



10 CFR 50.90
10 CFR 50.54(q)

HDI-IPEC-21-016

December 22, 2021

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

Subject: License Amendment Request to Revise the Emergency Plan and
Emergency Action Level Scheme to Address the Permanently Defueled
Condition

Indian Point Nuclear Generating Unit Nos. 1, 2, and 3
Docket Nos. 50-003, 50-247, and 50-286
Provisional Operating License No. DPR-5
Renewed Facility License No. DPR-26
Renewed Facility Operating License No. DPR-64

- References:
- 1) Entergy letter to U.S. Nuclear Regulatory Commission (NRC),
"Notification of Permanent Cessation of Power Operations," (Letter NL-
17-021) (ADAMS Accession No. ML17044A004), dated February 8,
2017
 - 2) Entergy letter to NRC, "Notification of Unit 1 Transfer of 160 Spent Fuel
Assemblies from the Spent Fuel Pool to the Indian Point Independent
Spent Fuel Storage Installation," (Letter No. NL-08-173) (ADAMS
Accession No. ML083510667), dated December 11, 2008
 - 3) Entergy letter to NRC, "Certifications of Permanent Cessation of Power
Operations and Permanent Removal of Fuel from the Reactor Vessel,
Indian Point Nuclear Generating Unit No. 2," (Letter NL-20-042)
(ADAMS Accession No. ML20133J902), dated May 12, 2020
 - 4) Entergy letter to NRC, "Certifications of Permanent Cessation of Power
Operations and Permanent Removal of Fuel from the Reactor Vessel,
Indian Point Nuclear Generating Unit No. 3," (Letter NL-21-033)
(ADAMS Accession No. ML21131A157), dated May 11, 2021
 - 5) NRC Letter to Entergy, "Indian Point Nuclear Generating Unit Nos. 1, 2,
and 3 – Issuance of Amendment Nos. 62, 293, and 268 Re: Changes to
Emergency Plan for Post-Shutdown and Permanently Defueled
Condition (EPID L-2019-LLA-0080)," (ADAMS Accession No.
ML20078L140), dated April 15, 2020

- 6) Letter from Holtec to US NRC, "Submittal of Topical Report: Holtec Spent Fuel Pool Heat Up Calculation Methodology Topical Report, Revision 2. Including Site-Specific Calculations for NRC Review" (Letter HDI-IPEC-21-041) (ADAMS Accession No. ML21356B687/ML21356B689) dated December 22, 2021.
- 7) Letter from Holtec to NRC, "Request for Exemptions from Certain Emergency Planning Requirements of 10 CFR 50.47 and 10 CFR Part 50, Appendix E," (Letter HDI-IPEC-21-015) (ADAMS Accession No. ML21356B693), dated December 22, 2021

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Holtec Decommissioning International, LLC (HDI), on behalf of Holtec Indian Point 2, LLC (IP1 & IP2) and Holtec Indian Point 3, LLC (IP3), collectively referred to as Indian Point Energy Center (IPEC)), requests an amendment to Provisional Operating License No. DPR-5 for IP1, Renewed Facility License No. DPR-26 for IP2, and Renewed Facility Operating License No. DPR-64 for IP3. The requested license amendments would revise the IPEC Emergency Plan and Emergency Action Level (EAL) scheme for the permanently shutdown and defueled condition at IPEC. The proposed changes are being submitted to the U.S. Nuclear Regulatory Commission (NRC) for approval prior to implementation, as required under 10 CFR 50.54(q)(4) and 10 CFR Part 50, Appendix E, Section IV.B.2.

In Reference 1, Entergy certified to the NRC, in accordance with 10 CFR 50.82(a)(1)(i), that it planned to permanently cease power operations at IP2 and IP3 by April 30, 2020 and April 30, 2021, respectively.

Operation of IP1 was suspended on October 31, 1974 and all fuel was removed from the reactor vessel in 1975. The IP1 Provisional Operating License prohibits taking the reactor to criticality or operation of the facility at any power level, and the IP1 Technical Specifications do not allow fuel to be loaded into the reactor core or moved into the reactor containment building without prior NRC review and authorization. On December 11, 2008, Entergy notified the NRC that all remaining spent fuel assemblies had been removed from the IP1 spent fuel pool (SFP) and placed in the existing Independent Spent Fuel Storage Installation (ISFSI) (Reference 2). The IP1 Technical Specifications also prohibit fuel from being stored in the IP1 spent fuel storage area.

In References 3 and 4, Entergy certified to the NRC, in accordance with 10 CFR 50.82(a)(1)(i), that power operations ceased at IP2 on April 30, 2020 and at IP3 on April 30, 2021. In addition, Entergy certified in accordance with 10 CFR 50.82(a)(1)(ii), that the fuel was permanently removed from the IP2 reactor vessel and placed in the IP2 SFP on May 12, 2020 and that the fuel was permanently removed from the IP3 reactor vessel and placed in the IP3 SFP on May 11, 2021. HDI understands and acknowledges that upon docketing of these certifications, the 10 CFR Part 50 license(s) no longer authorize operation of the reactor or emplacement or retention of fuel in the reactor vessel(s).

In Reference 5, the NRC approved changes to the IPEC Emergency Plan to support the planned permanent cessation of operation and permanent removal of fuel from the IP2 and IP3 reactor vessels. The approved changes revised the IPEC emergency response organization (ERO) on-shift and augmented staffing, commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled nuclear power reactor facility.

The proposed Permanently Defueled Emergency Plan (PDEP) and Permanently Defueled EAL scheme are commensurate with the significantly reduced risk associated with the spent fuel stored in the IP2 and IP3 SFPs 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 IPEC Decommissioning Trust Funds and the effectiveness of the Emergency Plan.

The proposed PDEP and Permanently Defueled EAL scheme are predicated on 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 7. 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, exempted as requested in Reference 7.

HDI has reviewed the proposed amendments in accordance with 10 CFR 50.91(a)(1), using the criteria in 10 CFR 50.92, and concludes that this change does not involve a significant hazards consideration. HDI has also determined that the proposed changes satisfy the criteria for categorical exclusion in accordance with 10 CFR 51.22(c)(10) and do not require an environmental review. Therefore, in accordance with 10 CFR 51.22(b), no environmental impact statement or environmental assessment is required.

As required by 10 CFR 50.91, copies of this application, with the enclosure, are being provided to the New York State Department of Health and Emergency Management Agency.

The Enclosure to this letter provides a description, technical and regulatory evaluation, significant hazards determination, and environmental considerations evaluation for the proposed license amendments. 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 IPEC Permanently Defueled EAL Technical Bases Document 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 requested amendments, HDI has contracted Holtec to perform site specific analyses utilizing the methodology in Holtec Report HI-2200750, Rev. 2 "Holtec Spent Fuel Pool Heat Up Calculation Methodology Topical Report" to determine the end of the zirconium fire period for IP2 and IP3. These site-specific analyses show that the requested PDEP may be implemented with an optimized spent fuel pool layout for IP2 and IP3 at 15 months after power operations ceased at IP3. The analyses and the results are summarized in Reference 6. HDI has had discussions with cognizant state and local response organizations regarding the PDEP requests to be submitted to the NRC as indicated above. HDI will continue to meet with representatives from the State of New York, local emergency preparedness personnel, and Regional leadership from the U.S. Federal Emergency Management Agency

HDI requests review and approval of the proposed license amendments by July 1, 2022, and a 31-day implementation period after the effective date of the amendments.

This letter contains no new regulatory commitments. Should you have any questions or require

additional information, please contact Mr. Walter Wittich, IPEC Licensing at 914-254-7212 or myself at 856-797-0900, ext. 3578.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 22, 2021.

Sincerely,

Jean F. Fleming
HDI Vice President, Regulatory and Environmental Affairs
Holtec Decommissioning International, LLC

Enclosure: Indian Point Energy Center - Description and Evaluation of Proposed Changes

Attachments to Enclosure:

1. Indian Point Energy Center Permanently Defueled Emergency Plan
2. Indian Point Energy Center Permanently Defueled Emergency Action Level Technical Bases Document
3. Comparison Matrix for Permanently Defueled EALs Based on NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6

cc: NRC Senior Project Manager, NRC NRR DORL
NRC Region I Regional Administrator
NRC Senior Regional Inspector, Indian Point Energy Center
New York State Liaison Officer Designee, NYSERDA
New York State (NYS) Public Service Commission

Enclosure

HDI-IPEC-21-016

Description and Evaluation of Proposed Changes

(18 Pages)

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 Indian Point 2, LLC (IP1 & IP2) and Holtec Indian Point 3, LLC (IP3), collectively referred to as Indian Point Energy Center (IPEC)), requests U.S. Nuclear Regulatory Commission (NRC) review and approval of a revision to the IPEC Emergency Plan. The proposed changes would revise the IPEC Emergency Plan and Emergency Action Level (EAL) scheme to support the permanent cessation of power operations and permanent removal of fuel from the IPEC reactor vessels. The IPEC Emergency Plan encompasses IP1, IP2, and IP3.

This request contains the proposed IPEC Permanently Defueled Emergency Plan (PDEP) and the Permanently Defueled EAL scheme for NRC review and approval.

HDI has submitted a separate request for exemptions from portions of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR Part 50, Appendix E, by letter dated December 22, 2021 (Reference 1). The proposed PDEP and Permanently Defueled EAL scheme satisfy the applicable standards of 10 CFR 50.47(b), 10 CFR 50.47(c)(2) and the requirements of 10 CFR Part 50, Appendix E, for the permanently defueled reactors, with exemptions as requested in Reference 1. Reference 31 contains site specific analyses for the IP2 and IP3 spent fuel pools (SFPs) for beyond design basis events, which show that the requested exemptions may be implemented with an optimized spent fuel pool layout at 15 months after power operations ceased at IP3, and the PDEP and the Permanently Defueled EAL scheme may also be implemented. The analysis demonstrates there is sufficient time to mitigate events that could lead to a zirconium fire.

2.0 DETAILED DESCRIPTION AND BASIS FOR THE CHANGES

This license amendment request modifies the IP1, IP2, and IP3 licenses by revising the IPEC Emergency Plan and the associated EAL scheme to reflect the permanently shutdown and defueled condition of the IPEC reactors.

IP1 was permanently shutdown on October 31, 1974 and all spent fuel was removed from the IP1 reactor vessel in 1975. All spent fuel has since been removed from the IP1 SFP and transported offsite or placed in the existing Independent Spent Fuel Storage Installation (ISFSI) as reported in the Entergy letter to the NRC regarding this subject, dated December 11, 2008 (ADAMS Accession No. ML083510667) (Reference 3). The IP1 Provisional Operating License prohibits taking the reactor to criticality or operation of the facility at any power level, and the IP1 Technical Specifications do not allow fuel to be loaded into the reactor core or moved into the reactor containment building without prior review and authorization by the NRC. IP1 is being maintained in SAFSTOR status. There are ongoing activities in the IP1 space that are support services for IP2 and, to a lesser extent, IP3. Only those areas that either store or process radioactive materials (the Fuel Handling Building (FHB) and waste storage/process areas in the Chemical Systems Building and the Integrated Liquid Radwaste Systems Building) are considered in evaluating the radiological hazards for the IPEC Emergency Plan. Based on its current configuration and licensing basis, with no spent fuel stored in the IP1 SFP, there are no postulated Design Basis Accidents (DBAs) that remain applicable to IP1 (Reference 4). The IP1 SFP is no longer in use because all spent fuel has been transferred to the ISFSI and other material has been removed, and the IP1 SFP has been drained.

By letter dated February 8, 2017 (Reference 2), in accordance with 10 CFR 50.82(a)(1)(i), Entergy submitted certification to the NRC indicating its intention to permanently cease power operations at IP2 and IP3 by April 30, 2020 and April 30, 2021, respectively.

By letter dated April 15, 2020 (Reference 5), the NRC issued Amendment Nos. 62, 293, and 268 for IP1, IP2, and IP3, respectively, approving the IPEC Post-Shutdown Emergency Plan (PSEP). The changes to the IPEC Emergency Plan that were approved for the PSEP support the planned permanent cessation of operations of IP2 and IP3 and permanent defueling of the reactor vessels. The approved changes revised the IPEC emergency response organization (ERO) and augmented ERO staffing commensurate with the reduced spectrum of credible accidents for a permanently shutdown and defueled nuclear power reactor facility as each reactor (IP2 and IP3) is shutdown and permanently defueled. The PSEP currently maintains the effectiveness of the IPEC Emergency Plan in accordance with 10 CFR 50.47 and 10 CFR 50, Appendix E.

