

**Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-AA1
2. Enercon Calculation No. ENTGPAL164-CALC-001, Permanently Defueled Gaseous and Liquid Effluent EAL Threshold Calculation Rev. 1, Table 2-1
3. PNP ODCM

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**INITIATING CONDITION:**

UNPLANNED rise in facility radiation levels.

**EMERGENCY ACTION LEVEL (EALs): (1 or 2)**

1. a. UNPLANNED water level drop in the SFP as indicated by **ANY** of the following:
  - EK-1309
  - Visual observation of SFP water level
  - Manual SFP water level measurement

**AND**

- b. UNPLANNED rise in area radiation levels as indicated by spent fuel pool area radiation monitor (RIA-5709 or RIA-2313).

**OR**

2. Area radiation monitor reading or survey result indicated an UNPLANNED rise of 25 mRem/hr over NORMAL LEVELS.

**Basis:**

This IC addresses elevated facility radiation levels caused by a decrease in water level above irradiated (spent) fuel or other UNPLANNED events. The increased radiation levels are indicative of a minor loss in the ability to control radiation levels within the facility or radioactive materials. Either condition is a potential degradation in the level of safety of the facility.

A water level decrease will be primarily determined by indications from available level instrumentation. Other sources of level indications may include reports from facility personnel. A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by monitors in those locations.

The effects of planned evolutions should be considered. Note that EAL #1 is applicable only in cases where the elevated reading is due to an UNPLANNED water level drop. EAL #2 excludes radiation level increases that result from planned activities such as use of radiographic sources and movement of radioactive waste materials.

Escalation of the ECL would be via IC PD-AA1 or PD-AA2.

#### Additional PNP Site-Specific Bases Information

Loss of inventory from the SFP may reduce water shielding above spent fuel and cause unexpected increases in plant radiation. Classification as an UNUSUAL EVENT is warranted as a precursor to a more serious event.

The minimum allowable water level in the (SFP) is the Low Spent Fuel Pool water level. The low SFP water level alarm setpoint is at 646 ft elevation or 35 ft above the bottom of the SFP. SFP water level is indicated by EK-1309 and alarmed in the Control Room (Reference 2 and 3), or via visual observation or manual SFP water level measurement.

The listed area radiation monitors are those that would likely see an increase in area radiation due to a loss of shielding resulting from a loss of pool inventory (Reference 3). While a radiation monitor could detect a rise in dose due to a drop in the water level, it might not be a reliable indication, in and of itself, of whether or not the fuel is uncovered. Elevated radiation monitor indications will need to be combined with another indicator (or personnel report) of water loss.

Calculated dose rates above the SFP and resultant measured dose rates on a nearby ARM (RIA-2313) indicate that measurable increases of radiation will occur when SFP water level drops to approximately the 632 ft elevation and alarm below an elevation of approximately 630 ft elevation (Reference 3).

Assessment of this EAL may be made with survey readings using portable instruments as well as installed radiation monitors.

#### **Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-AU2
2. Permanently Defueled Technical Specifications 3.7.14, Spent Fuel Pool (SFP) Water Level
3. AOP-26, Loss of Spent Fuel Pool Cooling

**EMERGENCY CLASSIFICATION LEVEL:**

ALERT

**INITIATING CONDITION:**

UNPLANNED rise in facility radiation levels that impedes facility access required to maintain spent fuel integrity.

**EMERGENCY ACTION LEVEL (EALs): (1 or 2)**

1. UNPLANNED dose rate greater than 15 mRem/hr in **ANY** of the following areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity:

- Control Room (RIA-2310)
- Central Alarm Station (CAS) (RIA-2311/by survey)

**OR**

2. UNPLANNED Area Radiation Monitor readings or survey indicate a rise by 100 mRem/hr over NORMAL LEVELS that impedes access to **ANY** of the following areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.

- SFP Room
- SFP Heat Exchanger Room

**Basis:**

This IC addresses increased radiation levels that impede necessary access to areas containing equipment that must be operated manually or that requires local monitoring, in order to maintain systems needed to maintain spent fuel integrity. As used here, 'impede' includes hindering or interfering, provided that the interference or delay is sufficient to significantly threaten necessary facility access. It is this impaired access that results in the actual or potential substantial degradation of the level of safety of the facility.

This IC does not apply to anticipated temporary increases due to planned events.

Additional PNP Site-Specific Bases Information

Areas that meet this threshold include the Control Room and the Central Alarm Station (CAS). The Control Room Area Radiation Monitor (RIA-2310) provides indication of area radiation levels in the Control Room.

The Central Alarm Station (CAS) is included in this EAL because of its importance to permitting access to areas required to assure safe plant operations. CAS has no installed radiation monitoring capability. However, RIA-2311 will provide indication of increasing radiation levels prompting surveys.

**Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-AA2

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**INITIATING CONDITION:**

Confirmed SECURITY CONDITION or threat.

**EMERGENCY ACTION LEVEL (EALs): (1 or 2 or 3)**

1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Leader.

**OR**

2. Notification of a credible security threat directed at the site.

**OR**

3. A validated notification from the NRC providing information of an aircraft threat.

**Basis:**

This IC addresses events that pose a threat to facility personnel or the equipment necessary to maintain cooling of spent fuel, 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 IC PD-HA1.

Timely and accurate communications between the Security Shift Leader and the Control Room is essential for proper classification of a security-related event. Classification of these events will initiate appropriate threat-related notifications to facility personnel and Offsite Response Organizations (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 references the Security Shift Leader because this is the individual 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.

EAL #2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with the PNP Security Plan (Reference 2).

EAL #3 addresses the threat from the impact of an aircraft on the facility. The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may also be provided by NORAD through the NRC. Validation is performed by calling the NRC or by other approved methods of authentication.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the PNP Security Plan.

Escalation of the ECL would be via IC PD-HA1.

#### Additional PNP Site-Specific Bases Information

The intent of these EALs is to ensure that notifications for the aircraft threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

The determination of "credible" is made through use of information found in the PNP Security Plan (Reference 2).

Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on PNP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the OWNER CONTROLLED AREA).

#### **Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-HU1
2. PNP Security Plan

**EMERGENCY CLASSIFICATION LEVEL:**

ALERT

**INITIATING CONDITION:**

HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.

**EMERGENCY ACTION LEVEL (EALs): (1 or 2)**

1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Leader.

**OR**

2. A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.

**Basis:**

This IC addresses the occurrence of a HOSTILE ACTION within the OWNER CONTROLLED AREA or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the PROTECTED AREA, or the need to prepare the facility and staff for a potential aircraft impact.

Timely and accurate communications between the Security Shift Leader and the Control Room is essential for proper classification of a security-related event.

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 OROs, 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.

EAL #1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes any action directed against an ISFSI that is located within the OWNER CONTROLLED AREA.

EAL #2 addresses the threat from the impact of an aircraft on the facility, and the anticipated arrival time is within 30 minutes. The intent of this EAL is to ensure that threat-related notifications are made in a timely manner so that facility personnel and OROs are in a heightened state of readiness. This EAL is met when the threat-related information has been validated in accordance with the PNP Security Plan (Reference 2).

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may be provided by NORAD through the NRC.

In some cases, it may not be readily apparent if an aircraft impact within the OWNER CONTROLLED AREA was intentional (i.e., a HOSTILE ACTION). It is expected, although not certain, that notification by an appropriate Federal agency to the site would clarify this point. In this case, the appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. The emergency declaration, including one based on other ICs/EALs, should not be unduly delayed while awaiting notification by a Federal agency.

Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the PNP Security Plan.

#### Additional PNP Site-Specific Bases Information

**HOSTILE ACTION:** An act toward a nuclear power plant 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 nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the OWNER CONTROLLED AREA).

#### **Basis Reference(s):**

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

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**INITIATING CONDITION:**

Hazardous event affecting equipment necessary for spent fuel cooling.

**EMERGENCY ACTION LEVEL (EAL):**

1. a. The occurrence of **ANY** of the following hazardous events:
  - Seismic event (earthquake)
  - Internal or external flooding event
  - High winds or tornado strike
  - FIRE
  - EXPLOSION
  - Other events with similar hazard characteristics as determined by the Shift Manager

**AND**

- b. The event has damaged at least one SFP cooling pump **AND** one SFP heat exchanger.

**AND**

- c. The damaged system cannot, or potentially cannot, perform its design function based on **EITHER**:
  - Indications of degraded performance
  - VISIBLE DAMAGE

**Basis:**

This IC addresses a hazardous event that causes damage to at least one train of a system needed for spent fuel cooling. The damage must be of sufficient magnitude that the system(s) train cannot, or potentially cannot, perform its intended function. This condition reduces the margin to a loss or potential loss of the fuel clad barrier, and therefore represents a potential degradation of the level of safety of the facility.

For EAL 1.c., the first bullet addresses damage to equipment that is in service/operation since indications for it will be readily available.

For EAL 1.c., the second bullet addresses damage to equipment that is not in service/operation or readily apparent through indications alone. Operators will make this determination based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage.

Escalation of the ECL would be via IC PD-AA1 or PD-AA2, PD-HA1 or PD-HA3.

#### Additional PNP Site-Specific Bases Information

The SFP cooling system removes decay heat from spent fuel stored in the SFP. The system was originally designed to remove the decay heat from one-third of the total core fuel elements.

The SFP cooling system is required to maintain the fuel pool water temperature less than 150°F with a minimum of one SFP cooling pump operating. The maximum allowable SFP heat load resulting from off-loaded spent fuel ensures that the SFP water temperature limit of 150°F is maintained with one pump in operation. Heat is removed from the spent fuel pool by the spent fuel pool heat exchanger with component cooling water providing the cooling medium. (Reference 2).

#### **Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-HU2
2. DSAR Section 9.4, Spent Fuel Pool Cooling System

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**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 systems needed to maintain spent fuel integrity 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 ECL description for an UNUSUAL EVENT.

Additional PNP Site-Specific Bases Information

None

**Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-HU3
2. PNP Permanently Defueled Emergency Plan, Part 2, Section B, "Emergency Response Organization"

**EMERGENCY CLASSIFICATION LEVEL:**

ALERT

**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 site equipment because of 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 ECL description for an ALERT.

Additional PNP Site-Specific Bases Information

None

**Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-HA3
2. PNP Permanently Defueled Emergency Plan, Part 2, Section B, "Emergency Response Organization"

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**INITIATING CONDITION:**

UNPLANNED spent fuel pool temperature rise.

**EMERGENCY ACTION LEVEL (EAL):**

UNPLANNED spent fuel pool temperature rise to greater than 140°F.

**Basis:**

This IC addresses a condition that is a precursor to a more serious event and represents a potential degradation in the level of safety of the facility. If uncorrected, boiling in the SFP will occur, and result in a loss of SFP level and increased radiation levels.

Escalation of the ECL would be via IC PD-AA1 or PD-AA2.