In References 6, Entergy certified to the NRC, in accordance with 10 CFR 50.82(a)(1)(i), that power operations ceased at IP2 on April 30, 2020 and at IP3 on April 30, 2021. In addition, Entergy certified in accordance with 10 CFR 50.82(a)(1)(ii), that the fuel was permanently removed from the IP2 reactor vessel and placed in the IP2 SFP on May 12, 2020 and that the fuel was permanently removed from the IP3 reactor vessel and placed in the IP3 SFP on May 11, 2021. HDI understands and acknowledges that upon docketing of these certifications, the 10 CFR Part 50 license(s) no longer authorize operation of the reactor or emplacement or retention of fuel in the reactor vessel(s).

With the IP1, IP2, and IP3 reactors in the conditions described above, the reactors will never again enter any operational mode, and reactor-related accidents, abnormal operational transients, and special events are no longer a possibility. The spectrum of credible accidents is much smaller than for an operational plant and the number and severity of potential radiological accidents is significantly less than when the IPEC reactors are operating. The majority of the accident scenarios postulated with the reactors in operation are no longer applicable. Section 6 of the IP2 and IP3 Defueled Safety Analysis Reports (DSARs) describe the design basis accident (DBA) scenarios that are applicable to IP2 and IP3, respectively. The analyzed DBAs that remain applicable to IP2 and IP3 in the permanently shutdown and defueled condition are the fuel handling accident (FHA) in the FHBs (i.e., Fuel Storage Buildings (FSBs)), accidental release of waste gas, and an accidental release-recycle of waste liquid. As previously discussed, there are no DBAs that remain applicable to IP1 with all remaining spent fuel stored at the ISFSI.

The offsite radiological consequences of accidents possible at IPEC, 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 7) beyond the site boundary.

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 and 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 IPEC 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 8). HDI determined that a revision to the IPEC EAL scheme to implement the EAL scheme contained in guidance presented in Appendix C of NEI 99-01, Revision 6 (Reference 9), Recognition Category "PD" (Permanently Defueled), is appropriate for the permanently shutdown and defueled condition of the IPEC reactors. 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 10).

3.0 TECHNICAL EVALUATION

3.1 Accident Analysis Overview

As specified in 10 CFR 50.82(a)(2), the 10 CFR Part 50 licenses no longer authorize operation of the IPEC reactors or emplacement or retention of fuel in the reactor vessels 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). With the termination of power operations at IP1, IP2, and IP3 and the permanent removal of the fuel from the reactor vessels, the postulated accidents involving failure or malfunction of the reactor and supporting structures, systems, and components (SSCs) are no longer applicable. A summary of the radiological accidents analyzed for the permanently shutdown and defueled condition is presented below.

Based on its current configuration and licensing basis, with no spent fuel stored in the IP1 SFP, there are no postulated DBAs that remain applicable to IP1. The IP1 SFP is no longer in use because all spent fuel has been removed from the site or transferred to the ISFSI and other material removed, and the IP1 SFP has been drained. Accordingly, the analyses discussed within this section only address the risks associated with the storage of spent fuel in the IP2 and IP3 SFPs.

HDI operates the IPEC onsite ISFSI in accordance with 10 CFR Part 72, Subpart K, under the general license authorized by 10 CFR 72.210. 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 a separate ISFSI emergency plan is not required. Therefore, operation of the ISFSI is adequately addressed for IP1, IP2, and IP3, and will continue to be addressed in the IPEC Emergency Plan.

Section 5.0 of Interim Staff Guidance document NSIR/DPR-ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," (ISG-02) (Reference 11) indicates that site-specific analyses should demonstrate that: (1) the radiological consequences of the remaining applicable DBAs would not exceed the limits of the EPA PAGs at the Exclusion Area

Boundary (EAB); (2) in the event of a beyond design basis event resulting in the partial draindown of the SFP to the point that cooling is not effective, there is at least 10 hours from the time that the fuel is no longer being cooled until the hottest fuel assembly reaches 900 degrees Celsius (°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 from a loss of SFP cooling, there is sufficient time to implement pre-planned mitigation measures to provide makeup or spray to the SFP before the onset of zirconium cladding ignition.

HDI described these analyses in Reference 1 and Reference 31. Specific analyses are summarized in the following sections.

3.2 Consequences of Design Basis Events

The NRC approved the IP2 Permanently Defueled Technical Specifications (PDTs) on April 28, 2020, with the issuance of IP2 License Amendment No. 294. The license amendment included the statement that the applicable DBAs for IP2 in the permanently defueled condition are: (1) a FHA in the FHB, (2) an accidental release of waste gas, and (3) an accidental release-recycle of waste liquid (Reference 12). Similarly, the NRC approved the IP3 PDTs on April 22, 2021 with the issuance of IP3 License Amendment No. 270, the analyzed events that will remain applicable to IP3 in the permanently defueled condition are: (1) the FHA in the FHB, (2) an accidental release of waste gas, and (3) an accidental release-recycle of waste liquid (Reference 13).

The remaining IP2 and IP3 DBAs are discussed in the following paragraphs in this section.

3.2.1 FHA Analysis

An FHA may occur in the FSB during fuel movement of a fuel assembly. The fuel assembly is moved under water and the accident is assumed to occur when one fuel assembly is damaged. The IP2 and IP3 post-permanent shutdown FHA (Reference 14) was evaluated utilizing the Alternate Source Term (AST) methodology described in Regulatory Guide 1.183 (Reference 15). This analysis did not credit the function of FSB filtration, high-rad alarm, dispersion from the FSB ventilation system, Control Room isolation, or emergency filtration. The analysis credits the decontamination of the 23 feet of water over the fuel assemblies in the SFP with an overall effective decontamination factor of 200, consistent with Regulatory Guide 1.183 (Reference 14).

The analysis indicates that after a decay time of at least 720 hours (30 days) following permanent cessation of power operations of each unit, the FHA results in an EAB TEDE dose of 0.47 rem, which is below the EPA early phase PAG criteria of 1 rem TEDE (Reference 14). In addition, the NRC has previously noted that the doses from an FHA are dominated by the isotope Iodine-131.

3.2.2 Accidental Release of Waste Gas

This calculation includes the determination of the dose consequences for a waste gas decay tank rupture accident using a 50,000 curie (Ci) dose-equivalent Xe-133 waste gas tank activity limit without any credit for mitigating systems. The waste gas decay tanks receive the radioactive gases from the radioactive liquids from the various laboratories and drains processed by the waste disposal system. The 50,000 Ci dose-equivalent Xe-133 waste gas tank activity assumed in this calculation bounds the current Xe-133 dose-equivalent limit of 29,761 Ci, as well as the administrative Xe-133 dose-equivalent limit of 6,000 Ci (Reference 14).

Other tanks that contain waste gas during operations (the volume control tank and liquid holdup

tank) were not considered in this analysis, since gaseous products from these liquid tanks are collected and compressed in the waste gas decay tanks for decay prior to release. Potential liquid waste releases are considered from these tanks; however, any liquid releases are retained in the building or sumps and only volatilized components would be released to the environment. These volatilized components are evaluated as part of the waste gas decay tank accident.

With the IP2 and IP3 reactors permanently shutdown and defueled, there is no mechanism to raise the primary coolant activity. Therefore, the source term contained within the waste gas tanks represents the worst-case source term, which is expected to be less than the assumed waste gas tank rupture analysis of record, and thus bounded. Subsequent additions to the waste gas tanks resulting from water management activities would be less than the final shutdown and cooldown waste gas tank source term.

The analysis concludes that without crediting any mitigating systems or the Plant Auxiliary Building (PAB) ventilation system, the calculated TEDE to the Control Room is less than the limit set forth in 10 CFR 50.67 and the whole-body dose value of 500 millirem (mrem) at the EAB. The dose consequences from a waste gas tank decay tank rupture are less than the dose consequences following an FHA and meet the applicable radiological dose criteria at the Control Room, EAB, and Low Population Zone (LPZ) (Reference 14).

3.2.3 Accidental Release-Recycle of Waste Liquid

Section 6.2 of the IP2 Defueled Safety Analysis Report (DSAR) and Section 6.4 of the IP3 Defueled Safety Analysis Report (DSAR) address the accidental release of waste liquid. In both documents, the referenced sections state that the hazard from these releases is derived only from the volatilized components. Thus, the release of liquid waste is evaluated in the accidental release of waste gas, which is addressed above.

3.3 Consequences of Beyond Design Basis Events

3.3.1 Spent Fuel Assembly Heat Up During a Theoretical Drain Down Event

The analyses discussed in Reference 1 compare the heat load limits for the hottest fuel assembly and for a 2X2 group of assemblies stored in each SFP (IP2 and IP3) to a criterion proposed in Commission Paper SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," (Reference 16) 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 heatup time of 10 hours from the time the spent fuel is uncovered was determined to be sufficient to take mitigating actions and, if necessary, offsite protective measures without offsite emergency preplanning addressing the facility.

The bounding analyses for the IP2 SFPs for beyond design basis events demonstrate 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. The bounding analyses for the IP3 SFPs for beyond design basis events demonstrate that 15 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, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," (February 2001) (Reference 17) 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 bounding 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 length of time it would take for the fuel to heatup, there is ample time to respond to any draindown event that might cause such an occurrence by restoring cooling or makeup, or providing spray to the IP2 or IP3 SFPs. As a result, the likelihood that such a scenario would progress to a zirconium fire is deemed not credible.

3.3.2 Spent Fuel Pool Draindown Event

NRC NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," (Reference 18) Supplement 1, Section 4.3.9, identifies that a SFP draindown event is a beyond design basis event. The analyses discussed in Section 3.3.1 demonstrate that a significant release of radioactive material from the SFP is not possible within 10 hours from the time the spent fuel in either the IP2 or IP3 SFP is uncovered. However, the potential exists for radiation exposure if shielding of the fuel in the IP2 or IP3 SFP is lost.

HDI analyzed the bounding radiological consequences of a postulated complete loss of SFP water from the IP2 and IP3 SFPs as a function of time after shutdown of IP2 and IP3. The analysis considered limiting distances from both SFPs to both Control Rooms and the EAB and a combination of IP3 fuel in the IP2 SFP, to bound both units (Reference 32).

The SFP water and the concrete SFP structures 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 SFP and being scattered back to a receptor at the site boundary. The analysis determined that the gamma radiation dose rates at the EAB from a loss of water shielding at the IP2 or IP3 SFP would be less than the EPA PAGs (Reference 32).

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 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 preplanning if efforts to reestablish shielding over the fuel are delayed.

Based on the analysis, the dose rate to a receptor at the EAB and the limiting dose rate in the IP2 and IP3 Control Rooms at one year after shutdown are less than 11.55 mrem/hour (hr) and 0.0259 mrem/hr, respectively (Reference 32).

3.4 Comparison to NUREG-1738 Industry Decommissioning Commitments and Staff Decommissioning Assumptions

Although the absence of DBAs applicable to IP1 and the limited scope of DBAs and beyond design basis accidents that remain applicable to IP2 and IP3 justify a reduction in the necessary scope of emergency response capabilities, HDI also evaluated the Industry Decommissioning Commitments (IDCs) and Staff Decommissioning Assumptions (SDAs) contained in NUREG-1738 (Reference 17).

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 IP2 and IP3 SFPs meet or compare with each of these IDCs and SDAs. The IP1 SFP is not addressed in Tables 4 and 5 of Reference 1 because the IP1 SFP is no longer in use, all spent fuel has been removed from the site or transferred to the ISFSI, other material has been removed from the IP1 SFP, and the IP1 SFP has been drained. Therefore, there is no risk associated with the IP1 SFP.

3.5 Consequences of a Beyond-Design Basis Earthquake

In addition to an evaluation of each IDC and SDA, HDI also developed an analysis demonstrating successful completion of the Enhanced Seismic Checklist provided in Attachment 1 to Appendix 2B of NUREG-1738 (Reference 17) for the IP2 and IP3 SFPs. Based on this analysis, summarized in Table 6 of Reference 1, there is a high confidence in a low probability of failure (HCLPF) for seismic ground motions up to a 1.2 gravitational acceleration (g) peak spectral acceleration (or with peak ground acceleration (PGA) of approximately 0.5 g), which in turn assures that the frequency of fuel uncover from seismic events for IP2 and IP3 is less than or equal to 1×10^{-5} per year (Reference 1).

The IP1 SFP is not addressed in Table 6 of Reference 1 because the IP1 SFP is no longer in use, all spent fuel has been transferred to the ISFSI, other material has been removed from the IP1 SFP, and the IP1 SFP has been drained. Therefore, there is no risk associated with the IP1 SFP.

4.0 PERMANENTLY DEFUELED EMERGENCY PLAN AND PERMANENTLY DEFUELED 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 11).