Additional PNP Site-Specific Bases Information

AOP-26 (Reference 2) is applicable when there is an unplanned loss of SFP inventory or SFP cooling. This procedure provides instructions to add large volumes of water to the SFP to address beyond design basis events that result in significant losses due to failures of the SFP. Entry into AOP-26 occurs based on HI-HI SFP Temperature Alarm on TIA\_0925\_D and TIA\_0926\_D of 140°F.

On-shift personnel will provide initial mitigation for a loss of SFP cooling based on SFP high temperature alarm on TIA\_0925\_D and TIA\_0926\_D of 125°F (Reference 3). Based on RX-EA-SFPHEATUP-11-01 (Reference 4), for a loss of SFP Cooling, at 365 days after shutdown, the heat up rate in the SFP would be approximately 3.5°F per hour. Using the entry condition for the Loss of Spent Fuel Pooling procedure as the EAL threshold provides a precursor for additional actions to restore SFP cooling and provides approximately 20 hours to mitigate before SFP boiling were to occur.

**Basis Reference(s):**

1. NEI 99-01, Rev. 6, PD-SU1
2. AOP-26, Loss of Spent Fuel Pool Cooling
3. SOP-27, Fuel Pool System
4. Calculation No. RX-EA-SFPHEATUP-11-01, "Palisades Spent Fuel Pool Heatup Calculation," Revision 6, Attachment 9.8

**E-HU1**

**EMERGENCY CLASSIFICATION LEVEL:**

UNUSUAL EVENT

**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 the applicable values shown on Table E-1 on the spent fuel cask.

**Table E-1 Cask Dose Rates**

<b>Cask System</b>	<b>Casks</b>	<b>Dose Rates</b>
Ventilated Storage Cask System (VSC-24)	All	40 mrem/hr on the sides
		100 mrem/hr on the top
		100 mrem/hr at inlet and outlet ducts
Standardized NUHOMS	32PT HSM-001 thru HSM-011	1600 mrem/hr on the HSM front surface
		400 mrem/hr on the HSM door centerline
		16 mrem/hr on the end shield wall exterior
	24PTH HSM-H-012 thru HSM-H-024	2600 mrem/hr on the HSM front surface
		10 mrem/hr on the HSM door centerline
		20 mrem/hr on the end shield wall exterior
HI-STORM FW MPC	All	60 mrem/hr (gamma + neutron) on the top of the OVERPACK
		600 mrem/hr (gamma + neutron) on 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 “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.

#### Additional PNP Site-Specific Bases Information

The PNP ISFSIs utilize multiple dry spent fuel storage systems. These systems consist of the Ventilated Storage Cask System (VSC-24) (Reference 2); the NUHOMS® Horizontal Modular Storage System (32PT and 24PTH) (References 3 and 4); and the HI-STORM Flood/Wind (FW) Multipurpose Canister (MPC) Cask System (Reference 5). The dose rates included in Table E-1 equate to two-times the cask-specific technical specification allowable radiation value for each of the cask systems (References 2, 3, 4, and 5).

This EAL addresses any condition which indicates a loss of a cask CONFINEMENT BOUNDARY and thus a potential degradation in the level of safety of the ISFSI.

Minor surface damage that does not affect storage cask boundary is excluded from the scope of this EAL.

#### **Basis Reference(s):**

1. NEI 99-01, Rev. 6, E-HU1
2. Renewal of Initial Certificate of Compliance and Amendments No. 1 through 6 of Certificate of Compliance No. 1007 for the VSC-24 Cask System, Enclosure # - Attachment A, Technical Specification 1.2.4
3. Renewal of Initial Certificate of Compliance and Amendments No. 1 through 11 and 13, Revision 1, and Amendment No. 14 of Certificate of Compliance No. 1004 for the Standardized NUHOMS® Horizontal Modular Storage System, Enclosure 16 (Amendment No. 7, Revision 1) Technical Specification 1.2.7a
4. Renewal of Initial Certificate of Compliance and Amendments No. 1 through 11 and 13, Revision 1, and Amendment No. 14 of Certificate of Compliance No. 1004 for the

Standardized NUHOMS® Horizontal Modular Storage System, Enclosure 16  
(Amendment No. 9, Revision 1) Technical Specification 1.2.7c

5. Issuance Certification of Compliance No. 1032, Amendment No. 1 Revision No. 1, for the HI-STORM Flood/Wind Multipurpose Canister Storage System (TAC No. L24775), Appendix A Technical Specification 5.3.4

**Attachment 3 to Enclosure**

**HDI PNP 2022-016**

**Comparison Matrix for Permanently Defueled Emergency Action Levels Based on NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6**

## **COMPARISON MATRIX FOR PERMANENTLY DEFUELED EMERGENCY ACTION LEVELS BASED ON NEI 99-01, "DEVELOPMENT OF EMERGENCY ACTION LEVELS FOR NON-PASSIVE REACTORS," REVISION 6**

### **Description of the Permanently Defueled EAL Technical Bases Document**

The following discussion provides a description of the Palisades Nuclear Plant (PNP) Permanently Defueled (PD) Emergency Action Level (EAL) Technical Bases Document (provided as Attachment 2 of this Enclosure) and describes any differences and/or deviations between the PNP PD EAL Technical Bases and the guidance presented in Nuclear Energy Institute (NEI) 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6 (hereinafter referred to as NEI 99-01).

The PNP PD EAL Technical Bases Document provides a stand-alone set of Initiating Conditions (ICs)/EALs to address the permanently shutdown and defueled condition of the PNP reactor.

#### **1.0 PURPOSE**

The PNP PD EAL Technical Bases Document includes references to Recognition Category "PD" and Recognition Category "E" ICs/EALs for the permanently shutdown and defueled reactor and the Independent Spent Fuel Storage Installations (ISFSIs). A comparison between the "Purpose" section of the PNP PD EAL Technical Bases Document and a corresponding section of NEI 99-01 was not performed.

#### **2.0 DISCUSSION**

The "Discussion" section in the PNP PD EAL Technical Bases Document was developed based on information contained in NEI 99-01, Section 1, "Regulatory Background." This section provides a description of a permanently defueled station (Section 2.1) and an ISFSI (Section 2.2). It also provides specific criteria for an ISFSI as it pertains to other regulations and guidance in NEI 99-01.

Section 1.1, "Operating Reactors," of NEI 99-01 was excluded from the PNP PD EAL Technical Bases Document because it pertains to operating reactors. By letter dated June 13, 2022, pursuant to 10 CFR 50.82(a)(1)(i), Entergy submitted a certification to the NRC, that power operations ceased at PNP on May 20, 2022. In addition, in accordance with 10 CFR 50.82(a)(1)(ii), Entergy also certified that the spent fuel was permanently removed from the PNP reactor vessel and placed in the PNP SFP on June 10, 2022. Upon the NRC's docketing of the certification that all fuel has been permanently removed from the PNP reactor vessel and placed into the spent fuel pool (SFP), in accordance with 10 CFR 50.82(a)(2), the license for PNP no longer authorizes operation of the reactor, nor emplacement or retention of fuel into the reactor vessel. Therefore, Section 1.1 of NEI 99-01 is not applicable to PNP.

Section 1.2, "Permanently Defueled Station," of NEI 99-01 is addressed in Section 2.1 of the PNP PD EAL Technical Bases Document. Inclusion of this discussion is appropriate because the PNP reactor has been permanently shutdown and defueled prior to implementation of this PD EAL scheme, and analyses have been completed that demonstrate that no credible event can result in a significant radiological release beyond the site boundary. As described in the Enclosure to this amendment request, HDI has performed analyses which demonstrate that

approximately 12 months after permanent cessation of power operations, the spent fuel stored in the SFP will have decayed to the extent that a minimum of 10 hours is available before the fuel cladding temperature of the hottest fuel assembly in the SFP reaches 900°C with a complete loss of SFP water inventory, assuming no heat loss (adiabatic heat up). Based on the results of these analyses, in the unlikely event of a beyond design basis event involving the PNP SFP, a minimum of 10 hours is available to initiate appropriate mitigating actions to restore a means of heat removal to the spent fuel and, if governmental officials deem warranted, for authorities to implement offsite protective actions using a comprehensive approach to emergency planning to protect the health and safety of the public before the hottest fuel assembly reaches the rapid oxidation temperature. Implementation of the PD EAL scheme would occur approximately 12 months after permanent shutdown of PNP.

Section 1.3, "Independent Spent Fuel Storage Installation (ISFSI)," of NEI 99-01 is addressed in Section 2.2 of the PNP PD EAL Technical Bases Document. Inclusion of this discussion is appropriate because two ISFSIs are in use at PNP.

Section 1.4, "NRC Order EA-12-051," of NEI 99-01 was excluded from the PNP PD EAL Technical Bases Document because the recommendation applies to NEI 99-01 EALs IC AA2, AS2, and AG2, which are only applicable to operating plants. Therefore, the discussion in Section 1.4 of NEI 99-01 does not apply to PNP and has not been included in the PD EAL Technical Bases Document.

Section 1.5, "Applicability to Advanced and Small Modular Reactor Designs," of NEI 99-01 was excluded from the PNP PD EAL Technical Bases Document because PNP does not utilize Advanced or Small Modular Reactors Designs. Therefore, the discussion in Section 1.5 of NEI 99-01 does not apply to PNP and has not been included in the PD EAL Technical Bases Document.

### **3.0 KEY TERMINOLOGY USED**

This section in of the PNP PD EAL Technical Bases Document was developed based on information contained in Section 2, "Key Terminology Used in NEI 99-01," of NEI 99-01. Differences between the PNP PD EAL Technical Bases Document and NEI 99-01 are discussed below.

- References to Site Area Emergency and General Emergency were excluded from the PNP PD EAL Technical Bases Document. PNP's Emergency Classification Levels (ECLs) only include Notification of Unusual Event (Unusual Event) and Alert. The PNP PD EALs have been developed using NEI 99-01, Appendix C for the permanently defueled station ICs/EALs and Section 8 for the ISFSIs.
- References to "plant" were revised to "facility" to indicate that PNP is no longer an operating nuclear power plant.
- References to Reactor Coolant System (RCS) Leakage and fission product barriers were excluded from PNP PD EAL Technical Bases Document, Section 3.2, "Initiating Condition (IC)" (Section 2.2 of NEI 99-01). Upon permanent removal of fuel from the PNP reactor, the RCS and Containment will no longer be considered fission product barriers because the reactor will be permanently shutdown and defueled and

containment integrity is not needed for the SFP. In the permanently shutdown and defueled condition, the fuel cladding is a fission product barrier. However, the Recognition Category "F" matrices containing EALs referred to as Fission Product Barrier Thresholds, are not applicable in the permanently shutdown and defueled condition.

- The purpose of the "Alert" Section 2.1.2 of NEI 99-01 was revised to indicate that emergency personnel would respond at an Alert declaration, rather than "be readily available to respond," to correspond with the actions at an Alert declaration as detailed in the PNP PDEP (provided as Attachment 1 of this Enclosure).
- Section 2.4, "Fission Product Barrier Threshold," of NEI 99-01 was excluded for reasons previously identified related to fission product barriers.

#### **4.0 GUIDANCE ON MAKING EMERGENCY CLASSIFICATIONS**

This section of the PNP PD EAL Technical Bases Document was developed based on guidance contained in Section 5, "Guidance on Making Emergency Classifications," of NEI 99-01. Differences between the PNP Permanently Defueled EAL Technical Bases Document and the corresponding section of NEI 99-01 are discussed below.

- References to fission product barrier thresholds in Section 5.1 of NEI 99-01 (Section 4.1 of the PNP PD EAL Technical Bases Document) were excluded as the RCS and Containment will no longer serve as fission product barriers upon permanent cessation of power operations and permanent removal of fuel from the PNP reactor vessel.
- Reference to "Operating Mode Applicability" was removed because Operating Modes are not applicable to a permanently shutdown and defueled facility.
- The second paragraph of Section 5.1 of NEI 99-01 stating that, "regulations require the licensee to establish and maintain the capability to assess, classify and declare an emergency condition within 15 minutes," was excluded from Section 4.1 of the PNP PD EAL Technical Bases Document. As detailed in NSIR/DPR-ISG-02, Interim Staff Guidance, "Emergency Planning Exemption Requests for Decommissioning Plants," (ISG-02) "...the staff concludes that a decommissioning power reactor is not required to assess, classify, and declare an emergency condition within 15 minutes." PNP will maintain the ability to assess, classify, and declare an emergency within 30 minutes. As described in Section 1.0 of the PNP PD EAL Technical Bases Document, an emergency declaration is required to be made as soon as conditions warranting classification are present and recognizable, but within 30 minutes in all cases after the availability of indications that an EAL threshold has been reached.
- With respect to the notification of an emergency declaration to State and local authorities, as discussed in the Enclosure to this amendment request, The analyses of the potential radiological impact of accidents while the facility is in a permanently defueled condition indicate that no DBA or reasonably conceivable beyond design basis accident would result in radioactive releases that exceed U.S. Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs) (Reference 8) beyond the exclusion area boundary (EAB). In the permanently defueled condition, the rapidly developing

scenarios associated with events initiated during reactor power operation are no longer credible. The radiological consequences resulting from the only remaining events develop over a significantly longer period. As such, a 15-minute notification requirement is unnecessarily restrictive. A notification time of 60 minutes after declaring an emergency provides a reasonable amount of time to notify state and local governmental authorities.

- Reference to "Operating Mode Applicability" was excluded from Section 4.2 of the PNP PD EAL Technical Bases Document (Section 5.2 of NEI 99-01), because Operating Modes are not applicable to a permanently defueled facility.
- Section 5.4 of NEI 99-01 was excluded from the PNP PD EAL Technical Bases Document because mode changes during classification are not applicable to a permanently defueled facility.
- In Section 4.4 of the PNP PD EAL Technical Bases Document (Section 5.5 of NEI 99-01), the word "levels" was changed to "level" within the term "Emergency Classification Levels (ECLs) because there is only one higher emergency classification level above an Unusual Event for a permanently defueled facility.
- In Section 4.5 of the PNP PD EAL Technical Bases Document (Section 5.6 of NEI 99-01), references to "Site Area Emergency" and "General Emergency" were excluded. Based on the analyses described in the Enclosure to this submittal, the "Site Area Emergency" and "General Emergency" classification levels are no longer credible emergency classifications at PNP, and no DBA or reasonable conceivable beyond design basis accident will result in radiological releases requiring offsite protective actions. PNP will not downgrade events.
- In Section 4.6 of the PNP PD EAL Technical Bases Document (Section 5.7 of NEI 99-01), references to an "operating plant short-lived event (e.g., reactor trip)" were removed and replaced with verbiage applicable to a permanently shutdown and defueled facility. The given example was changed to an "explosion" because the example provided in NEI 99-01, ("failure of the reactor protection system to automatically scram/trip the reactor followed by a successful manual scram/trip") is not possible for a permanently shutdown and defueled facility.
- In Section 4.7 of the PNP PD EAL Technical Bases Document (Section 5.8 of NEI 99-01), the given example was removed because an emergency declaration associated with the auxiliary feedwater system is no longer credible at PNP. The reference to "15-minute emergency classification assessment period" was excluded because the timeframe is not applicable to a permanently shutdown and defueled facility. However, consistent with NEI 99-01, the PNP PDEP EAL Technical Bases Document indicates that the emergency classification assessment period is not a "grace period."

## 5.0 REFERENCES

This section of the PNP PD EAL Technical Bases Document was added to provide Developmental and Implementing References applicable to the PNP PD EAL Technical Bases. No corresponding section is included in NEI 99-01.

## 6.0 DEFINITIONS AND ACRONYMS

This section of the PNP PD EAL Technical Bases Document was developed based on the information presented in Appendices A and B of NEI 99-01. The section incorporates only those acronyms and definitions applicable to, and used in, the PNP PD EAL Technical Bases Document.

- The following definitions contained within NEI 99-01 are not used in the PNP PD EAL Technical Bases Document, as previously discussed:
  - General Emergency
  - Site Area Emergency
- The definition for "Alert" was revised to change "plant" to "facility" and to delete "of safety systems." The reference to "plant" was revised to "facility" to indicate that PNP is no longer an operating nuclear power plant. The term "safety system" was excluded because only those systems required to maintain spent fuel cooling are necessary in the permanently shutdown and defueled condition. These systems, by definition, are not "safety systems."
- The definition for "Notification of Unusual Event (NOUE)" was revised to change "plant" to "facility" and to delete "of safety systems" for reasons detailed in the preceding bullet.
- The following key term is not used in the PNP PD EAL Technical Bases Document for reasons previously provided:
  - Fission Product Barrier Threshold
- The key term, "Initiating Condition," was revised to change "four emergency classification levels" to "two emergency classification levels" because the "Site Area Emergency" and "General Emergency" are not applicable to a permanently shutdown and defueled facility.
- The key term, "Emergency Classification Level," was revised to exclude reference to "Site Area Emergency" and "General Emergency" because the classification levels are no longer credible emergency classifications at PNP, and no DBA or reasonable conceivable beyond design basis accident will result in radiological releases requiring offsite protective actions.

Selected terms used in IC and EAL statements are set in all capital letters (e.g., ALL CAPS). These words are defined terms that have specific meanings as used in NEI 99-01. Definitions not used in the PNP PD EAL Technical Bases Document were excluded.

The term "SAFETY SYSTEM" was excluded because only those systems required to maintain spent fuel cooling are necessary in the permanently shutdown and defueled condition. These systems, by definition, are not SAFETY SYSTEMS.

## **7.0 ATTACHMENTS**

### **7.1 Attachment 1, EAL Matrices**

- References to "Operating Modes" were excluded from PNP PD EAL Technical Bases Document Tables PD-1 and E-1 because Operating Modes are not applicable to a permanently shutdown and defueled facility.
- The EALs were developed using Appendix C (Recognition Category "PD") and Section 8 (Recognition Category "E") of NEI 99-01.

### **7.2 Attachment 2, EAL Bases**

- Attachment 2 of the PNP PD EAL Technical Bases Document provides the Permanently Defueled and ISFSI IC/EALs and incorporates Appendix C (Recognition Category "PD") and Section 8 (Recognition Category "E") of NEI 99-01.
- Reference to Section 3 of NEI 99-01, "Design of the NEI 99-01 Emergency Classification Scheme," was excluded from Attachment 2 because this section was not included in the PNP PD EAL Technical Bases Document (provided as Attachment 2 of this Enclosure).

The table included below provides a comparison of the PNP EALs (PD and ISFSI) against the corresponding information contained in NEI 99-01.

## **8.0 NEI 99-01 SECTIONS NOT INCLUDED IN THE PNP PD EAL TECHNICAL BASES DOCUMENT**

The following sections of NEI 99-01 were excluded from the PNP PD EAL Technical Bases Document. Any references made to these sections in NEI 99-01 were also excluded:

- Section 3, "Design of the NEI 99-01 Emergency Classification Scheme"
- Section 4, "Site-Specific Scheme Development Guidance"

The following sections of NEI 99-01 were excluded from the PNP PD EAL Technical Bases Document because these sections do not apply to a permanently shutdown and defueled facility:

- Section 6, Abnormal Rad Levels/Radiological Effluent ICs/EALs,
- Section 7, Cold Shutdown/Refueling System Malfunction ICs/EALs,
- Section 9, Fission Product Barrier ICs/EALs,
- Section 10, Hazards and Other Conditions Affecting Plant Safety ICs/EALs, and
- Section 11, System Malfunction ICs/EALs

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison												
<p><b>PD-AU1</b></p> <p><b>ECL:</b> Notification of Unusual Event</p> <p><b>Initiating Condition:</b> Release of gaseous or liquid radioactivity greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b> (1 or 2)</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>The Emergency Director should declare the Unusual Event promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.</li> <li>If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes.</li> <li>If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> </ul> <p>(1) Reading on ANY effluent radiation monitor greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.</p> <p>(2) Sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times the (site-specific effluent release controlling document) limits for 60 minutes or longer.</p>	<p><b>PD-AU1</b></p> <p><b>ECL:</b> UNUSUAL EVENT</p> <p><b>Initiating Condition:</b> Release of gaseous or liquid radioactivity greater than 2 times the Offsite Dose Calculation Manual (ODCM) limits for 60 minutes or longer.</p> <p><b>Emergency Action Levels (EALs): (1 or 2)</b></p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>The Emergency Director should declare the UNUSUAL EVENT promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.</li> <li>If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes.</li> <li>If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> </ul> <p>1. Valid reading on <b>ANY</b> of the following effluent radiation monitors greater than the reading shown for 60 minutes or longer.</p> <table border="1" data-bbox="737 1133 1352 1252"> <thead> <tr> <th colspan="3">Effluent Monitor Classification Thresholds – UNUSUAL EVENT</th> </tr> <tr> <th>Monitor</th> <th colspan="2">UNUSUAL EVENT Threshold</th> </tr> </thead> <tbody> <tr> <td>Gaseous</td> <td>RIA-2326</td> <td>2.30E+04 cpm</td> </tr> <tr> <td>Liquid</td> <td>RIA-1049</td> <td>2 X High Alarm</td> </tr> </tbody> </table> <p><b>OR</b></p> <p>2. Confirmed sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than two times the ODCM limits for 60 minutes or longer.</p>	Effluent Monitor Classification Thresholds – UNUSUAL EVENT			Monitor	UNUSUAL EVENT Threshold		Gaseous	RIA-2326	2.30E+04 cpm	Liquid	RIA-1049	2 X High Alarm	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>ECL: Changed “Notification of Unusual Event” to “UNUSUAL EVENT” to maintain continuity with the previous PNP EAL scheme</li> <li>Initiating Condition: Inserted Offsite Dose Calculation Manual (ODCM) as the site-specific effluent release controlling document</li> <li>Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>Removed “Example” from EALs as they are no longer examples</li> <li>Notes, Bullet #3: Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path"</li> <li>Added "OR" between the EALs as an operator aid to facilitate EAL navigation.</li> <li>EAL #1: Added “Valid”</li> <li>EAL #1: Provided PNP site-specific effluent radiation monitors and calculated threshold values</li> <li>EAL #1: Replaced “2 times the alarm setpoint established by a current radioactivity discharge permit” with "the reading shown" and included PNP site-specific calculated effluent radiation monitor threshold values on which to base the declaration of an UNUSUAL EVENT.</li> <li>EAL #2: Added "Confirmed"</li> </ul>
Effluent Monitor Classification Thresholds – UNUSUAL EVENT														
Monitor	UNUSUAL EVENT Threshold													
Gaseous	RIA-2326	2.30E+04 cpm												
Liquid	RIA-1049	2 X High Alarm												