The analyses of the potential radiological impact of accidents while IP1, IP2, and IP3 are in a permanently shutdown and defueled condition indicate that no DBAs or reasonably conceivable beyond design basis event would result in radioactive releases that exceed EPA PAGs (Reference 7) or the industry accepted 10% EPA PAG (Reference 10) beyond the site boundary.

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 (Reference 1). 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 and local 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, "Emergency Plans," and 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," that remain applicable after the requested exemptions (Reference 1) are approved, and is consistent with the applicable guidance established in ISG-02 (Reference 11) and NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (Reference 30).

4.1.1 On-Shift and Emergency Response Organization Staffing

The PDEP modifies the IPEC Stage II PSEP on-shift and augmenting ERO positions previously approved by the NRC in Reference 5. The proposed on-shift staffing consists of one (1) Shift Manager at each unit with fuel in the SFP (IP2 and IP3), one (1) Non-Certified Operator (NCO) at each unit with fuel in the SFP (IP2 and IP3), 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 IPEC 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 plant/facility.

The PDEP further provides that in the event of an emergency at IPEC requiring additional personnel and other support resources, the ERO can be augmented with staffing and equipment support from additional station 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 IPEC.

4.1.2 Emergency Communications

Section F of the PDEP, "Emergency Communications," eliminates the current method of using specialized communication methods, such as the Radiological Emergency Communications System (RECS), dedicated ringing phones and Executive Hotlines that provide for a dedicated link between State and local officials and the IPEC Emergency Director currently. While IPEC 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 provided. HDI proposes to complete emergency notification to the contiguous jurisdictions of the State of New York, Westchester County, and Rockland 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 any 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 and local authorities.

For beyond design basis events, the deployment of offsite resources, including law enforcement, ambulance, and fire/rescue services may be requested by HDI 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 11) 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 Section C of the proposed PDEP. 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 with the IPEC Emergency Planning Department.

4.2 Permanently Defueled Emergency Action Level Scheme

The current IPEC EAL scheme was developed based on the guidance presented in NEI 99-01, Rev. 5 (Reference 8). Attachment 2 to this Enclosure provides the proposed Permanently Defueled EAL Technical Bases Document. This document contains 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 9).

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 vessels.

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 9), and the proposed Permanently Defueled EALs. Differences and deviations 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 19).

As discussed in RIS 2003-18, Supplement 1, *differences* are defined 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.

As discussed in RIS 2003-18, Supplement 1, *deviations* are defined 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 IPEC, emergency planning and responsibilities have historically involved coordination with the State of New York; Westchester, Rockland, Putnam, and Orange Counties; and the City of Peekskill.

Decommissioning-related Emergency Plan submittals for IPEC have been discussed with cognizant officials from these organizations. These discussions include the proposed changes to the IPEC Emergency Plan 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 30-minute emergency declaration time, the 60-minute notification time, those agencies participating in the annual review of EALs, and those agencies invited to participate in drills and exercises. HDI will continue to meet with representatives from the State of New York, local emergency preparedness personnel, and Regional leadership from the U.S. Federal Emergency Management Agency (FEMA).

Following NRC approval, and prior to implementation of the proposed Permanently Defueled EAL scheme, HDI 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 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 requested exemptions, the IPEC Emergency Plan and Permanently Defueled EAL scheme, as revised in accordance with this license amendment request, will meet the remaining applicable planning standards of 10 CFR 50.47(b) and requirements of 10 CFR Part 50, Appendix E.

5.1 Applicable Regulatory Requirements/Criteria

HDI intends to meet the applicable regulatory requirements as 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.

10 CFR 50.47, "Emergency Plans," 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."

10 CFR 50.47(b) establishes the standards 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)) (with exemption) requires that a licensee's emergency response plan contain the following:

"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(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, "Emergency Planning and Preparedness for Production and Utilization Facilities," 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:

"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 9). 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 10). The analyses of the potential radiological impact of accidents with IPEC 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 (Reference 1). Therefore, the Permanently Defueled EALs, detailed in NEI 99-01, Revision 6, will be adopted, with certain differences. 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 11) contains guidance for NRC staff evaluation of decommissioning Emergency Plans.

The proposed license amendments for IP1, IP2, and IP3 are being submitted to the NRC pursuant to 10 CFR 50.90, for the purpose of revising the IPEC Emergency Plan in order to establish an Emergency Plan appropriate for a permanently shutdown and defueled plant/facility and to implement a Permanently Defueled EAL scheme.

5.2 No Significant Hazards Consideration Determination

The proposed changes would revise the IPEC Emergency Plan and Emergency Action Level (EAL) scheme commensurate with the hazards associated with the permanently shutdown and defueled condition of Indian Point Nuclear Generating Units 1, 2, and 3 (IP1, IP2, and IP3).

In accordance with 10 CFR 50.92, 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 each of the IP1, IP2, and IP3 plants (hereinafter collectively 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 IPEC Emergency Plan 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 IPEC Emergency Plan 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 IPEC Emergency Plan 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 IPEC 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 IPEC Emergency Plan 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 IPEC Emergency Plan 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) Holtec Decommissioning International, LLC (HDI) for the Pilgrim Nuclear Power Station (Pilgrim) on January 2, 2020 (Reference 20); 2) Exelon Generation Company, LLC (Exelon) for the Oyster Creek Nuclear Generating Station on October 17, 2018 (Reference 21); 3) Omaha Public Power District (OPPD) for the Fort Calhoun Station (FCS) on December 12, 2017 (Reference 22); 4) Entergy for the Vermont Yankee Nuclear Power Station (VY) on December 11, 2015 (Reference 23); 5) Southern California Edison Company for the San Onofre Nuclear Generating Station, Units 1, 2, and 3 on June 5, 2015 (References 24 and 25); 6) Duke Energy Florida, Inc. for the Crystal River Unit 3 Nuclear Generating Station on March 31, 2015 (Reference 26); and 7) Dominion Energy Kewaunee, Inc. for the Kewaunee Power Station on October 31, 2014 (Reference 27).

Similar changes to the Emergency Plan and the associated EAL scheme were approved by the NRC for Zion Nuclear Power Station, Units 1 and 2, as they transitioned from operating plants to a decommissioned facility, as described in References 28 and 29.

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(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," (Letter HDI-IPEC-21-016), (ADAMS Accession Number ML21356B693), dated December 22, 2021
2. Entergy letter to NRC, "Notification of Permanent Cessation of Power Operations," (Letter NL-17-021) (ADAMS Accession Number ML17044A004), dated February 8, 2017
3. Entergy letter to NRC, "Notification of Unit 1 Transfer of 160 Spent Fuel Assemblies from the Spent Fuel Pool to the Indian Point Independent Spent Fuel Storage Installation," (ADAMS Accession No. ML083510667), dated December 11, 2008
4. Entergy letter to NRC, "Application to Revise Provisional Operating License and Technical Specifications," Indian Point Nuclear Generating Station Unit 1 (Letter No. NL-20-012) (ADAMS Accession No. ML20182A679), dated June 30, 2020
5. NRC letter to Entergy, "Indian Point Nuclear Generating Unit Nos. 1, 2, and 3 – Issuance of Amendment Nos. 62, 293, and 268 Re: Changes to Emergency Plan for Post-Shutdown and Permanently Defueled Condition (EPID L-2019-LLA-0080)," (ADAMS Accession No. ML20078L140), dated April 15, 2020
6. Entergy letter to NRC, "Certifications of Permanent Cessation of Power Operations and Permanent Removal of Fuel from the Reactor Vessel, Indian Point Nuclear Generating Unit No. 2," (Letter NL-20-042) (ADAMS Accession No. ML20133J902), dated May 12, 2020, and Entergy letter to NRC, "Certifications of Permanent Cessation of Power Operations and Permanent Removal of Fuel from the Reactor Vessel, Indian Point Nuclear Generating Unit No. 3," (Letter NL-21-033) (ADAMS Accession No. ML21131A157), dated May 11, 2021
7. 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
8. Nuclear Energy Institute (NEI) 99-01, Revision 5, "Methodology for Development of Emergency Action Levels," (ADAMS Accession No. ML080450149), dated February 22, 2008
9. NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," (ADAMS Accession No. ML12326A805), dated November 21, 2012
10. 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)," (ADAMS Accession No. ML12346A463), dated March 28, 2013

11. NRC NSIR/DPR-ISG-02, Interim Staff Guidance, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," (ADAMS Accession No. ML14106A057), dated May 11, 2015
12. NRC letter to Entergy, "Indian Point Nuclear Generating Unit No. 2 – Issuance of Amendment No. 294 Re: Permanently Defueled Technical Specifications (EPID L-2019-LLA-0079)," (ADAMS Accession No. ML20081J402), dated April 28, 2020
13. NRC letter to Entergy, "Indian Point Nuclear Generating Unit No. 3 – Issuance of Amendment No. 270 Re: Permanently Defueled Technical Specifications (EPID L-2020-LLA-0090) (ADAMS Accession No. ML21074A000), dated April 22, 2021
14. Calculation IP-CALC-19-00003, "Post-Permanent Shutdown Analyses of Fuel Handling, Waste Handling, and High Integrity Container Drop Accidents for Indian Point Units 2 and 3," Revision 0
15. NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," (ADAMS Accession No. ML003716792), dated July 31, 2000
16. NRC Commission Paper SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," (ADAMS Accession No. ML992800087), dated June 30, 1999
17. NRC NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," (ADAMS Accession No. ML010430066), dated February 28, 2001
18. NRC NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," (ADAMS Accession Nos. ML023470304, ML023470323, ML023500187, ML023500211, ML023500223), dated October 2002
19. NRC Regulatory Issue Summary 2003-18, "Use of Nuclear Energy Institute (NEI) 99-01, 'Methodology for Development of Emergency Action Levels,'" Revision 4 (ADAMS Accession No. ML032580518), dated January 2003, Supplement 1 (ADAMS Accession No. ML041550395), dated July 13, 2004, and Supplement 2 (ADAMS No. ML051450482), dated December 12, 2005
20. NRC letter to Holtec Decommissioning International, LLC (HDI), "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)," (ADAMS Accession No. ML19274C674), dated January 2, 2020
21. NRC letter to Exelon Generation Company, LLC (Exelon), "Oyster Creek Nuclear Generating Station – Issuance of Amendment Re: Changes to the Emergency Plan for Permanently Defueled Emergency Plan and Emergency Action Level Scheme (CAC No. MG0160; EPID L-2017-LLA-0307)," (ADAMS Accession No. ML18221A400), dated October 17, 2018
22. NRC letter to Omaha Public Power District (OPPD), "Fort Calhoun Station, Unit 1 - Issuance of Amendment Re: Revise Emergency Plan to the Permanently Defueled Emergency Plan and Permanently Defueled Emergency Action Level Scheme (CAC No.

- MF8951; EPID L-2016-LLA- 0036)," (ADAMS Accession No. ML17276B286), dated December 12, 2017
23. NRC letter to Entergy, "Vermont Yankee Nuclear Power Station - Issuance of Amendment Re: Changes to the Emergency Plan and Emergency Action Levels (TAC No. MF4279)," (ADAMS Accession No. ML15233A166), dated December 11, 2015
 24. NRC letter to Southern California Edison Company (SCE), "San Onofre Nuclear Generating Station, Units 1, 2, and 3 and the Independent Spent Fuel Storage Installation - Issuance of Amendments Re: Changes to the Emergency Action Level Scheme (TAC Nos. MF3838, MF3839, MF3840)," (ADAMS Accession No. ML15105A349), dated June 5, 2015
 25. NRC letter to SCE, "San Onofre Nuclear Generating Station, Units 1, 2, and 3 and the Independent Spent Fuel Storage Installation - Issuance of Amendments Re: Changes to the Emergency Plan (TAC Nos. MF3841, MF3842, MF3843)," (ADAMS Accession No. ML15126A461), dated June 5, 2015
 26. NRC letter to Crystal River Nuclear Plant (NA2C), "Crystal River Unit 3 - Issuance of Amendment Regarding Changes to the Emergency Plan and Emergency Action Levels (TAC No. MF3415)," (ADAMS Accession No. ML15027A209), dated March 31, 2015
 27. NRC letter to Dominion Energy Kewaunee, Inc., "Kewaunee Power Station - Issuance of Amendment for Changes to the Emergency Plan and Emergency Action Levels (TAC No. MF3411)," (ADAMS Accession No. ML14279A482), dated October 31, 2014
 28. NRC letter to Commonwealth Edison Company (ComEd), "Request For Approval of Defueled Station Emergency Plan and Exemption from Certain Requirements of 10 CFR 50.47, 'Emergency Plans' - Zion Nuclear Power Station, Unit Nos. 1 and 2 (TAC Nos. MA5253 and MA5254)," (ADAMS Legacy No. 9909070087), dated August 31, 1999
 29. NRC letter to Exelon, "Emergency Action Level Revisions for Zion Nuclear Power Station (TAC Nos. J00327 and J00328)," (ADAMS Accession No. ML072680350), dated February 25, 2008
 30. NRC NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (ADAMS Accession No. ML19345B878), dated November 30, 1980.
 31. Letter from Holtec to US NRC, "Holtec Spent Fuel Pool Heat Up Calculation Methodology Topical Report, Attachment 1, Site Specific Application of Topical Report Methodology for Indian Point Units 2 & 3" (ADAMS Accession No. ML21356B687 & ML21356B689) dated December 22, 2021.
 32. Calculation IP-CALC-18-00066, "Shine Dose to Exclusion Area Boundary and Control Room from Spent Fuel Pool during SAFSTOR," Revision 1, dated July 19, 2019.