<b>NEI 99-01 Rev 6 Appendix C –            Permanently Defueled Station ICs/EALs</b>	<b>Proposed Permanently Defueled            EAL for PNP</b>	<b>Comparison</b>
		<ul style="list-style-type: none"> <li>EAL #2: Inserted "ODCM" as the site-specific effluent release controlling document</li> </ul>
<p><b>Basis:</b></p> <p>This IC addresses a potential decrease in the level of safety of the plant as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any gaseous or liquid radiological release, monitored or un-monitored, including those for which a radioactivity discharge permit is normally prepared.</p> <p>Nuclear power plants incorporate design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, and to control and monitor intentional releases. The occurrence of an extended, uncontrolled radioactive release to the environment is indicative of degradation in these features and/or controls.</p> <p>Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.</p> <p>Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent</p>	<p><b>Basis:</b></p> <p>This IC addresses a potential decrease in the level of safety of the facility as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any uncontrolled gaseous or liquid radiological release, monitored or un-monitored, including those for which a radioactivity discharge permit is normally prepared.</p> <p>PNP incorporates design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, and to control and monitor intentional releases. The occurrence of an extended, uncontrolled radioactive release to the environment is indicative of degradation in these features and/or controls.</p> <p>Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of facility conditions alone. The inclusion of both facility condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.</p> <p>Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to isolation of</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Replaced "plant" with "facility"</li> <li>Added "uncontrolled" without changing the intent of the EAL</li> <li>Replaced "Nuclear power plants" with "PNP" to incorporate PNP site-specific information</li> <li>Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path" consistent with the change made in the Notes</li> </ul>

<b>NEI 99-01 Rev 6 Appendix C –            Permanently Defueled Station ICs/EALs</b>	<b>Proposed Permanently Defueled            EAL for PNP</b>	<b>Comparison</b>
<p>monitor reading is no longer valid for classification purposes.</p> <p>Releases should not be prorated or averaged. For example, a release exceeding 4 times release limits for 30 minutes does not meet the EAL.</p> <p>EAL #1 - This EAL addresses radioactivity releases that cause effluent radiation monitor readings to exceed 2 times the limit established by a radioactivity discharge permit. This EAL will typically be associated with planned batch releases from non-continuous release pathways (e.g., radwaste, waste gas).</p> <p>EAL #2 - This EAL addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.).</p> <p>Escalation of the emergency classification level would be via IC PD-AA1.</p>	<p>the release path, then the effluent monitor reading is no longer valid for classification purposes.</p> <p>The 2 x ODCM limit multiples are specified only to distinguish between emergency and non-emergency conditions. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate.</p> <p>Releases should not be prorated or averaged. For example, a release exceeding 4 times release limits for 30 minutes does not meet the EAL.</p> <p>EAL #1 - This EAL addresses radioactivity releases that cause effluent radiation monitor readings to exceed 2 times the limit established by a radioactivity discharge permit. This EAL will typically be associated with planned batch releases from non-continuous release pathways (e.g., radwaste, waste gas).</p> <p>EAL #2 - This EAL addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.).</p> <p>Escalation of the ECL would be via IC PD-AA1.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>Gaseous and liquid releases in excess of two times the ODCM instantaneous limits that continue for 60 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the UNUSUAL EVENT emergency class) is not the primary concern here; it is the degradation in plant</p>	<ul style="list-style-type: none"> <li>• Provided PNP site-specific basis information and references</li> </ul>

<b>NEI 99-01 Rev 6 Appendix C –            Permanently Defueled Station ICs/EALs</b>	<b>Proposed Permanently Defueled            EAL for PNP</b>	<b>Comparison</b>
	<p>control implied by the fact that the release was not isolated within 60 minutes.</p> <p>The values shown for each monitor represents two times the calculated monitor alarm set-points (Reference 2) which are set in accordance with the ODCM (Reference 3).</p> <p>Collecting liquid and gaseous effluent samples to ensure that release conditions above nominal steady state conditions are detected and reported. Confirmed sample analyses in excess of two times the ODCM (Reference 3) that continue for 60 minutes or longer represent an uncontrolled situation and, hence, a potential degradation in the level of safety. The final integrated dose (which is very low in the UNUSUAL EVENT emergency class) is not the primary concern here; it is the degradation in facility control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. For example, a release of 4 times the ODCM limit for 30 minutes does not exceed this initiating condition. Further, the ED should not wait until 60 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has or will likely exceed 60 minutes.</p> <p>At low classification levels, the concern for classification is the continuing, uncontrolled release of radioactivity and not the magnitude of the release. When the liquid release is isolated, the release is no longer continuing nor is it uncontrolled. Therefore, the classification is not appropriate when the liquid release is isolated.</p> <p>EAL #2 addresses collecting liquid and gaseous effluent samples to ensure that release conditions above nominal steady state conditions are detected and reported.</p>	

<b>NEI 99-01 Rev 6 Appendix C –            Permanently Defueled Station ICs/EALs</b>	<b>Proposed Permanently Defueled            EAL for PNP</b>	<b>Comparison</b>
	<p>Sample analyses are considered "confirmed" when samples have been obtained and analyzed in accordance with plant procedures and the results reported to the Shift Manager or Emergency Director according to established practices. Preliminary sample results that may become available prior to completion of the relevant procedural requirements are not "confirmed" and are not to be used in assessing this EAL.</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01, Rev. 6, PD-AU1</li> <li>2. Enercon Calculation No. ENTGPAL164-CALC-001, Permanently Defueled Gaseous and Liquid Effluent EAL Threshold Calculation Rev. 1, Table 2-1</li> <li>3. PNP Offsite Dose Calculation Manual</li> </ol>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p><b>PD-AA1</b></p> <p><b>ECL:</b> Alert</p> <p><b>Initiating Condition:</b> Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b> (1 or 2 or 3 or 4)</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>The Emergency Director should declare the Alert promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</li> <li>If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.</li> <li>If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> <li>The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.</li> </ul>	<p><b>PD-AA1</b></p> <p><b>ECL:</b> ALERT</p> <p><b>Initiating Condition:</b> Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mRem TEDE or 50 mRem thyroid CDE.</p> <p><b>Emergency Action Levels (EALs): (1 or 2 or 3 or 4)</b></p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>The Emergency Director should declare the ALERT promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.</li> <li>If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.</li> <li>If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.</li> <li>The pre-calculated effluent monitor values presented in EAL #1 should be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.</li> </ul>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>Removed "Example" from EALs as they are no longer examples</li> <li>Notes, Bullet #3: Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path"</li> </ul>
<p>1) Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or</p>	<p>1. Valid reading on <b>ANY</b> of the following effluent radiation monitors greater than the reading shown for 15 minutes or longer.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p>

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison												
<p>longer:            (site-specific monitor list and threshold values)</p> <ol style="list-style-type: none"> <li>2) Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site-specific dose receptor point).</li> <li>3) Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond (site-specific dose receptor point) for one hour of exposure.</li> <li>4) Field survey results indicate <b>EITHER</b> of the following at or beyond (site-specific dose receptor point):               <ul style="list-style-type: none"> <li>• Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer.</li> <li>• Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation.</li> </ul> </li> </ol>	<table border="1" data-bbox="741 318 1358 431"> <thead> <tr> <th colspan="3">Effluent Monitor Classification Thresholds - ALERT</th> </tr> <tr> <th>Monitor</th> <th colspan="2">ALERT Threshold</th> </tr> </thead> <tbody> <tr> <td>Gaseous</td> <td>RIA-2326</td> <td>9.00E+06 cpm</td> </tr> <tr> <td>Liquid</td> <td>RIA-1049</td> <td>8.92E+06 cpm</td> </tr> </tbody> </table> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>2. Dose assessment using actual meteorology indicates doses greater than 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary.</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>3. Confirmed analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mRem TEDE or 50 mRem thyroid CDE at or beyond the site boundary for one hour of exposure.</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>4. Field survey results indicate <b>EITHER</b> of the following at or beyond the site boundary:               <ul style="list-style-type: none"> <li>• Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer.</li> <li>• Analyses of field survey samples indicate thyroid CDE greater than 50 mRem for one hour of inhalation.</li> </ul> </li> </ol>	Effluent Monitor Classification Thresholds - ALERT			Monitor	ALERT Threshold		Gaseous	RIA-2326	9.00E+06 cpm	Liquid	RIA-1049	8.92E+06 cpm	<ul style="list-style-type: none"> <li>• Added "OR" between the EALs as an operator aid to facilitate EAL navigation.</li> <li>• EAL #1: Added "Valid"</li> <li>• EAL #1: Provided PNP site-specific effluent radiation monitors and calculated threshold values</li> <li>• EAL #2: Provided "the site boundary" as the site-specific dose receptor point</li> <li>• EAL #3: Added "Confirmed"</li> <li>• EAL #3: Provided "the site boundary" as the site-specific dose receptor point</li> <li>• EAL #4: Provided "the site boundary" as the site-specific dose receptor point</li> </ul>
Effluent Monitor Classification Thresholds - ALERT														
Monitor	ALERT Threshold													
Gaseous	RIA-2326	9.00E+06 cpm												
Liquid	RIA-1049	8.92E+06 cpm												
<p><b>Basis:</b>            This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1% of the EPA PAGs. It includes both monitored and un-monitored releases. Releases of this magnitude represent an actual or potential substantial</p>	<p><b>Basis:</b>            This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude represent an actual or potential</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• Replaced "plant" with "facility"</li> </ul>												

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p>degradation of the level of safety of the plant as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).</p> <p>Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.</p> <p>The TEDE dose is set at 1% of the EPA PAG of 1,000 mrem while the 50 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.</p> <p>Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.</p>	<p>substantial degradation of the level of safety of the facility as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).</p> <p>Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of facility conditions alone. The inclusion of both facility condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.</p> <p>The TEDE dose is set at 1% of the EPA PAG of 1,000 mRem while the 50 mRem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.</p> <p>Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to isolation of the release path, then the effluent monitor reading is no longer valid for classification purposes.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>The calculated EAL threshold value for RIA-2326 exceeds the operating range for the effluent monitor (Reference 2). Therefore, a value equal to 90% of the maximum accurate reading of the monitor is used as the threshold to declare an Alert. This value is not based on any particular dose value. However, it ensures that an accurate monitor reading is available, and that an actual or potential substantial degradation of the level of safety of the facility is addressed.</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01, Rev. 6, PD-AA1</li> <li>2. Enercon Calculation No. ENTGPAL164-CALC-</li> </ol>	<ul style="list-style-type: none"> <li>• Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path"</li> <li>• Provided PNP site-specific basis information and references</li> </ul>

<b>NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs</b>	<b>Proposed Permanently Defueled EAL for PNP</b>	<b>Comparison</b>
	001, Permanently Defueled Gaseous and Liquid Effluent EAL Threshold Calculation Rev. 1, Table 2-1  3. PNP ODCM	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p><b>PD-AU2</b>  <b>ECL:</b> Notification of Unusual Event  <b>Initiating Condition:</b> UNPLANNED rise in plant radiation levels.  <b>Operating Mode Applicability:</b> Not Applicable  <b>Example Emergency Action Levels:</b> (1 or 2)            (1) a. UNPLANNED water level drop in the spent fuel pool as indicated by ANY of the following:                  (Site specific level indications).    <b>AND</b>            b. UNPLANNED rise in area radiation levels as indicated by ANY of the following radiation monitors:                  (Site specific level indications).              (2) Area radiation monitor reading or survey result indicates an UNPLANNED rise of 25 mR/hr over NORMAL LEVELS.</p>	<p><b>PD-AU2</b>  <b>ECL:</b> UNUSUAL EVENT  <b>Initiating Condition:</b> UNPLANNED rise in facility radiation levels.    <b>Emergency Action Levels (EALs): (1 or 2)</b>            1. a. UNPLANNED water level drop in the SFP as indicated by ANY of the following:                  • EK-1309                  • Visual observation of SFP water level                  • Manual SFP water level measurement    <b>AND</b>            b. UNPLANNED rise in area radiation levels as indicated by spent fuel pool area radiation monitor (RIA-5709 or RIA-2313).    <b>OR</b>            2. Area radiation monitor reading or survey result indicates an UNPLANNED rise of 25 mR/hr over NORMAL LEVELS.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• ECL: Changed "Notification of Unusual Event" to "UNUSUAL EVENT" to maintain continuity with the previous PNP EAL scheme</li> <li>• Initiating Condition: Replaced "plant" with "facility"</li> <li>• Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>• Removed "Example" from EALs as they are no longer examples</li> <li>• Added "OR" between the EALs as an operator aid to facilitate EAL navigation.</li> <li>• EAL #1.a: Provided PNP site-specific SFP level indications</li> <li>• EAL # 1.b: Provided PNP site-specific area radiation monitors</li> </ul>
<p><b>Basis:</b>            This IC addresses elevated plant radiation levels caused by a decrease in water level above irradiated (spent) fuel or other UNPLANNED events. The increased radiation levels are indicative of a minor loss in the ability to control radiation levels within the plant or radioactive materials. Either condition is a potential degradation in the level of safety of the plant.</p>	<p><b>Basis:</b>            This IC addresses elevated facility radiation levels caused by a decrease in water level above irradiated (spent) fuel or other UNPLANNED events. The increased radiation levels are indicative of a minor loss in the ability to control radiation levels within the facility or radioactive materials. Either condition is a potential degradation in the level of safety of the facility.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• Replaced "plant" with "facility"</li> </ul>

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<p>A water level decrease will be primarily determined by indications from available level instrumentation. Other sources of level indications may include reports from plant personnel or video camera observations (if available). A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by monitors in those locations.</p> <p>The effects of planned evolutions should be considered. Note that EAL #1 is applicable only in cases where the elevated reading is due to an UNPLANNED water level drop. EAL #2 excludes radiation level increases that result from planned activities such as use of radiographic sources and movement of radioactive waste materials.</p> <p>Escalation of the emergency classification level would be via IC PD-AA1 or PD-AA2.</p>	<p>A water level decrease will be primarily determined by indications from available level instrumentation. Other sources of level indications may include reports from facility personnel. A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by monitors in those locations.</p> <p>The effects of planned evolutions should be considered. Note that EAL #1 is applicable only in cases where the elevated reading is due to an UNPLANNED water level drop. EAL #2 excludes radiation level increases that result from planned activities such as use of radiographic sources and movement of radioactive waste materials.</p> <p>Escalation of the ECL would be via IC PD-AA1 or PD-AA2.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>Loss of inventory from the SFP may reduce water shielding above spent fuel and cause unexpected increases in plant radiation. Classification as an UNUSUAL EVENT is warranted as a precursor to a more serious event.</p> <p>The minimum allowable water level in the (SFP) is the Low Spent Fuel Pool water level. The low SFP water level alarm setpoint is at 646 ft elevation or 35 ft above the bottom of the SFP. SFP water level is indicated by EK-1309 and alarmed in the Control Room (Reference 2 and 3), or via visual observation or manual SFP water level measurement.</p> <p>The listed area radiation monitors are those that would likely see an increase in area radiation due to a loss of shielding resulting from a loss of pool inventory (Reference 4). While a radiation monitor could detect a rise in dose due to a drop in the water level, it might not be a reliable indication, in</p>	<ul style="list-style-type: none"> <li>• Provided PNP site-specific basis information and references</li> </ul>

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	<p>and of itself, of whether or not the fuel is uncovered. Elevated radiation monitor indications will need to be combined with another indicator (or personnel report) of water loss.</p> <p>Calculated dose rates above the SFP and resultant measured dose rates on a nearby ARM (RIA-2313) indicate that measurable increases of radiation will occur when SFP water level drops to approximately the 632 ft elevation and alarm below an elevation of approximately 630 ft elevation (Reference 5).</p> <p>Assessment of this EAL may be made with survey readings using portable instruments as well as installed radiation monitors.</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01, Rev. 6, PD-AU2</li> <li>2. Permanently Defueled Technical Specifications 3.7.14, Spent Fuel Pool (SFP) Water Level</li> <li>3. AOP-26, Loss of Spent Fuel Pool Cooling</li> </ol>	

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<p><b>PD-AA2</b></p> <p><b>ECL:</b> Alert</p> <p><b>Initiating Condition:</b> UNPLANNED rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b> (1 or 2)</p> <p>(1) UNPLANNED dose rate greater than 15 mR/hr in <b>ANY</b> of the following areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity:</p> <p style="padding-left: 40px;">(site-specific area list)</p> <p>(2) UNPLANNED Area Radiation Monitor readings or survey results indicate a rise by 100 mR/hr in <b>ANY</b> of the following areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.</p> <p style="padding-left: 40px;">(site specific area list)</p>	<p><b>PD-AA2</b></p> <p><b>ECL:</b> ALERT</p> <p><b>Initiating Condition:</b> UNPLANNED rise in facility radiation levels that impedes facility access required to maintain spent fuel integrity.</p> <p><b>Emergency Action Levels (EALs): (1 or 2)</b></p> <p>1. UNPLANNED dose rate greater than 15 mR/hr in <b>ANY</b> of the following areas requiring continuous occupancy to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.</p> <ul style="list-style-type: none"> <li>• Control Room (RIA-2310)</li> <li>• Central Alarm Station (CAS) (RIA-2311/by survey)</li> </ul> <p><b>OR</b></p> <p>2. UNPLANNED Area Radiation Monitor readings or survey indicate a rise by 100 mR/hr over <b>NORMAL LEVELS</b> that impedes access to <b>ANY</b> of the following areas needed to maintain control of radioactive material or operation of systems needed to maintain spent fuel integrity.</p> <ul style="list-style-type: none"> <li>• SFP Room</li> <li>• SFP Heat Exchanger Room</li> </ul>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• Initiating Condition: Replaced “plant” with “facility”</li> <li>• Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>• Removed “Example” from EALs as they are no longer examples</li> <li>• Added "OR" between the EALs as an operator aid to facilitate EAL navigation.</li> <li>• EAL #1: Provided applicable PNP site-specific areas</li> <li>• EAL #2: Re-worded to better align with the IC without changing the intent of the EAL</li> <li>• EAL #2: Eliminated the word "results" because the use of survey results is implied</li> <li>• EAL #2: Provided applicable PNP site-specific areas</li> </ul>
<p><b>Basis:</b></p> <p>This IC addresses increased radiation levels that impede necessary access to areas containing equipment that must be operated manually or that requires local monitoring, in order to maintain systems needed to maintain spent fuel integrity. As used here, ‘impede’ includes hindering or</p>	<p><b>Basis:</b></p> <p>This IC addresses increased radiation levels that impede necessary access to areas containing equipment that must be operated manually or that requires local monitoring, in order to maintain systems needed to maintain spent fuel integrity. As used here, ‘impede’ includes hindering or</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• Replace “plant” with “facility”</li> </ul>

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<p>interfering, provided that the interference or delay is sufficient to significantly threaten necessary plant access. It is this impaired access that results in the actual or potential substantial degradation of the level of safety of the plant.</p> <p>This IC does not apply to anticipated temporary increases due to planned events.</p>	<p>interfering, provided that the interference or delay is sufficient to significantly threaten necessary facility access. It is this impaired access that results in the actual or potential substantial degradation of the level of safety of the facility.</p> <p>This IC does not apply to anticipated temporary increases due to planned events.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>Areas that meet this threshold include the Control Room and the Central Alarm Station (CAS). The Control Room Area Radiation Monitor (RIA-2310) provides indication of area radiation levels in the Control Room.</p> <p>The Central Alarm Station (CAS) is included in this EAL because of its importance to permitting access to areas required to assure safe plant operations. CAS has no installed radiation monitoring capability. However, RIA-2311 will provide indication of increasing radiation levels prompting surveys.</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01, Rev. 6, PD-AA2</li> </ol>	<ul style="list-style-type: none"> <li>• Provided PNP site-specific basis information, instrumentation, and references</li> </ul>