Enclosure, Attachment 1

HDI-IPEC-21-016

Permanently Defueled Emergency Plan

(54 Pages)

Approval: _____

Print Name Signature Date

ii

Indian Point Energy Center
Permanently Defueled Emergency Plan

Table of Contents

	<u>Page</u>
<u>Part I: INTRODUCTION</u>	
Section A: Purpose	1
Section B: Background.....	1
Section C: Scope	2
Section D: Planning Basis	3
<u>Part II: PLANNING STANDARDS AND CRITERIA</u>	
Section A: Assignment of Responsibility	A-1
1. IPEC Emergency Response and Responsibilities	A-1
2. OffSite Response Organizations	A-2
Section B: Emergency Response Organization.....	B-1
1. IPEC Emergency Response Organization.....	B-1
1.1 Normal Plant Organization.....	B-1
1.2 Augmenting ERO.....	B-3
2. OffSite Emergency Assistance	B-4
Section C: Emergency Response Support and Resources	C-1
1. Support Provided by Local Organizations	C-1
1.1 Law Enforcement.....	C-1
1.2 Ambulance Service	C-1
1.3 Hospital.....	C-1
1.4 Fire.....	C-1
2. State and County (Local) Government Response	C-1
3. Federal Response Support and Resources.....	C-2
4. Letters of Agreement	C-2
Section D: Emergency Classification System.....	D-1
1. Emergency Classification System	D-1
1.1 Notification of Unusual Event.....	D-2
1.2 Alert	D-2
2. Postulated Accidents	D-2
3. State and Local Governmental Authorities	D-2
Section E: Notification Methods and Procedures	E-1
1. ORO Notification.....	E-1
1.1 Initial Notification.....	E-1

Indian Point Energy Center
Permanently Defueled Emergency Plan

1.2 Follow-up Messages	E-2
2. Notification of the NRC	E-2
3. Notification of the IPEC ERO	E-2
Section F: Emergency Communications	F-1
1. Description of Primary and Backup Communications Systems	F-1
1.1 Public Address System	F-1
1.2 Commercial Telephone Systems	F-1
1.3 Radio System	F-2
2. Medical Communications	F-2
3. Communications Drills and Testing	F-2
Section G: Public Education and Information	G-1
Section H: Emergency Facilities and Equipment	H-1
1. Control Room	H-1
2. Emergency Onsite Monitoring Systems	H-1
2.1 Radiological Monitors	H-1
2.2 Process Instrumentation	H-2
3. Facility and Equipment Readiness	H-2
4. Emergency Equipment and Supplies	H-2
Section I: Accident Assessment	I-1
1. Radiological Assessment	I-1
2. Dose Assessment	I-1
3. Corrective Actions	I-1
Section J: Protective Actions	J-1
1. Notification of Onsite Personnel	J-1
2. Assembly	J-1
3. Accountability	J-1
4. Radiological Monitoring	J-2
5. Provisions for the Protection of Onsite Personnel	J-2
Section K: Radiological Exposure Control	K-1
1. Emergency Exposure Guidelines	K-1
2. Emergency Radiological Control Program	K-2
3. Personnel Monitoring	K-2
4. Decontamination and First Aid	K-3

Indian Point Energy Center
Permanently Defueled Emergency Plan

5. Contamination Control Measures	K-3
6. Drinking Water and Food Supplies	K-3
7. Return of Areas and Items to Normal Use	K-3
Section L: Medical and Public Health Support	L-1
Section M: Re-Entry and Recovery Planning	M-1
1. Re-Entry	M-1
2. Recovery	M-1
3. Recovery Organization	M-2
Section N: Drill and Exercise Program	N-1
1. Exercises	N-1
2. Drills	N-1
2.1 Communication Drills or Surveillances	N-1
2.2 Fire Drills	N-2
2.3 Medical Emergency Drills	N-2
2.4 Radiation Protection Drills	N-2
3. Conduct of Drills and Exercises	N-2
Section O: Emergency Response Training	O-1
1. Emergency Response Training	O-1
1.1 ERO Training	O-1
1.2 First Aid Response	O-2
1.3 Fire Response	O-2
1.4 Security	O-2
2. General, Initial, and Periodic Training Program Maintenance	O-2
3. Local Support Service Personnel Training	O-2
4. Training Records	O-3
Section P: Responsibility for the Maintenance of the Planning Effort	P-1
1. Responsibility for Development and Maintenance of the PDEP	P-1
1.1 IPEC Vice President	P-1
1.2 Nuclear Manager	P-1
1.3 Emergency Planning Personnel	P-1
2. Emergency Plan Review and Revision	P-2
3. Emergency Planning Procedures	P-2
4. Letters of Agreement	P-2
5. Cross-Reference to Planning Criteria	P-2

Indian Point Energy Center
Permanently Defueled Emergency Plan

6. Review of the Emergency Preparedness Program	P-2
7. Emergency Telephone Directory	P-3
8. Inventory and Maintenance of Emergency Equipment	P-3

Part III: APPENDICES

Appendix 1: Letters of Agreement.....	Appendix-1-1
Appendix 2: Cross-Reference Sections of the PDEP to Emergency Planning Procedures	Appendix-2-1
Appendix 3 Abbreviations and Definitions	Appendix-3-1
Abbreviations.....	Appendix-3-1
Definitions.....	Appendix-3-2

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 Indian Point Energy Center

Indian Point Nuclear Generating Units 1, 2, and 3 (IP1, IP2, and IP3, collectively referred to as Indian Point Energy Center (IPEC)) are located on the east side of the Hudson River on approximately 239 acres of land. IPEC is about 24 miles north of the New York City boundary line, at Indian Point, Village of Buchanan, in upper Westchester County, New York State. IPEC is about 2.5 miles southwest of the City of Peekskill; 8.3 miles south of West Point; 1.5 miles northeast of the Lovett Generating Station site; 4.6 miles north of the Bowline Point Generating Station site; and 2.3 miles north of Montrose Point. Rockland County is located west of IPEC, across the Hudson River.

IP1 was permanently shutdown on October 31, 1974 and all fuel was removed from the reactor vessel in 1975. The IP1 Provisional Operating License prohibits taking the reactor to criticality or operation of the facility at any power level, and the IP1 Technical Specifications do not allow fuel to be loaded into the reactor core or moved into the reactor containment building without prior review and authorization by the U.S. Nuclear Regulatory Commission (NRC). On December 11, 2008, IPEC notified the NRC that all spent fuel assemblies had been removed from the IP1 spent fuel pool (SFP). IP1 spent fuel has been removed from the site or placed in the existing IPEC Independent Spent Fuel Storage Installation (ISFSI). A detailed description of IP1 is contained in the IP1 Defueled Safety Analysis Report (DSAR).

IP2 was permanently shutdown on April 30, 2020 and defueled on May 12, 2020. The 10 CFR 50.82(a)(1) certifications for IP2 have been submitted and docketed such that the IP2 Renewed Facility License no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel. A detailed description of IP2 is contained in the IP2 DSAR.

IP3 was permanently shutdown on April 30, 2021 and defueled on May 11, 2021. The 10 CFR 50.82(a)(1) certifications for IP3 have been submitted and docketed such that the IP3 Renewed Facility License no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel. A detailed description of IP3 is contained in the IP3 DSAR.

Indian Point Energy Center Permanently Defueled Emergency Plan

Exclusion Area

HDI has the authority within the Site Boundary, called the Exclusion Area, to determine all activities including the exclusion or removal of personnel and property.

There are no residences within the exclusion area nor are there any public highways or public railroads traversing the exclusion area.

One main road and one alternate access road service the exclusion area. Several other roads interconnect with these two roads.

Protected Area

A Security fence marks the perimeter of the Protected Area of the site. Access beyond the fence is restricted to badged employees or escorted visitors. The permanently shutdown reactors and ISFSI are located within the Protected Area boundary.

Section C: Scope

The PDEP has been developed to respond to potential emergencies at IPEC considering the permanently shutdown and defueled status of the reactors. There are no postulated design basis accidents (DBAs) that would result in dose consequences that are large enough to require offsite emergency planning. 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 IPEC Emergency Response Organization (ERO) (as defined in this PDEP) would be put in place and maintained until such time that IPEC is returned to a stable condition.

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

Decommissioning Nuclear Power Plants” (ISG-02). Appendix 2 of this PDEP contains a cross-reference to Emergency Planning 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 ISFSI and in the Unit 2 and 3 SFPs. No reactor operations can take place and the facility is prohibited from emplacement or retention of fuel in the reactor vessels.

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 IPEC ISFSI contains HOLTEC spent fuel storage casks 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 the HOLTEC Cask Updated Final Safety Analysis Report (UFSAR) 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 IPEC 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**.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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. 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 PDEP.

The On-Shift ERO performs the following functions:

- Control and operation of station activities
- Mitigation of the emergency condition
- Protection of station personnel
- Emergency event classification
- Radiological monitoring and dose assessment
- Emergency notification to, and ongoing communications with, Federal, State, and local 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 each unit's Technical Specifications, one (1) Shift Manager is assigned to each unit (IP2 and IP3) on a continuous 24-hour-per-day basis and are the senior management positions at IPEC during off-hours. These positions are responsible for monitoring facility conditions and managing the activities at IPEC.

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 PDEP are staffed on a continuous 24-hour-per-day basis.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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

The functions assigned to the On-Shift and Augmenting ERO positions are specified in Section B of this PDEP. 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) (local law enforcement support; medical and ambulance services, including hospital support; and fire/rescue support) may be requested to respond to an emergency at IPEC. 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 Section C of this PDEP.

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

Section B: Emergency Response Organization

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

1. IPEC 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 Shift Manager / Emergency Director.

Figure B-1 illustrates the overall emergency response organization.

1.1 Normal Plant Organization

The normal on-shift staff organizations for IP1, IP2, and IP3 are specified in each unit's Technical Specifications and are 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 are capable of performing 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 are considered to be the On-Shift ERO, and are the minimum on-shift staff positions required to implement the PDEP:

(1) Shift Manager

In accordance with Technical Specifications, one (1) Shift Manager is assigned to each unit (IP2 and IP3). The Shift Managers are qualified as Certified Fuel Handlers (CFH) and manage 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 Technical Specifications. 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 a facility 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 fence;
- 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 Technical Specifications, one (1) Non-Certified Operator (NCO) is assigned to each unit (IP2 and IP3).

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

(3) Radiation Protection Technician

One (1) on-shift Radiation Protection (RP) Technician is on-shift at IPEC 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 at IPEC. Upon declaration of emergency, the on-shift RP Technician reports to the Emergency Director to support implementation of the PDEP.

Indian Point Energy Center
Permanently Defueled Emergency 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 Supervisor.

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 a sufficient number of appropriately qualified personnel are available on a 24-hour-per-day, 7-day-per-week basis to respond to emergency situations.

During an emergency at IPEC, the initial phase of the response is managed by the On-Shift ERO. Following an Alert emergency declaration, or at the discretion of the Shift Manager / 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 Section D), 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 the PDEP 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;
- establishing and maintaining communications with offsite organizations as desired by the Emergency Director; and
- maintaining a record of event activities.

Indian Point Energy Center
Permanently Defueled Emergency Plan

(2) Radiation Protection Coordinator

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

- monitoring personnel accumulated dose;
- advising the Emergency Director concerning Radiological 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 IPEC. 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 the PDEP and are contained in their respective Letters of Agreement, listed in Appendix 1.