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<p><b>PD-HU1</b></p> <p><b>ECL:</b> Notification of Unusual Event</p> <p><b>Initiating Condition:</b> Confirmed SECURITY CONDITION or threat.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b> (1 or 2 or 3)</p> <p>(1) A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the (site-specific security shift supervision).</p> <p>(2) Notification of a credible security threat directed at the site.</p> <p>(3) A validated notification from the NRC providing information of an aircraft threat.</p>	<p><b>PD-HU1</b></p> <p><b>ECL:</b> UNUSUAL EVENT</p> <p><b>Initiating Condition:</b> Confirmed SECURITY CONDITION or threat.</p> <p><b>Emergency Action Levels (EALs): (1 or 2 or 3)</b></p> <p>1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Leader.</p> <p><b>OR</b></p> <p>2. Notification of a credible security threat directed at the site.</p> <p><b>OR</b></p> <p>3. A validated notification from the NRC providing information of an aircraft threat.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>ECL: Changed “Notification of Unusual Event” to “UNUSUAL EVENT” to maintain continuity with the previous PNP EAL scheme</li> <li>Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition.</li> <li>Removed “Example” from EALs as they are no longer examples</li> <li>Added "OR" between the EALs as an operator aid to facilitate EAL navigation.</li> <li>EAL #1: Provided the Security Shift Leader as the PNP "site-specific security shift supervision"</li> </ul>
<p><b>Basis:</b></p> <p>This IC addresses events that pose a threat to plant personnel or the equipment necessary to maintain cooling of spent fuel, and thus represent a potential degradation in the level of plant 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 IC PD-HA1.</p> <p>Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event. Classification of these events will initiate appropriate threat-related notifications to plant personnel and OROs.</p> <p>Security plans and terminology are based on the guidance provided by NEI 03-12, <i>Template for the Security Plan, Training and Qualification Plan</i>,</p>	<p><b>Basis:</b></p> <p>This IC addresses events that pose a threat to facility personnel or the equipment necessary to maintain cooling of spent fuel, 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 IC PD-HA1.</p> <p>Timely and accurate communications between the Security Shift Leader and the Control Room is essential for proper classification of a security-related event. Classification of these events will initiate appropriate threat-related notifications to facility personnel and Offsite Response Organizations (OROs).</p> <p>Security plans and terminology are based on the guidance provided by NEI 03-12, <i>Template for the</i></p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Replaced “plant” with “facility”</li> </ul>

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<p><i>Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program].</i></p> <p>EAL #1 references (site-specific security shift supervision) 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.</p> <p>EAL #2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with (site-specific procedure).</p> <p>EAL #3 addresses the threat from the impact of an aircraft on the plant. The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may also be provided by NORAD through the NRC. Validation of the threat is performed in accordance with (site-specific procedure).</p> <p>Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.</p> <p>Escalation of the emergency classification level would be via IC PD-HA1.</p>	<p><i>Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program].</i></p> <p>EAL #1 references the Security Shift Leader because this is the individual 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.</p> <p>EAL #2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with the PNP Security Plan (Reference 2).</p> <p>EAL #3 addresses the threat from the impact of an aircraft on the facility. The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may also be provided by NORAD through the NRC. Validation is performed by calling the NRC or by other approved methods of authentication.</p> <p>Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the PNP Security Plan.</p> <p>Escalation of the ECL would be via IC PD-HA1.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>The intent of these EALs is to ensure that notifications for the aircraft threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding</p>	<ul style="list-style-type: none"> <li>• Changed "(site-specific security shift supervision) because these are the individuals" to "Security Shift Leader because this is the individual" to reflect PNP site-specific nomenclature</li> <li>• Added "PNP Security Plan" to reflect PNP site-specific nomenclature</li> <li>• Changed "Security Plan" to "PNP Security Plan" to reflect PNP site-specific nomenclature</li> <li>• Provided PNP site-specific basis information and references</li> </ul>

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	<p>the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.</p> <p>The determination of “credible” is made through use of information found in the PNP Security Plan (Reference 2).</p> <p>Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on PNP. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the OWNER CONTROLLED AREA).</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"><li>1. NEI 99-01 Rev. 6, PD-HU1</li><li>2. PNP Security Plan</li></ol>	

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<p><b>PD-HA1</b></p> <p><b>ECL:</b> Alert</p> <p><b>Initiating Condition:</b> HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b> (1 or 2)</p> <p>(1) A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the (site-specific security shift supervision).</p> <p>(2) A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.</p>	<p><b>PD-HA1</b></p> <p><b>ECL:</b> ALERT</p> <p><b>Initiating Condition:</b> HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p><b>Emergency Action Levels (EALs): (1 or 2)</b></p> <p>1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Leader.</p> <p><b>OR</b></p> <p>2. A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>Removed "Example" from EALs as they are no longer examples</li> <li>Added "OR" between the EALs as an operator aid to facilitate EAL navigation.</li> <li>EAL #1: Provided the Security Shift Leader as the PNP "site-specific security shift supervision"</li> </ul>
<p><b>Basis:</b></p> <p>This IC addresses the occurrence of a HOSTILE ACTION within the OWNER CONTROLLED AREA or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the PROTECTED AREA , or the need to prepare the facility and staff for a potential aircraft impact.</p> <p>Timely and accurate communications between Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.</p> <p>Security plans and terminology are based on the guidance provided by NEI 03-12, <i>Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]</i>.</p> <p>As time and conditions allow, these events require a heightened state of readiness by the plant staff</p>	<p><b>Basis:</b></p> <p>This IC addresses the occurrence of a HOSTILE ACTION within the OWNER CONTROLLED AREA or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the PROTECTED AREA, or the need to prepare the facility and staff for a potential aircraft impact.</p> <p>Timely and accurate communications between the Security Shift Leader and the Control Room is essential for proper classification of a security-related event.</p> <p>Security plans and terminology are based on the guidance provided by NEI 03-12, <i>Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]</i>.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Replaced "plant" with "facility".</li> <li>Changed "Security Shift Supervision" to "Security Shift Leader" to reflect PNP site-specific nomenclature</li> </ul>

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<p>and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The Alert declaration will also heighten the awareness of Offsite Response Organizations, allowing them to be better prepared should it be necessary to consider further actions.</p> <p>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.</p> <p>EAL #1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes any action directed against an ISFSI that is located within the OWNER CONTROLLED AREA.</p> <p>EAL #2 addresses the threat from the impact of an aircraft on the plant, and the anticipated arrival time is within 30 minutes. The intent of this EAL is to ensure that threat-related notifications are made in a timely manner so that plant personnel and OROs are in a heightened state of readiness. This EAL is met when the threat-related information has been validated in accordance with (site-specific procedure).</p> <p>The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may be provided by NORAD through the NRC.</p> <p>In some cases, it may not be readily apparent if an aircraft impact within the OWNER CONTROLLED AREA was intentional (i.e., a HOSTILE ACTION). It</p>	<p>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 OROs, allowing them to be better prepared should it be necessary to consider further actions.</p> <p>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.</p> <p>EAL #1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes any action directed against an ISFSI that is located within the OWNER CONTROLLED AREA.</p> <p>EAL #2 addresses the threat from the impact of an aircraft on the facility, and the anticipated arrival time is within 30 minutes. The intent of this EAL is to ensure that threat-related notifications are made in a timely manner so that facility personnel and OROs are in a heightened state of readiness. This EAL is met when the threat-related information has been validated in accordance with the PNP Security Plan (Reference 2).</p> <p>The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the</p>	

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<p>is expected, although not certain, that notification by an appropriate Federal agency to the site would clarify this point. In this case, the appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. The emergency declaration, including one based on other ICs/EALs, should not be unduly delayed while awaiting notification by a Federal agency.</p> <p>Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the Security Plan.</p>	<p>plane may be provided by NORAD through the NRC.</p> <p>In some cases, it may not be readily apparent if an aircraft impact within the OWNER CONTROLLED AREA was intentional (i.e., a HOSTILE ACTION). It is expected, although not certain, that notification by an appropriate Federal agency to the site would clarify this point. In this case, the appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. The emergency declaration, including one based on other ICs/EALs, should not be unduly delayed while awaiting notification by a Federal agency.</p> <p>Emergency plans and implementing procedures are public documents; therefore, EALs should not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information should be contained in non-public documents such as the PNP Security Plan.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p><b>HOSTILE ACTION:</b> An act toward a nuclear power plant 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 nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this</p>	<ul style="list-style-type: none"> <li>• Changed "Security Plan" to "PNP Safeguards Contingency Plan" to reflect PNP site-specific nomenclature</li>   <li>• Provided PNP site-specific basis information and references</li> </ul>

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	may include violent acts between individuals in the OWNER CONTROLLED AREA). <b>Basis Reference(s):</b> 1. NEI 99-01, Rev. 6, PD-HA1 2. PNP Security Plan	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p><b>PD-HU2</b></p> <p><b>ECL:</b> Notification of Unusual Event</p> <p><b>Initiating Condition:</b> Hazardous event affecting SAFETY SYSTEM equipment necessary for spent fuel cooling.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b></p> <p>(1)</p> <p>a. The occurrence of <b>ANY</b> of the following hazardous events:</p> <ul style="list-style-type: none"> <li>• Seismic event (earthquake)</li> <li>• Internal or external flooding event</li> <li>• High winds or tornado strike</li> <li>• FIRE</li> <li>• EXPLOSION</li> <li>• (site-specific hazards)</li> <li>• Other events with similar hazard characteristics as determined by the Shift Manager</li> </ul> <p><b>AND</b></p> <p>b. The event has damaged at least one train of a SAFETY SYSTEM needed for spent fuel cooling.</p> <p><b>AND</b></p> <p>c. The damaged SAFETY SYSTEM train(s) cannot, or potentially cannot, perform its design function based on <b>EITHER:</b></p> <ul style="list-style-type: none"> <li>• Indications of degraded performance</li> </ul>	<p><b>PD-HU2</b></p> <p><b>ECL:</b> UNUSUAL EVENT</p> <p><b>Initiating Condition:</b> Hazardous event affecting equipment necessary for spent fuel cooling.</p> <p><b>Emergency Action Level (EAL):</b></p> <p>1. a. The occurrence of <b>ANY</b> of the following hazardous events:</p> <ul style="list-style-type: none"> <li>• Seismic event (earthquake)</li> <li>• Internal or external flooding event</li> <li>• High winds or tornado strike</li> <li>• FIRE</li> <li>• EXPLOSION</li> <li>• Other events with similar characteristics as determined by the Shift Manager</li> </ul> <p><b>AND</b></p> <p>b. The event has damaged at least one SFP cooling pump <b>AND</b> one SFP heat exchanger.</p> <p><b>AND</b></p> <p>c. The damaged system cannot, or potentially cannot, perform its design function based on <b>EITHER:</b></p> <ul style="list-style-type: none"> <li>• Indications of degraded performance</li> <li>• VISIBLE DAMAGE</li> </ul>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• ECL: Changed “Notification of Unusual Event” to “UNUSUAL EVENT” to maintain continuity with the previous PNP EAL scheme</li> <li>• Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>• Removed “Example” from EALs as they are no longer examples</li> <li>• EAL #1.b: “Train” has been replaced with PNP site-specific information because the PNP SFP does not have train separation.</li> <li>• EAL #1 (b and c): The term “SAFETY SYSTEM” was excluded because only those systems required to maintain spent fuel cooling are necessary in the permanently shut down and defueled condition. These systems, by definition, are not SAFETY SYSTEMS.</li> </ul>

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<ul style="list-style-type: none"> <li>VISIBLE DAMAGE</li> </ul>		
<p><b>Basis:</b></p> <p>This IC addresses a hazardous event that causes damage to at least one train of a SAFETY SYSTEM needed for spent fuel cooling. The damage must be of sufficient magnitude that the system(s) train cannot, or potentially cannot, perform its design function. This condition reduces the margin to a loss or potential loss of the fuel clad barrier, and therefore represents a potential degradation of the level of safety of the plant.</p> <p>For EAL 1.c, the first bullet addresses damage to a SAFETY SYSTEM train that is in service/operation since indications for it will be readily available.</p> <p>For EAL 1.c, the second bullet addresses damage to a SAFETY SYSTEM train that is not in service/operation or readily apparent through indications alone. Operators will make this determination based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage.</p> <p>Escalation of the emergency classification level could, depending upon the event, be based on any of the Alert ICs; PD-AA1, PD-AA2, PD-HA1 or PD-HA3.</p>	<p><b>Basis:</b></p> <p>This IC addresses a hazardous event that causes damage to at least one train of a system needed for spent fuel cooling. The damage must be of sufficient magnitude that the system(s) train cannot, or potentially cannot, perform its intended function. This condition reduces the margin to a loss or potential loss of the fuel clad barrier, and therefore represents a potential degradation of the level of safety of the facility.</p> <p>For EAL 1.c., the first bullet addresses damage to equipment that is in service/operation since indications for it will be readily available.</p> <p>For EAL 1.c., the second bullet addresses damage to equipment that is not in service/operation or readily apparent through indications alone. Operators will make this determination based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage.</p> <p>Escalation of the ECL would be via IC PD-AA1 or PD-AA2, PD-HA1 or PD-HA3.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>The SFP cooling system removes decay heat from spent fuel stored in the SFP. The system was originally designed to remove the decay heat from one-third of the total core fuel elements.</p> <p>The SFP cooling system is required to maintain the fuel pool water temperature less than 150°F with a minimum of one SFP cooling pump operating. The maximum allowable SFP heat load resulting from off-loaded spent fuel ensures that the SFP water temperature limit of 150°F is maintained with one</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Replaced “plant” with “facility”</li> <li>The term “SAFETY SYSTEM” was excluded because only those systems required to maintain spent fuel cooling are necessary in the permanently shut down and defueled condition. These systems, by definition, are not SAFETY SYSTEMS.</li> <li>Replaced "design function" with "intended function" without changing the intent of the EAL.</li> <li>Provided PNP site-specific references</li> </ul>

<b>NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs</b>	<b>Proposed Permanently Defueled EAL for PNP</b>	<b>Comparison</b>
	<p>pump in operation. Heat is removed from the spent fuel pool by the spent fuel pool heat exchanger with component cooling water providing the cooling medium. (Reference 2).</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"><li>1. NEI 99-01, Rev. 6, PD-HU2</li><li>2. DSAR Section 9.4, Spent Fuel Pool Cooling System</li></ol>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p><b>PD-HU3</b></p> <p><b>ECL:</b> Notification of Unusual Event</p> <p><b>Initiating Condition:</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of a (NO)UE.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b></p> <p>(1) 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 plant 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.</p>	<p><b>PD-HU3</b></p> <p><b>ECL:</b> UNUSUAL EVENT</p> <p><b>Initiating Condition:</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT.</p> <p><b>Emergency Action Level (EAL):</b></p> <p>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 systems needed to maintain spent fuel integrity occurs.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• ECL: Changed “Notification of Unusual Event” to “UNUSUAL EVENT” to maintain continuity with the previous PNP EAL scheme</li> <li>• Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>• Removed “Example” from EALs as they are no longer examples</li> <li>• Removed numbering from EAL because there is only one EAL that is associated with the IC</li> <li>• Replaced “plant” with “facility”</li> <li>• Replaced “SAFETY SYSTEMS” with "systems needed to maintain spent fuel integrity" as the term "safety systems" is not applicable in the permanently shut down and defueled condition</li> </ul>
<p><b>Basis:</b></p> <p>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 a NOUE.</p>	<p><b>Basis:</b></p> <p>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 ECL description for an UNUSUAL EVENT.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>None</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01, Rev. 6, PD-HU3</li> <li>2. PNP Permanently Defueled Emergency Plan, Part 2, Section B, Emergency Response Organization"</li> </ol>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• Changed "NOUE" to "UNUSUAL EVENT" to maintain continuity with the previous PNP EAL scheme</li> <li>• Provided PNP site-specific references</li> </ul>

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p><b>PD-HA3</b></p> <p><b>ECL:</b> Alert</p> <p><b>Initiating Condition:</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b></p> <p>(1) 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 plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.</p>	<p><b>PD-HA3</b></p> <p><b>ECL:</b> ALERT</p> <p><b>Initiating Condition:</b> Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.</p> <p><b>Emergency Action Level (EAL):</b></p> <p>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 HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>Removed "Example" from EALs as they are no longer examples</li> <li>Removed numbering from EAL, because there is only one EAL is associated with the IC</li> <li>Replaced "plant" with "facility"</li> </ul>
<p><b>Basis:</b></p> <p>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.</p>	<p><b>Basis:</b></p> <p>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 ECL description for an ALERT.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>None</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>NEI 99-01, Rev. 6, PD-HA3</li> <li>PNP Permanently Defueled Emergency Plan, Part 2, Section B, Emergency Response Organization"</li> </ol>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>Provided PNP site-specific references</li> </ul>

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
<p><b>PD-SU1</b></p> <p><b>ECL:</b> Notification of Unusual Event</p> <p><b>Initiating Condition:</b> UNPLANNED spent fuel pool temperature rise.</p> <p><b>Operating Mode Applicability:</b> Not Applicable</p> <p><b>Example Emergency Action Levels:</b></p> <p>(1) UNPLANNED spent fuel pool temperature rise to greater than (site-specific ° F).</p>	<p><b>PD-SU1</b></p> <p><b>ECL:</b> UNUSUAL EVENT</p> <p><b>Initiating Condition:</b> UNPLANNED spent fuel pool temperature rise.</p> <p><b>Emergency Action Level (EAL):</b></p> <p>UNPLANNED spent fuel pool temperature rise to greater than 140°F.</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• ECL: Changed “Notification of Unusual Event” to “UNUSUAL EVENT” to maintain continuity with the previous PNP EAL scheme</li> <li>• Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>• Removed “Example” from EALs as they are no longer examples</li> <li>• Removed numbering from EAL because there is only one EAL that is associated with the IC</li> <li>• Provided PNP site-specific temperature for the SFP</li> </ul>
<p><b>Basis:</b></p> <p>This IC addresses a condition that is a precursor to a more serious event and represents a potential degradation in the level of safety of the plant. If uncorrected, boiling in the pool will occur, and result in a loss of pool level and increased radiation levels.</p> <p>Escalation of the emergency classification level would be via IC PD-AA1 or PD-AA2.</p>	<p><b>Basis:</b></p> <p>This IC addresses a condition that is a precursor to a more serious event and represents a potential degradation in the level of safety of the facility. If uncorrected, boiling in the SFP will occur, and result in a loss of SFP level and increased radiation levels.</p> <p>Escalation of the ECL would be via IC PD-AA1 or PD-AA2.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>AOP-26 (Reference 2) is applicable when there is an unplanned loss of SFP inventory or SFP cooling. This procedure provides instructions to add large volumes of water to the SFP to address beyond design basis events that result in significant losses due to failures of the SFP. Entry into AOP-26</p>	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>• Replaced "plant" with "facility"</li> <li>• Provided PNP site-specific basis information and justification for 140°F EAL threshold provided in the EAL</li> <li>• Provided PNP site-specific references</li> </ul>

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
	<p>occurs based on HI-HI SFP Temperature Alarm on TIA_0925_D and TIA_0926_D of 140°F.</p> <p>On-shift personnel will provide initial mitigation for a loss of SFP cooling based on SFP high temperature alarm on TIA_0925_D and TIA_0926_D of 125°F (Reference 3). Based on RX-EA-SFPHEATUP-11-01 (Reference 4), for a loss of SFP Cooling, at 365 days after shutdown, the heat up rate in the SFP would be approximately 3.5°F per hour. Using the entry condition for the Loss of Spent Fuel Pooling procedure as the EAL threshold provides a precursor for additional actions to restore SFP cooling and provides approximately 20 hours to mitigate before SFP boiling were to occur.</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01 Rev. 6, PD-SU1</li> <li>2. AOP-26, Loss of Spent Fuel Pool Cooling</li> <li>3. SOP-27, Fuel Pool System</li> <li>4. Calculation No. RX-EA-SFPHEATUP-11-01, "Palisades Spent Fuel Pool Heatup Calculation," Revision 6, Attachment 9.8</li> </ol>	

NEI 99-01 Rev 6, Section 8 ISFSI ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison																					
<p><b>E-HU1</b></p> <p><b>ECL:</b> Notification of Unusual Event</p> <p><b>Initiating Condition:</b> Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p><b>Operating Mode Applicability:</b> All</p> <p><b>Example Emergency Action Levels:</b></p> <p>(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.</p>	<p><b>E-HU1</b></p> <p><b>ECL:</b> UNUSUAL EVENT</p> <p><b>Initiating Condition:</b> Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p><b>Emergency Action Level (EAL):</b></p> <p>Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than the applicable values shown on Table E-1 on the spent fuel cask.</p> <p style="text-align: center;"><b>Table E-1 Cask Dose Rates</b></p> <table border="1" data-bbox="747 764 1356 1455"> <thead> <tr> <th>Cask System</th> <th>Casks</th> <th>Dose Rates</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Ventilated Storage Cask System (VSC-24)</td> <td rowspan="3">All</td> <td>40 mrem/hr on the sides</td> </tr> <tr> <td>100 mrem/hr on the top</td> </tr> <tr> <td>100 mrem/hr at inlet and outlet ducts</td> </tr> <tr> <td rowspan="6">Standardized NUHOMS</td> <td rowspan="3">32PT HSM-001 thru HSM-011</td> <td>1600 mrem/hr on the HSM front surface</td> </tr> <tr> <td>400 mrem/hr on the HSM door centerline</td> </tr> <tr> <td>16 mrem/hr on the end shield wall exterior</td> </tr> <tr> <td rowspan="3">24PTH HSM-H-012 thru HSM-H-024</td> <td>2600 mrem/hr on the HSM front surface</td> </tr> <tr> <td>10 mrem/hr on the HSM door centerline</td> </tr> <tr> <td>20 mrem/hr on the end shield wall exterior</td> </tr> <tr> <td rowspan="2">HI-STORM FW MPC</td> <td rowspan="2">All</td> <td>60 mrem/hr (gamma + neutron) on the top of the OVERPACK</td> </tr> <tr> <td>600 mrem/hr (gamma + neutron) on the OVERPACK, excluding inlet and outlet ducts</td> </tr> </tbody> </table>	Cask System	Casks	Dose Rates	Ventilated Storage Cask System (VSC-24)	All	40 mrem/hr on the sides	100 mrem/hr on the top	100 mrem/hr at inlet and outlet ducts	Standardized NUHOMS	32PT HSM-001 thru HSM-011	1600 mrem/hr on the HSM front surface	400 mrem/hr on the HSM door centerline	16 mrem/hr on the end shield wall exterior	24PTH HSM-H-012 thru HSM-H-024	2600 mrem/hr on the HSM front surface	10 mrem/hr on the HSM door centerline	20 mrem/hr on the end shield wall exterior	HI-STORM FW MPC	All	60 mrem/hr (gamma + neutron) on the top of the OVERPACK	600 mrem/hr (gamma + neutron) on the OVERPACK, excluding inlet and outlet ducts	<p><input type="checkbox"/> No Change    <input checked="" type="checkbox"/> Difference    <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> <li>ECL: Changed "Notification of Unusual Event" to "UNUSUAL EVENT" to maintain continuity with the previous PNP EAL scheme</li> <li>Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition</li> <li>Removed "Example" from EALs as they are no longer examples.</li> <li>Removed numbering from EAL because there is only one EAL that is associated with the IC</li> <li>Included the cask-specific EAL threshold values corresponding to two-times the cask specific technical specification allowable value for each of the cask systems in use at the PNP ISFSI</li> </ul>
Cask System	Casks	Dose Rates																					
Ventilated Storage Cask System (VSC-24)	All	40 mrem/hr on the sides																					
		100 mrem/hr on the top																					
		100 mrem/hr at inlet and outlet ducts																					
Standardized NUHOMS	32PT HSM-001 thru HSM-011	1600 mrem/hr on the HSM front surface																					
		400 mrem/hr on the HSM door centerline																					
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	24PTH HSM-H-012 thru HSM-H-024	2600 mrem/hr on the HSM front surface																					
		10 mrem/hr on the HSM door centerline																					
		20 mrem/hr on the end shield wall exterior																					
HI-STORM FW MPC	All	60 mrem/hr (gamma + neutron) on the top of the OVERPACK																					
		600 mrem/hr (gamma + neutron) on the OVERPACK, excluding inlet and outlet ducts																					