Indian Point Energy Center
Permanently Defueled Emergency Plan

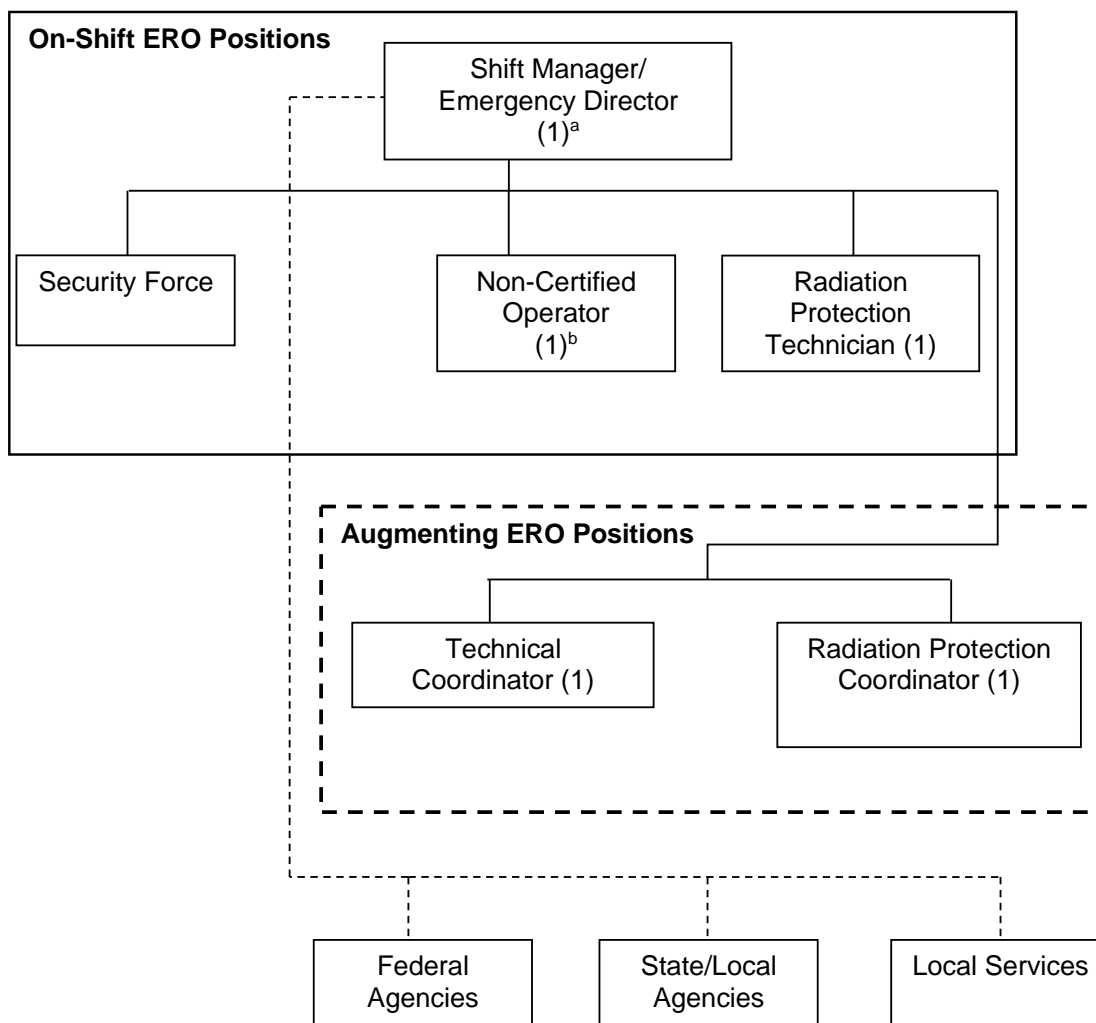
TABLE B-1
Emergency Response Organization Minimum Staffing Requirements

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* per unit ^a 1* per unit ^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 One (1) Shift Manager is assigned to each unit (IP2 and IP3). Upon declaration of an emergency, the Shift Manager assumes the role of Emergency Director.
- ^b One (1) NCO is assigned to each unit (IP2 and IP3). Upon declaration of an emergency, the NCO assists the Emergency Director with implementation of the PDEP.
- * The Shift Manager and NCOs 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 offsite response organization.
- *** Provided by on-shift personnel assigned other functions.

Indian Point Energy Center
Permanently Defueled Emergency Plan

FIGURE B-1
Emergency Response Organization



(#) Denotes number of staff assigned to position

^a One (1) Shift Manager is assigned to each unit (IP2 and IP3)

^b One (1) NCO is assigned to each unit (IP2 and IP3)

Indian Point Energy Center
Permanently Defueled Emergency Plan

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. LOAs are in place for those local agencies (local law enforcement support; medical and ambulance services, including hospital support; and fire/rescue support) identified below, that will respond to an emergency at IPEC.

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, Holtec Security International, LLC (HSI) will notify the New York State Police, which is the lead Local Law Enforcement Agency (LLEA). The handling of security matters is addressed in the Security Safeguards Contingency Plan and Incident Response Plan.

1.2 Ambulance Service

Ambulance service is provided by the Verplanck Fire District in accordance with our LOA with the Verplanck Fire District. The Verplanck Fire District will coordinate with other responding agencies, as necessary. 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 New York-Presbyterian Hudson Valley Hospital in Cortland Manor has agreed to accept patients from IPEC 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

Offsite firefighting and rescue support are provided by the Verplanck Fire District in accordance with our LOA with the Verplanck Fire District. The Verplanck Fire District will coordinate with other responding agencies, as necessary.

2. State and County (Local) Government Response

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

3. Federal Response Support and Resources

The Emergency Director is authorized to request Federal assistance, as needed. 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.

The IPEC Control Rooms have space available to accommodate limited NRC response team members.

4. Letters of Agreement

HDI has entered into agreements with the OROs identified above that will provide support (local law enforcement support; medical and ambulance services, including hospital support; and fire/rescue support) in the event of an emergency at IPEC.

The agreements are listed in Appendix 1 and are maintained on file. These agreements identify the emergency measures to be provided, the mutually accepted criteria for implementation, and the arrangements for exchange of information.

Indian Point Energy Center
Permanently Defueled Emergency Plan

Section D: Emergency Classification System

A standard emergency classification and emergency action level (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 particular 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 IPEC. This scheme is based on IP2, IP3, and ISFSI systems, effluent parameters, and operating procedures. There are no postulated DBAs associated with IP1.

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 IPEC, in order of increasing severity, are an 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 / Emergency Director 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 an 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 actual parameter values, annunciators, and equipment status used by the Shift Manager / Emergency Director to classify emergencies.

Indian Point Energy Center
Permanently Defueled Emergency Plan

1.1 Notification of Unusual Event (NOUE)

An 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 IPEC staff to a state of readiness, and to provide systematic handling of NOUE 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 site to support the emergency response.

2. Postulated Accidents

The IP2 and IP3 DSARs and the ISFSI UFSAR describe the postulated accidents applicable to IPEC. There are no postulated DBAs that remain applicable to IP1.

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 New York and local governments (Westchester and Rockland Counties). Further, State and local governmental authorities are provided the opportunity to review the Permanently Defueled EALs annually.

Indian Point Energy Center
Permanently Defueled Emergency Plan

Section E: Notification Methods and Procedures

Procedures are established for notification to the State of New York and local response organizations (Westchester and Rockland Counties) and IPEC 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.

Emergency events that involve both units (IP2 and IP3) (i.e., Security Events) and when the classification for each unit is the same, shall be reported as affecting both units.

In situations when both units are affected by emergency events, but the classification for each unit is different, notification will be made for the highest classification. Clarification of the relationship between the classification levels determined for the units should be provided in the follow-up messages.

1.1 Initial Notification

For all classified events, Initial Notification shall be provided to the State of New York, Westchester County, and Rockland County promptly following the declaration of the emergency, but 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 and the name and telephone number (or other applicable contact information) of the individual providing the notification;
- 3) Date and time of the incident;
- 4) Emergency classification and EAL;
- 5) Emergency response actions underway;
- 6) Whether a release is in progress;
- 7) Wind direction, speed, and stability class;
- 8) Any request for onsite support from OROs; and
- 9) Prognosis for worsening or termination of the event based on available facility information

Indian Point Energy Center
Permanently Defueled Emergency Plan

1.2 Follow-up Messages

Follow-up messages will be provided to the State of New York, Westchester County, and Rockland County as needed.

Additionally, follow-up messages should be provided within 60 minutes of a change in radioactive release conditions 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 notify 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 IPEC ERO

At the notification of an 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 IPEC Public Address System. Onsite IPEC ERO personnel and IPEC ERO personnel away from the site at the time of the IPEC ERO activation are notified via an electronic notification system and/or phone calls.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 IPEC ERO. It outlines the available communications equipment to:

- Notify the IPEC ERO;
- Provide initial notification to governmental agencies;
- Communicate among IPEC 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 IPEC.

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 IPEC Public Address System is designed for paging within the units (IP1, IP2, and IP3) from the IP2 and IP3 Control Rooms, etc. Personnel have the ability to talk to the Control Room via party line phones that are strategically located within each unit. Plant personnel may initiate the communication to the Control Room from outlying party lines.

These systems are used to call personnel and notify onsite personnel of the declaration, escalation, or termination of an emergency.

1.2 Commercial Telephone Systems

The commercial telephone system is available in the IP2 and IP3 Control Rooms and throughout IPEC. 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 IPEC ERO.

Commercial telephones serve as the primary means of providing emergency notifications to the State of New York and Westchester and Rockland Counties and is used to provide initial and follow-up notifications and for general information flow between these agencies.

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

and maintain continuous communications with the state and counties, and can serve as a backup means of notifying and activating the IPEC 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 IPEC 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 two-channel radio system is also available for communication between individuals onsite. One channel is assigned to each unit (IP2 and IP3) to communicate with individuals performing tasks within each unit.

2. Medical Communications

IPEC establishes communications with New York-Presbyterian Hudson Valley 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 IPEC or transporting contaminated and/or injured personnel from IPEC.

3. Communications Drills and Testing

Communications drills between IPEC and State and local governments and the NRC are conducted in accordance with criteria contained in Part 2, Section N, of this PDEP. Also, Section N 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 H, of this PDEP to ensure reliable operation.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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(s) is continuously staffed in accordance with each unit's Technical Specifications, 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 Shift Manager / 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 in each unit with remote readouts and alarm indications in the Control Room. Key fixed radiation-monitoring equipment is identified in the IP2 and IP3 DSARs, 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 Planning Procedures describe type, locations and the amount of equipment available to the ERO.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 IPEC 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. A detailed description of the fire detection equipment is provided in the Fire Protection Program documents.

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 Planning 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 Section F and are checked periodically in accordance with Section N.

4. Emergency Equipment and Supplies

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

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:	<ul style="list-style-type: none">- Anti-Contamination Clothing- Respirators
Radiological Monitoring Equipment:	<ul style="list-style-type: none">- Air Samplers- Ionization Chamber Survey Instruments- G-M Friskers- Dosimetry
Emergency Supplies:	<ul style="list-style-type: none">- First Aid Kits- Stretchers / Blankets- Resuscitators- Backboards / Splints
Communications Equipment:	<ul style="list-style-type: none">- Telephones- Radios

Indian Point Energy Center
Permanently Defueled Emergency Plan

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

HDI 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. Dose assessment is the responsibility of the Emergency Director and is initially performed by qualified on-shift personnel. When augmented, the Radiation Protection Coordinator assumes the dose assessment responsibilities.

3. Corrective Actions

Station procedures and Emergency Planning 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 SFPs prior to the onset of zirconium cladding ignition when considering very low probability beyond design basis events affecting the SFPs.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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

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

The 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. 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. 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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. The following are the exposure guidelines for emergency activities:

TABLE K-1
Emergency Exposure Criteria
(Refer to Note 1)

Guideline	Activity	Condition
5 rem	All occupational exposures	All reasonably achievable actions have been taken to minimize dose.
10 rem ^(a)	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 ^{(b)(c)}	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 ^{(b)(c)}	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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

- (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 Radiation Protection Coordinator ensures that proper personnel radiological monitoring equipment is provided for 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 Planning 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 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 Dosimetry of Legal Record (DLR) badges will be tracked by use of surveys and time spent in radiation areas.

Indian Point Energy Center
Permanently Defueled Emergency Plan

Workers who would be expected to enter the RCA are trained and issued DLR badges. In addition to these badges, dosimetry devices will be issued, 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 DLRs 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.

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, of this PDEP.

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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 Verplanck Fire District.

An agreement is in place with New York-Presbyterian Hudson Valley Hospital for medical treatment of patients from IPEC who have injuries complicated by radioactive contamination. The hospital has trained personnel for handling radioactively contaminated patients from IPEC.

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 IPEC 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, so as to afford maximum protection to IPEC personnel and the general public. Once 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, of this PDEP. 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 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 employed to the fullest extent possible.