<b>NEI 99-01 Rev 6, Section 8            ISFSI ICs/EALs</b>	<b>Proposed Permanently Defueled            EAL for PNP</b>	<b>Comparison</b>
<p><b>Basis:</b></p> <p>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.</p> <p>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.</p> <p>Security-related events for ISFSIs are covered under ICs HU1 and HA1.</p>	<p><b>Basis:</b></p> <p>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.</p> <p>The existence of “damage” is determined by radiological survey. The 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.</p> <p>Security-related events for ISFSIs are covered under ICs PD-HU1 and PD-HA1.</p> <p><u>Additional PNP Site-Specific Bases Information</u></p> <p>The PNP ISFSIs utilize multiple dry spent fuel storage systems. These systems consist of the Ventilated Storage Cask System (VSC-24) (Reference 2); the NUHOMS® Horizontal Modular Storage System (32PT and 24PTH) (References 3 and 4); and the HI-STORM Flood/Wind (FW) Multipurpose Canister (MPC) Cask System (Reference 5). The dose rates included in Table E-1 equate to two-times the cask-specific technical</p>	<p> <input type="checkbox"/> No Change              <input checked="" type="checkbox"/> Difference              <input type="checkbox"/> Deviation         </p> <p> <input type="checkbox"/> No Change              <input checked="" type="checkbox"/> Difference              <input type="checkbox"/> Deviation         </p> <ul style="list-style-type: none"> <li>• Provided PNP site-specific and cask-specific basis information and references</li> </ul>

NEI 99-01 Rev 6, Section 8 ISFSI ICs/EALs	Proposed Permanently Defueled EAL for PNP	Comparison
	<p>specification allowable radiation value for each of the cask systems (References 2, 3, 4, and 5).</p> <p>This EAL addresses any condition which indicates a loss of a cask CONFINEMENT BOUNDARY and thus a potential degradation in the level of safety of the ISFSI.</p> <p>Minor surface damage that does not affect storage cask boundary is excluded from the scope of this EAL.</p> <p><b>Basis Reference(s):</b></p> <ol style="list-style-type: none"> <li>1. NEI 99-01, Rev. 6, E-HU1</li> <li>2. Renewal of Initial Certificate of Compliance and Amendments No. 1 through 6 of Certificate of Compliance No. 1007 for the VSC-24 Cask System, Enclosure # - Attachment A, Technical Specification 1.2.4</li> <li>3. Renewal of Initial Certificate of Compliance and Amendments No. 1 through 11 and 13, Revision 1, and Amendment No. 14 of Certificate of Compliance No. 1004 for the Standardized NUHOMS® Horizontal Modular Storage System, Enclosure 16 (Amendment No. 7, Revision 1) Technical Specification 1.2.7a</li> <li>4. Renewal of Initial Certificate of Compliance and Amendments No. 1 through 11 and 13, Revision 1, and Amendment No. 14 of Certificate of Compliance No. 1004 for the Standardized NUHOMS® Horizontal Modular Storage System, Enclosure 16 (Amendment No. 9, Revision 1) Technical Specification 1.2.7c</li> <li>5. Issuance Certification of Compliance No. 1032, Amendment No. 1 Revision No. 1, for the HI-STORM Flood/Wind Multipurpose Canister</li> </ol>	

<b>NEI 99-01 Rev 6, Section 8 ISFSI ICs/EALs</b>	<b>Proposed Permanently Defueled EAL for PNP</b>	<b>Comparison</b>
	Storage System (TAC No. L24775), Appendix A Technical Specification 5.3.4	

**Attachment 4 to Enclosure**

**HDI PNP 2022-016**

**Offsite Response Organization Acknowledgment and Concurrence**

**(4 Pages)**



STATE OF MICHIGAN  
DEPARTMENT OF STATE POLICE  
LANSING

GRETCHEN WHITMER  
GOVERNOR

COL. JOSEPH M. GASPER  
DIRECTOR

June 15, 2022

Mr. Michael Schultheis  
Emergency Planning Manager  
Holtec International  
27780 Blue Star Memorial Highway  
Covert, Michigan 49043

Dear Mr. Schultheis:

Thank you for your presentation on June 14 concerning Holtec's Permanently Defueled Emergency Plan (PDEP). My staff and I have discussed this and I fully understand and am satisfied with the plant's current and future plans as the decommissioning process proceeds.

The Michigan State Police, Emergency Management and Homeland Security Division is confident these plan changes will not impact our ability to effectively implement the state's Federal Emergency Management Agency (FEMA)-approved Radiological Emergency Preparedness (REP) Program.

I am fully supportive of the process and will do everything necessary to ensure the safety and protection of the public, as identified in the FEMA REP manual.

Please feel free to reach out to me at [sweeneyk@michigan.gov](mailto:sweeneyk@michigan.gov) or 517-719-1195 if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "Kevin Sweeney".

Capt. Kevin Sweeney, Commander  
Emergency Management  
and Homeland Security Division



## **Allegan County Sheriff's Office EMERGENCY MANAGEMENT DEPARTMENT**

Homeland Security / Local Emergency Planning Committee  
3271 – 122<sup>nd</sup> Avenue, Allegan, Michigan 49010  
Telephone: (269) 673-0571  
Fax: (269) 673-0566

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### **Sheriff**

Frank Baker

### **Undersheriff**

Mike Larsen

### **Director**

Scott Corbin

### **LEPC Information Coordinator**

Brett Apelgren

### **LEPC Chairperson**

Dean Kapenga

### **AUXCOM Coordinator**

Jason Veenstra

### **Cert Coordinator**

Philip Holscher

### **Reserve Unit**

Jim Steuer

### **Search and Rescue**

Randy MacNeil

Tuesday June 14, 2022

Dear Mr. Malone,

Thank you for the invitation to the June 14, 2022 presentation concerning Permanently Defueling Emergency Plan (PDEP) for Palisades Nuclear Plant. Based on this meeting and the discussions that followed after, we feel satisfied that we fully understand the proposed changes and do not feel that these changes will in any way impact our ability to effectively implement our FEMA-approved REP plans.

Sincerely,

Scott Corbin  
Allegan County Emergency Management Director



**Van Buren County Office of Domestic Preparedness**  
*Division of Van Buren County Sheriff's Office*

205 S Kalamazoo Street  
Paw Paw, Michigan 49079  
269-657-7786 Phone  
269-657-7787 Fax



**Lieutenant Robert A. Kirk**  
*Director*  
**Sheriff Daniel E. Abbott**

**June 15, 2022**

**Mr. Mike Schultheis**  
**Emergency Planning Manager**  
**Holtec- Palisades Nuclear Plant**  
**27780 Blue Star Memorial Highway**  
**Covert, Michigan 49043**

**SUBJECT: Palisades Nuclear Plant- Permanently Defueled Emergency Plan (PDEP)**

**Dear Mr. Schultheis,**

**Based on the discussions during our meeting on June 14, 2022, concerning Holtec's Permanently Defueled Emergency Plan License Amendment Request for Palisades Nuclear Plant, we are satisfied we understand the changes proposed and we are satisfied that these changes will not impact the ability of Van Buren County Sheriff's Office and the VBC Office of Domestic Preparedness to effectively implement our FEMA- approved REP plans.**

**Sincerely,**

*DEP. [Signature]*

**Dep. Todd Skinner**  
**Deputy Director/ Emergency Manager**  
**Office of Domestic Preparedness**  
**Van Buren County Sheriff's Office**



# BERRIEN COUNTY SHERIFF'S OFFICE

## EMERGENCY MANAGEMENT & HOMELAND SECURITY DIVISION

919 Port Street, Saint Joseph, Michigan 49085  
Phone (269) 983-7141 x4915 • Email [bcoem@berriencounty.org](mailto:bcoem@berriencounty.org)

June 14, 2022

Mr. Daniel G. Malone  
Emergency Planning Manager  
Entergy – Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, Michigan 49043 USA

Subject: Palisades Nuclear Plant Permanently Defueled Emergency Plan (PDEP)

Dear Mr. Malone,

I am writing to express my appreciation toward your effort to inform us about the Palisades Permanently Defueled Emergency Plan (PDEP) and giving us an open forum to assess any conflict with our community emergency operations plans. Please pass on the same appreciation to Michael Schultheis, as his presentation of the facts was also very helpful to this conversation.

After careful review and understanding of this plan, we see no indication that the proposed changes will impact our ability to effectively implement our emergency plans. We do not see any evidence that the safety of the community in Berrien County will be adversely affected by this proposed plan or from any subsequent license amendments requested based upon this plan.

We will continue to commit any required resources needed when it becomes appropriate during the decommissioning process. We are committed to ensuring the successful decommissioning of the plant is safe and healthy process for our community.

Please feel free to contact me if you have questions or concerns that we need to discuss at [Radams1@berriencounty.org](mailto:Radams1@berriencounty.org) or 269-983-7111 ext. 4916.

Respectfully,

*CPT. Rockey J. Adams*

Digitally signed by CPT Rockey J.  
Adams  
Date: 2022.06.14 18:25:53 -04'00'

Capt. Rockey Adams  
Emergency Management and Homeland Security Coordinator