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

The Shift Manager / Emergency Director has the responsibility for determining when an emergency situation is stable and the station is ready to enter the recovery phase. Prior to terminating an emergency and entering the recovery phase, the

Indian Point Energy Center Permanently Defueled Emergency Plan

below conditions 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 SFPs are 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 station.

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. NOUE 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 HDI 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.
- Deactivating any of the IPEC 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

- 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.
- Developing a Root Cause Report.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 as a result of exercises or drills are identified and corrected.

1. Exercises

Biennial exercises shall be conducted to test the integration, timing, and content of Emergency Planning 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, drills are conducted 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 IPEC 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 IP2 and IP3 Control Rooms and the State and County Warning Points will be tested monthly. An annual communication drill verifies that contact information is appropriate and current, and that the content of messages is adequate and understood.
- (3) The communication systems listed below, as detailed in Part 2, Section F, of this PDEP, 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

Indian Point Energy Center
Permanently Defueled Emergency Plan

2.2 Fire Drills

Fire Drills are conducted in accordance with the Fire Protection Plan.

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 Verplanck Fire District and New York-Presbyterian Hudson Valley 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 Station. 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 station 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 Planning 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, drill or exercise reports, or during annual refresher training.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 station ERO personnel is implemented via the ERO Training Program. IPEC 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 station procedures. Operations personnel receive periodic training to ensure proficiency in this area.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 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 IPEC receive initial and periodic refresher training on general station 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 provide assistance in the event of an 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

4. Training Records

Records associated with training of IPEC 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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 Site Vice President - IPEC

The Site 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 ERO.

1.2 Nuclear Manager

The Nuclear Manager is responsible for the maintenance of the IPEC Emergency Preparedness Program. In maintaining the program, the Nuclear Manager ensures the following:

- Development, maintenance, and revision of the PDEP and Emergency Planning 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 Planning 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.

1.3 Emergency Planning Personnel

Personnel who perform planning (E - Planners) duties for the Emergency Preparedness Program receive on-going training and experiences to maintain or improve their knowledge related to emergency planning.

Indian Point Energy Center
Permanently Defueled Emergency Plan

2. Emergency Plan Review and Revision

The PDEP is reviewed and updated as needed, on an annual basis. The Nuclear Manager 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 Planning Procedures shall be conducted in accordance with station procedures. The reviewer shall determine the need for cross-disciplinary reviews.

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

3. Emergency Planning Procedures

PDEP Emergency Planning Procedures (refer to Appendix 2) shall be developed and revised concurrent with the PDEP and reviewed in accordance with station procedures. The Emergency Planning Procedures are reviewed biennially and approved in accordance with approved station procedures.

4. Letters of Agreement

Appendix 1 of this PDEP contains a listing of LOAs with support agencies which shall be reviewed annually. Agreements will be revised or recertified. Recertification may include a recertification letter/memorandum, purchase order, email, documented telephone conversation, or other correspondence. Designated HDI management have 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. 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 IPEC Vice President. The Nuclear Manager ensures that any findings that deal

Indian Point Energy Center
Permanently Defueled Emergency Plan

with offsite interfaces are reviewed with the appropriate agencies. Written notification will be provided to local agencies of the performance of the audit and the availability of the audit records for review at IPEC facilities. Records of the review are maintained for at least five years.

7. Emergency Telephone Directory

A phone list contains telephone numbers used by the IPEC ERO during an emergency. This directory contains names and phone numbers of the IPEC 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:

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

Emergency equipment and instrumentation (refer to Part 2, Section H) 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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

Part III: APPENDICES

Indian Point Energy Center
Permanently Defueled Emergency Plan

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. Verplanck Fire District (Fire/Ambulance)
2. New York-Presbyterian Hudson Valley Hospital
3. New York State Police

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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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

Cross reference table of regulations and guidance documents to the IPEC Emergency Plan and Emergency Planning Procedures.

Emergency Plan Section	Planning Standard 10 CFR 50.47*	Planning Requirement Appendix E.IV*	ISG-02, Attachment 1 Evaluation Criteria	Procedure
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 IPEC exemptions from portions of 10 CFR 50.47 and 10 CFR 50, Appendix E, for applicability.

Indian Point Energy Center
Permanently Defueled Emergency Plan

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
DLR	Dosimeter of Legal Record
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
FTS	Federal Telephone System
IC	Initiating Condition
ICS	Incident Command System
IP1	Indian Point Unit 1
IP2	Indian Point Unit 2
IP3	Indian Point Unit 3
IPEC	Indian Point Energy Center
ISFSI	Independent Spent Fuel Storage Installation
ISG	Interim Staff Guidance
LLEA	Local Law Enforcement Agency
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
NOUE	Notification of Unusual Event
ORO	Offsite Response Organization
PAG	Protective Action Guide
PDEP	Permanently Defueled Emergency Plan
PRM	Process Radiation Monitor
RCA	Radiologically Controlled Area
RP	Radiation Protection
SAR	Safety Analysis Report
SFP	Spent Fuel Pool
TEDE	Total Effective Dose Equivalent
UFSAR	Updated Final Safety Analysis Report

Indian Point Energy Center
Permanently Defueled Emergency Plan

Definitions

Accountability - The process used by the IPEC 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 1st and December 31st.

Area Radiation Monitors - Fixed radiation detectors placed in strategic locations throughout the Station for the purpose of continuously monitoring area radiation dose rates; an integral part of the Radiation Monitoring System that provides the Control Rooms 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.

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.

Indian Point Energy Center
Permanently Defueled Emergency Plan

Emergency Planning 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 IPEC reactors 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)

Indian Point Energy Center (IPEC) - The combined areas immediately surrounding IP1, IP2, and IP3 that are owned and operated by the licensee.

Nuclear Manager - 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 Indian Point Energy Center Site boundary.

Onsite - The area within the Indian Point Energy Center 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.

Protected Area - The area surrounding IP1, IP2, and IP3 encompassed by physical barriers and to which access is controlled.

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

Indian Point Energy Center
Permanently Defueled Emergency Plan

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. When the plume is traveling toward the water, the distance to the nearest point on the opposite side of Hudson River will be considered as the Site Boundary.

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.

Station - The three nuclear units (IP1, IP2 and IP3) located on the Indian Point Energy Center Site, near Peekskill, NY.

Warning Point - A location designated by a government agency for the purposes of receiving and promulgating warning information.

Enclosure, Attachment 2

HDI-IPEC-21-016

Permanently Defueled Emergency Action Level Technical Bases Document

(45 Pages)

Indian Point Energy Center

Permanently Defueled

Emergency Action Level Technical Bases Document

Table of Contents

1.0	PURPOSE.....	3
2.0	DISCUSSION	3
2.1	Permanently Defueled Facility.....	3
2.2	Independent Spent Fuel Storage Installation	4
3.0	KEY TERMINOLOGY USED	4
3.1	Emergency Classification Level	4
3.2	Initiating Condition.....	5
3.3	Emergency Action Level	5
4.0	GUIDANCE ON MAKING EMERGENCY CLASSIFICATIONS	5
4.1	General Considerations	5
4.2	Classification Methodology.....	6
4.3	Classification of Multiple Events and Conditions	7
4.4	Classification of Imminent Conditions	7
4.5	Emergency Classification Level Upgrading and Termination	7
4.6	Classification of Short-Lived Events.....	7
4.7	Classification of Transient Conditions	8
4.8	After-the-Fact Discovery of an Emergency Event or Condition	8
4.9	Retraction of an Emergency Declaration.....	8
5.0	REFERENCES.....	9
5.1	Developmental References.....	9
5.2	Implementing References	9
5.3	Commitments.....	9
6.0	ACRONYMS, ABBREVIATIONS, AND DEFINITIONS.....	10
6.1	Acronyms and Abbreviations.....	10
6.2	Definitions	11
7.0	IPEC-TO-NEI 99-01 EAL CROSS-REFERENCE	14
8.0	ATTACHMENTS	14
	Attachment 1	15
	Attachment 2	21

1.0 PURPOSE

This document provides the detailed set of EMERGENCY ACTION LEVELs (EALs) applicable to the Indian Point Nuclear Generating Units 1, 2, and 3 (IP1, IP2, and IP3) and the Independent Spent Fuel Storage Installation (ISFSI) (collectively referred to as Indian Point Energy Center (IPEC)) and the associated Technical Bases using the EAL development methodology found in NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6 (NEI 99-01, Rev. 6) (Reference 5.1.1). As a Permanently Defueled facility, IPEC used the Recognition Category "PD" (Permanently Defueled) to develop a 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 IPEC Spent Fuel Pools (SFPs). Because spent fuel at IPEC is also stored in an ISFSI, 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 IPEC EALs, provide historical documentation for future reference and serve as a resource for training. Individuals responsible for emergency classification (Emergency Director) may refer to the ICs and EALs contained in the matrix of this document. The Emergency Director may also use the information in the associated "Basis" 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 for assistance 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 on-site for an extended period of time. 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 ISG-02, "Interim Staff Guidance, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," (ISG-02) (Reference 5.1.4).

To relax the emergency plan requirements applicable to an operating station, the owner of a permanently defueled station must demonstrate that no credible event can result in a significant radiological release beyond the site boundary. 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 on-site and off-site consequences of accidental releases associated with the operation of an ISFSI is contained in NUREG-1140, "A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees," (NUREG-1140) (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 off-site 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 off-site 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 on-site and off-site response actions. The ECLs that are applicable to IPEC, 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 IPEC 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 particular 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 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 Emergency Director with the ability to classify events and conditions based upon judgment using EALs that are consistent with the ECL definitions (refer to PD-HU3 and PD-HA3). The Emergency Director will need to determine if the effects or consequences of the event or condition reasonably meet or exceed a particular ECL definition.

4.2 Classification Methodology

To make an emergency classification, the 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 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, whether at one unit or at two units, 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, whether at one unit or at two units, 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 Emergency Director must remain alert to events or conditions that could lead to meeting or exceeding an EAL within a relatively short period of time (i.e., a change in the ECL is IMMINENT). If, in the judgment of the Emergency Director, meeting an EAL is IMMINENT, the emergency classification should be made as if the EAL has been met. 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.

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 to allow the performance of a corrective action that would obviate the need to classify the event. Emergency classification assessments must be deliberate and timely, with no undue delays.

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

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

In these cases, no emergency declaration is warranted; however, the guidance contained in NUREG-1022, “Event Report Guidelines 10 CFR 50.72 and 50.73,” (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.

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 and 10 CFR Part 50, Appendix E," (Letter HDI-IPEC-21-015), dated December 22, 2021 [*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/ISG-02, Interim Staff Guidance, Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants (ISG-02)
- 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 IPEC Permanently Defueled Emergency Plan
- 5.2.2 Procedure Number [TBD], "*Emergency Classification*"

5.3 Commitments

None

6.0 ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

6.1 Acronyms and Abbreviations

CAS.....	Central Alarm Station
CDE.....	Committed Dose Equivalent
CEDE	Committed Effective Dose Equivalent
CFR.....	Code of Federal Regulations
CoC	Certificate of Compliance
cps.....	Counts per Second
DBA.....	Design Basis Accident
DSAR	Defueled Safety Analysis Report
EAB	Exclusion Area Boundary
EAL	Emergency Action Level
ECL	Emergency Classification Level
EDE.....	Effective Dose Equivalent
EPA.....	Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
FAA	Federal Aviation Administration
FBI.....	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FSAR.....	Final Safety Analysis Report
FSB	Fuel Storage Building
ft.....	Feet
HOO	Headquarters Operations Officer
hr	Hour
in	Inches
ISFSI	Independent Spent Fuel Storage Installation
IC.....	Initiating Condition
IP1.....	Indian Point Unit 1
IP2.....	Indian Point Unit 2
IP3.....	Indian Point Unit 3
MPC	Multi-Purpose Canister

mRem.....	milli-Roentgen Equivalent Man
MSL.....	Mean Sea Level
NEI.....	Nuclear Energy Institute
NORAD.....	North American Aerospace Defense Command
NRC.....	Nuclear Regulatory Commission
OCA.....	Owner Controlled Area
ODCM.....	Off-site Dose Calculation Manual
ORO.....	Off-site Response Organization
PA.....	Protected Area
PAB.....	Plant Auxiliary Building
PAG.....	Protective Action Guide
PD.....	Permanently Defueled
rem.....	Roentgen Equivalent Man
SFP.....	Spent Fuel Pool
STC.....	Shielded Transfer Canister
TEDE.....	Total Effective Dose Equivalent

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 on-site and off-site

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 IP1, IP2 & IP3 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 off-site 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 IPEC-TO-NEI 99-01 EAL CROSS-REFERENCE

The following cross-reference table is provided to facilitate association and location of an IPEC EAL within the NEI 99-01, Rev. 6 IC/EAL identification scheme.

IPEC Permanently Defueled IC/EALs	NEI 99-01, Rev. 6, Appendix C – Permanently Defueled Station ICs/EALs
PD-AU1	PD-AU1
PD-AA1	PD-AA1
PD-AU2	PD-AU2
PD-AA2	PD-AA2
PD-HU1	PD-HU1
PD-HA1	PD-HA1
PD-HU2	PD-HU2
PD-HU3	PD-HU3
PD-HA3	PD-HA3
PD-SU1	PD-SU1
IPEC ISFSI ICs/EAL	NEI 99-01, Rev. 6, Section 8 – ISFSI ICs/ EALs
E-HU1	E-HU1

8.0 ATTACHMENTS

- 8.1 Attachment 1, EAL Matrices
- 8.2 Attachment 2, EAL Bases

Attachment 1
EAL Matrices

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

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

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

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

Radiological Effluents

ALERT

UNUSUAL EVENT

Abnormal Rad Levels / Radiological Effluents

PD-AA1

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

EMERGENCY ACTION LEVEL (EAL): (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.

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

Gaseous

U2 R-27

1.4E+02 µCi/cc
3.6E+09 µCi/sec

U2 R-44

4.2E-01 µCi/cc

U3 R-27

9.5E+01 µCi/cc
3.1E+09 µCi/sec

U3 R-14

1.5E-01 µCi/cc

Liquid

U2 R-54 WDST

3.8E-02 µCi/cc

U3 R-18 Monitor Tanks

3.8E-02 µCi/cc

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.

PD-AU1

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

EMERGENCY ACTION LEVEL (EAL): (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.

Reading on ANY of the following effluent radiation monitors greater than the reading shown for 60 minutes or longer.

Effluent Monitor Classification Thresholds - NOUE

Monitor

NOUE

Gaseous

U2 R-27

1.6E+00 µCi/cc
4.1E+07 µCi/sec

U2 R-44

4.2E-02 µCi/cc

U3 R-27

1.0E+00 µCi/cc
3.6E+07 µCi/sec

U3 R-14

1.5E-02 µCi/cc

Liquid

U2 R-54 WDST

4.0E-04 µCi/cc

U3 R-18 Monitor Tanks

1.0E-03 µCi/cc

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.

ALERT		UNUSUAL EVENT						
Abnormal Rad Levels / Radiological Effluents								
Area Rad Levels	<p>PD-AA2 UNPLANNED rise in facility radiation levels that impedes facility access required to maintain spent fuel integrity.</p> <p><u>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</u></p> <p>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.</p> <ul style="list-style-type: none">Control Room (Area Radiation Monitor R-1)Central Alarm Station (CAS) (by survey) <p>OR</p> <p>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.</p> <table><tr><td><u>Unit 2</u></td><td><u>Unit 3</u></td></tr><tr><td><ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 80' elevationPAB 98' elevation</td><td><ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 55' elevationPAB 73' elevation</td></tr></table>	<u>Unit 2</u>	<u>Unit 3</u>	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 80' elevationPAB 98' elevation	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 55' elevationPAB 73' elevation	<p>PD-AU2 UNPLANNED rise in facility radiation levels.</p> <p><u>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</u></p> <p>1. a. UNPLANNED water level drop in the SFP as indicated by ANY of the following:</p> <ul style="list-style-type: none">LC-650Visual observation of SFP water levelManual SFP water level measurement <p>AND</p> <p>b. UNPLANNED rise in area radiation levels as indicated by the following radiation monitor:</p> <ul style="list-style-type: none">R-5 Fuel Storage Building (FSB) Area Radiation Monitor <p>OR</p> <p>2. Area radiation monitor reading or survey result indicated an UNPLANNED rise of 25 mRem/hr over NORMAL LEVELS.</p>		
	<u>Unit 2</u>	<u>Unit 3</u>						
	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 80' elevationPAB 98' elevation	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 55' elevationPAB 73' elevation						

ALERT		UNUSUAL EVENT	
Hazards and Other Conditions Affecting Facility Safety			
Security	<p>PD-HA1 HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p>EMERGENCY ACTION LEVEL (EAL): (1 or 2)</p> <p>1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor.</p> <p>OR</p> <p>2. A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.</p>	<p>PD-HU1 Confirmed SECURITY CONDITION or threat.</p> <p>EMERGENCY ACTION LEVEL (EAL): (1 or 2 or 3)</p> <p>1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervisor.</p> <p>OR</p> <p>2. Notification of a credible security threat directed at the site.</p> <p>OR</p> <p>3. A validated notification from the NRC providing information of an aircraft threat.</p>	
	Hazardous Event	<p>None</p>	<p>PD-HU2 Hazardous event affecting equipment necessary for spent fuel cooling.</p> <p>EMERGENCY ACTION LEVEL (EAL):</p> <p>1. a. The occurrence of ANY of the following hazardous events:</p> <ul style="list-style-type: none">Seismic event (earthquake)Internal or External flooding eventHigh winds or tornado strikeFIREEXPLOSIONOther events with similar hazard characteristics as determined by Shift Manager <p>AND</p> <p>b. The event has damaged at least one train of a system needed for spent fuel cooling.</p> <p>AND</p> <p>c. The damaged system train(s) cannot, or potentially cannot, perform its design function based on EITHER:</p> <ul style="list-style-type: none">Indications of degraded performanceVISIBLE DAMAGE

ALERT		UNUSUAL EVENT	
Emergency Director Judgment	PD-HA3 Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.		PD-HU3 Other conditions exist which in the judgment of the Emergency Director warrant declaration of an UNUSUAL EVENT.
	<u>EMERGENCY ACTION LEVEL (EAL):</u> 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.		<u>EMERGENCY ACTION LEVEL (EAL):</u> 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 off-site response or monitoring are expected unless further degradation of systems needed to maintain spent fuel integrity occurs.

ALERT		UNUSUAL EVENT	
System Malfunctions			
Spent Fuel Pool	None	PD-SU1 UNPLANNED spent fuel pool temperature rise.	
		<u>EMERGENCY ACTION LEVEL (EAL):</u> 1. UNPLANNED spent fuel pool temperature rise to greater than 140° F.	

ALERT		UNUSUAL EVENT	
ISFSI Malfunctions			
ISFSI	None	E-HU1	Damage to a loaded cask CONFINEMENT BOUNDARY.
		<u>EMERGENCY ACTION LEVEL (EAL):</u> 1. Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than EITHER of the following: <ul style="list-style-type: none">40 mRem/hr (gamma + neutron) on the top of the OVERPACK220 mRem/hr (gamma + neutron) on the side of the OVERPACK, excluding inlet and outlet ducts	

Attachment 2
EAL Bases

PD-AU1

EMERGENCY CLASSIFICATION LEVEL:

UNUSUAL EVENT

INITIATING CONDITION:

Release of gaseous or liquid radioactivity greater than 2 times the Off-site 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. Reading on **ANY** of the following effluent radiation monitors greater than the reading shown for 60 minutes or longer.

Effluent Monitor Classification Thresholds – NOUE		
Monitor		NOUE
Gaseous	U2 R-27	1.6E+00 $\mu\text{Ci/cc}$ 4.1E+07 $\mu\text{Ci/sec}$
	U2 R-44	4.2E-02 $\mu\text{Ci/cc}$
	U3 R-27	1.0E+00 $\mu\text{Ci/cc}$ 3.6E+07 $\mu\text{Ci/sec}$
	U3 R-14	1.5E-02 $\mu\text{Ci/cc}$
Liquid	U2 R-54 WDST	4.0E-04 $\mu\text{Ci/cc}$
	U3 R-18 Monitor Tanks	1.0E-03 $\mu\text{Ci/cc}$

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.

IPEC 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.

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 IPEC Site-Specific Bases Information

Gaseous and liquid releases in excess of two times the Off-site Dose Calculation Manual (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 which are set in accordance with the ODCM (Reference 2).

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 2) 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.

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.

Basis Reference(s):

1. NEI 99-01 Rev. 6, PD-AU1
2. IP-CALC-20-00019 (ENTGIP144-CALC-001), Revision 2
3. IPEC Off-site Dose Calculation Manual

PD-AA1

EMERGENCY CLASSIFICATION LEVEL:

ALERT

INITIATING CONDITION:

Release of gaseous or liquid radioactivity resulting in off-site 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. 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
Gaseous	U2 R-27	1.4E+02 $\mu\text{Ci/cc}$ 3.6E+09 $\mu\text{Ci/sec}$
	U2 R-44	4.2E-01 $\mu\text{Ci/cc}$
	U3 R-27	9.5E+01 $\mu\text{Ci/cc}$ 3.1E+09 $\mu\text{Ci/sec}$
	U3 R-14	1.5E-01 $\mu\text{Ci/cc}$
Liquid	U2 R-54 WDST	3.8E-02 $\mu\text{Ci/cc}$
	U3 R-18 Monitor Tanks	3.8E-02 $\mu\text{Ci/cc}$

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 off-site 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 IPEC Site-Specific Bases Information

None

Basis Reference(s):

1. NEI 99-01 Rev. 6, PD-AA1
2. IP-CALC-20-00019 (ENTGIP144-CALC-001), Revision 2

PD-AU2

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:

- LC-650
- Visual observation of SFP water level
- Manual SFP water level measurement

AND

b. UNPLANNED rise in area radiation levels as indicated by the following radiation monitor:

- R-5 Fuel Storage Building (FSB) Area Radiation Monitor

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 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.

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 IPEC 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 IP2 SFP Technical Specification minimum water level is 92' 2". The SFP low water level alarm setpoint is 93' 3". High and low SFP water level is indicated by LC-650 and alarmed in the IP2 Control Room.

The IP3 SFP water level is required to be 23 feet over the top of the irradiated fuel assemblies seated in the storage racks. LC-650 actuates the SFP level alarm in the IP3 Control Room.

For the IP2 and IP3 R-5 area radiation monitors, remote readouts are located in each of the IP2 and IP3 Fuel Storage Buildings (FSBs). For the IP3 R-5 area radiation monitor, a remote readout is also located in the PAB. Remote readouts and audible alarms are provided for R-5 in each respective Control Room.

Basis Reference(s):

1. NEI 99-01 Rev. 6, PD-AU2
2. 2-AOP-FH-1, "Fuel Damage or Loss of SFP/Refueling Cavity Level"
3. 3-AOP-FH-1, "Fuel Damage or Loss of SFP/Refueling Cavity Level"
4. 2-SOP-12.3.3, "Radiation Monitor Set-point Control"
5. 3-SOP-RM-010, "Radiation Monitor Set-point Control"

PD-AA2

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 (Area Radiation Monitor R-1)
- Central Alarm Station (CAS) (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.

Unit 2

- Fuel Storage Building (FSB)
- Control Building 33' elevation
- PAB 80' elevation
- PAB 98' elevation

Unit 3

- Fuel Storage Building (FSB)
- Control Building 33' elevation
- PAB 55' elevation
- PAB 73' elevation

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 IPEC Site-Specific Bases Information

Areas that meet this threshold include the IP2 and IP3 Control Rooms and the Central Alarm Station (CAS). The Control Room Area Radiation Monitor (ARM) R-1 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. There are no permanently installed CAS area radiation monitors that may be used to assess this EAL threshold. Therefore, these thresholds must be assessed via local radiation survey for the CAS.

Basis Reference(s):

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

PD-HU1

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 Supervisor.

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 Supervisor 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 Off-site 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 Supervisor 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.

EAL #2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with the IPEC Safeguards Contingency 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 IPEC Safeguards Contingency Plan.

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

Additional IPEC 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.

Only the plant to which the specific threat is made need declare the UNUSUAL EVENT.

The determination of “credible” is made through use of information found in the IPEC Safeguards Contingency Plan (Reference 2).

0-AOP-SEC-1, “Response to Security Compromise” (Reference 3) provides guidance for response to security related events based on contingency events at IPEC, including validation of the threats. Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on IPEC. 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. IPEC Safeguards Contingency Plan
3. 0-AOP-SEC-1, “Response to Security Compromise”

PD-HA1

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 Security Shift Supervisor.

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 Supervisor 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 on-site 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 IPEC Safeguards 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 IPEC Safeguards Contingency Plan.

Additional IPEC 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).

0-AOP-SEC-1, "Response to Security Compromise" (Reference 3) provides guidance for response to security related events based on contingency events at IPEC.

Basis Reference(s):

1. NEI 99-01 Rev. 6, PD-HA1
2. IPEC Safeguards Contingency Plan
3. 0-AOP-SEC-1, "Response to Security Compromise"

PD-HU2

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 train of a system needed for spent fuel cooling.
- AND**
- c. The damaged system train(s) 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.

Additional IPEC Site-Specific Bases Information

None

IPEC Basis Reference(s):

1. NEI 99-01, PD-HU2
2. 2-AOP-FLOOD, "Flooding"
3. 3-AOP-FLOOD, "Flooding"

PD-HU3

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 off-site 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 IPEC Site-Specific Bases Information

None

Basis Reference(s):

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

PD-HA3

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 IPEC Site-Specific Bases Information

None

Basis Reference(s):

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

PD-SU1

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 pool will occur, and result in a loss of pool level and increased radiation levels.

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

Additional IPEC Site-Specific Bases Information

The IP2 and IP3 SFPs have large capacities for heat absorption. The normal SFP water level is maintained greater than or equal to 23 feet above the top of the irradiated fuel assemblies seated in the storage racks in accordance with the Technical Specifications. Normal SFP temperature is procedurally maintained below 125° F for the IP2 SFP and below 135° F for the IP3 SFP.

Based on IP-CALC-19-00032 (Reference 2), using the normal SFP water level and a conservative initial SFP temperature of 140° F, at 12 months after final core offload, 89 hours are available to mitigate a loss of SFP cooling event before the water in the SFP were to boil down to 10 ft above top of fuel, and 125 hours are available before the water in the SFP were to boil down to 3 ft. above top of fuel (Reference 3).

Basis Reference(s):

1. NEI 99-01, PD-SU1
2. IP2 Technical Specifications Section 3.7.11, Spent Fuel Pit Water Level
3. IP3 Technical Specifications Section 3.7.14, Spent Fuel Pit Water Level

4. Indian Point Energy Center Calculation No. IP-CALC-19-00032, Revision 0, "Evaluation of Spent Fuel Pool Boil Off Time," issued September 25, 2019
5. IPEC Letter to NRC, NL-19-092, "Request for Rescission of Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)"

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 an on-contact radiation reading greater than **EITHER** of the following:

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

Basis:

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

The existence of “damage” is determined by radiological survey. The technical specification multiple of “2 times”, which is also used in Recognition Category A IC PD-AU1, is used here to distinguish between non-emergency and emergency conditions. The emphasis for this classification is the degradation in the level of safety of the spent fuel cask and not the magnitude of the associated dose or dose rate. It is recognized that in the case of extreme damage to a loaded cask, the fact that the “on-contact” dose rate limit is exceeded may be determined based on measurement of a dose rate at some distance from the cask.

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

Additional IPEC Site-Specific Bases Information

The results of the ISFSI Safety Analysis Report (SAR) [per NUREG 1536], or a SAR referenced in the cask Certificate of Compliance (CoC) and the related NRC Safety Evaluation Report, identify the natural phenomena events and accident conditions that could potentially affect the CONFINEMENT BOUNDARY. This EAL addresses damage that could result from the range of identified natural or man-made events (e.g., a dropped or tipped over cask, EXPLOSION, FIRE, EARTHQUAKE, etc.).

An UNUSUAL EVENT in this EAL is categorized on the basis of the occurrence of an event of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. This includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

CONFINEMENT BOUNDARY means the outline formed by either: (1) the sealed, cylindrical enclosure of the Multi-Purpose Canister (MPC) shell welded to a solid baseplate, a lid welded around the top circumference of the shell wall, the port cover plates welded to the lid, and the closure ring welded to the lid and MPC shell providing the redundant sealing; or (2) the sealed, cylindrical enclosure of the Shielded Transfer Canister (STC) inner shell welded to a solid base plate and an upper flange, with the upper flange bolted to a solid closure lid with the lid to flange interface having a double elastomeric o-ring seal, and with the lid having vent and drain ports with bolted solid cover plates with each cover plate having an elastomeric o-ring seal.

The on-contact radiation readings equate to 2 times the value presented in Appendix A of the Holtec International HI-STORM 100 Cask System CoC No. 72-1014, Technical Specification 5.7.4 (Reference 2). Because the IPEC ISFSI contains casks loaded under Amendments 2, 4, 6, and 9 of the Holtec International HI-STORM 100 Cask System CoC No. 72-1014, this EAL utilizes the allowable levels of Amendment 2 as these would be the first to be reached in the case of a confinement boundary failure issue. On-contact radiation readings are defined in Amendment 2 as 20 mRem/hr on the top of the overpack, and 110 mRem/hr on the side of the overpack, excluding near the inlet and outlet ducts per the cask system technical specifications (Reference 2).

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. Holtec International HI-STORM 100 Cask System CoC No. 72-1014 Amendments 2, 4, 6, and 9
3. Technical Specifications for the HI-STORM 100 Cask System, Administrative Control 5.7.4

Enclosure, Attachment 3

HDI-IPEC-21-016

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

(35 Pages)

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

Description of the Permanently Defueled EAL Technical Basis Document

The following discussion provides a description of the Indian Point Energy Center (IPEC) 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 IPEC PD EAL Technical Bases Document and the guidance presented in Nuclear Energy Institute (NEI) 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6 (NEI 99-01).

The IPEC 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 IPEC Unit 1, 2, and 3 (IP1, IP2, and IP3) reactors.

1.0 PURPOSE

The IPEC PD EAL Technical Bases Document includes reference to Recognition Category "PD" and Recognition Category "E" IC/EAL for the permanently shutdown and defueled reactors and the Independent Spent Fuel Storage Installation (ISFSI). A comparison between the "Purpose" section of the IPEC PD EAL Technical Bases Document and a corresponding section of NEI 99-01 was not performed.

2.0 DISCUSSION

The "Discussion" section in the IPEC 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 IPEC PD EAL Technical Bases Document because it pertains to operating reactors. IP1 was permanently shutdown on October 31, 1974 and all spent fuel was removed from the IP1 reactor vessel in 1975. All spent fuel has since been removed from the IP1 Spent Fuel Pool (SFP). IP1 spent fuel has been placed in the existing ISFSI. By letters dated May 12, 2020 and May 11, 2021, pursuant to 10 CFR 50.82(a)(1)(i), IPEC submitted a certification to the NRC, that power operations ceased at IP2 on April 30, 2020 and IP3 on April 30, 2021. In addition, in accordance with 10 CFR 50.82(a)(1)(ii), IPEC also certified that the spent fuel was permanently removed from the IP2 reactor vessel and placed in the IP2 SFP on May 12, 2020 and removed from the IP3 reactor vessel and placed in the IP3 SFP on May 11, 2021. Therefore, Section 1.1 of NEI 99-01 is not applicable to IPEC.

Section 1.2, "Permanently Defueled Station," of NEI 99-01 is addressed in Section 2.1 of the IPEC PD EAL Technical Bases Document. Inclusion of this discussion is appropriate because the IPEC reactors have 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 bounding analyses for the IP2 and IP3 SFPs for beyond design basis events that demonstrate 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, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," (February 2001) (Reference 17) 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 results of the bounding analyses, in the unlikely event of a beyond design basis event involving the IP2 or IP3 SFP, 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.

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

Section 1.4, "NRC Order EA-12-051," of NEI 99-01 was excluded from the IPEC 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 of Section 1.4 does not apply to IPEC and has not been included.

Section 1.5, "Applicability to Advanced and Small Modular Reactor Designs," of NEI 99-01 was excluded from the IPEC PD EAL Technical Bases Document because IPEC does not utilize Advanced or Small Modular Reactors Designs.

3.0 KEY TERMINOLOGY USED

This section in of the IPEC 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 IPEC PD EAL Technical Bases Document and NEI 99-01 are discussed below.

- References to Site Area Emergency and General Emergency were removed throughout. IPEC's Emergency Classification Levels (ECLs) only include Notification of Unusual Event and Alert. EALs have been developed using NEI 99-01, Appendix C for the permanently defueled station ICs/EALs and Section 8 for the ISFSI.
- References to "plant" were revised to "facility" to indicate that IPEC is no longer an operating nuclear power plant.
- References to Reactor Coolant System (RCS) Leakage and fission product barriers were excluded from IPEC 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 IPEC reactors, the RCS and Containment will no longer be considered fission product barriers because the reactors will be permanently defueled and containment integrity is

not needed for the SFPs. In the permanently 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 IPEC PDEP.
- 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 IPEC 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 IPEC Permanently Defueled EAL Technical Bases Document and the corresponding section of NEI 99-01, Rev. 6 are discussed below.

- References to fission product barrier thresholds in Section 5.1 of NEI 99-01 (Section 4.1 of the IPEC 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 IPEC reactor vessels. Reference to "Operating Mode Applicability" was removed because Operating Modes are not applicable to a permanently 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 IPEC 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." HDI will maintain the ability to assess, classify, and declare an emergency within 30 minutes. As described in Section 1.0 of the IPEC 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 to operators 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, no design basis accident or reasonably conceivable beyond design basis accident (DBA) would result in radioactive releases that exceed U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAGs) beyond the site boundary. 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 IPEC 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 IPEC PD EAL Technical Bases Document because mode changes during classification are not applicable to a permanently defueled facility.
- In Section 4.4 of the IPEC 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 IPEC 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 IPEC and no credible accident will result in radiological releases requiring offsite protective actions. IPEC will not downgrade events.
- In Section 4.6 of the IPEC 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 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 defueled facility.
- In Section 4.7 of the IPEC 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 IPEC. 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 IPEC PDEP EAL Technical Bases Document indicates that the emergency classification assessment period is not a "grace period."

5.0 REFERENCES

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

6.0 DEFINITIONS AND ACRONYMS

This section of the IPEC 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 IPEC PD EAL Technical Bases Document.

- The following definitions contained within NEI 99-01 are not used in the IPEC 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 IPEC is no longer an operating nuclear power plant.
- The definition for "Notification of Unusual Event (NOUE)" was revised to change "plant" to "facility" and to delete "of safety systems." The reference to "plant" was revised to "facility" to indicate that IPEC 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 shut down and defueled condition. These systems, by definition, are not "safety systems".
- The following key term is not used in the IPEC 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 IPEC and no credible 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 IPEC 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 shut down and defueled condition. These systems, by definition, are not SAFETY SYSTEMS.

7.0 IPEC TO NEI 99-01 EAL CROSS-REFERENCE

There is no corresponding section included in NEI 99-01, Rev. 6. However, this section was added to the IPEC PD EAL Technical Bases Document to facilitate reviewer's association and location of the IPEC EALs with the corresponding information contained in the guidance in NEI 99-01. Further information regarding the development of the IPEC EALs, based on the NEI guidance, can be found in the EAL Matrices in Attachment 1 of the IPEC PD EAL Technical Bases Document.

8.0 ATTACHMENTS

8.1 Attachment 1, EAL Matrices

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

8.2 Attachment 2, EAL Bases

- Attachment 2 of the IPEC 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 was excluded from Attachment 2 because this section was not included in the IPEC PD EAL Technical Bases Document (Attachment 2 of this Enclosure).

The table included below provides a comparison of the IPEC EALs (PD and ISFSI) against the corresponding information contained in NEI 99-01, Rev. 6.

9.0 NEI 99-01 SECTIONS NOT INCLUDED IN THE IPEC PD EAL TECHNICAL BASES DOCUMENT

The following sections of NEI 99-01 were excluded from the IPEC 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 IPEC PD EAL Technical Bases Document because these Sections do not apply to a permanently 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 IPEC	Comparison
<p>PD-AU1</p> <p>ECL: Notification of Unusual Event</p> <p>Initiating Condition: 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>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>Notes:</p> <ul style="list-style-type: none"> 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 actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. <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>PD-AU1</p> <p>ECL: UNUSUAL EVENT</p> <p>Initiating Condition: Release of gaseous or liquid radioactivity greater than 2 times the Off-site Dose Calculation Manual (ODCM) limits for 60 minutes or longer.</p> <p>Emergency Action Levels (EALs): (1 or 2)</p> <p>Notes:</p> <ul style="list-style-type: none"> 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. <p>1. Reading on ANY of the following effluent radiation monitors greater than the reading shown for 60 minutes or longer.</p>	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> ECL: Changed "Notification of Unusual Event" to "UNUSUAL EVENT" to maintain continuity with the previous IPEC EAL scheme Initiating Condition: Inserted Off-site Dose Calculation Monitor (ODCM) as the site-specific effluent release controlling document Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition Removed "Example" from EALs as they are no longer examples Notes, Bullet #3: Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path" Added "OR" between the EALs as an operator aid to facilitate EAL navigation. EAL #1: Provided IPEC site-specific effluent radiation monitors and calculated threshold values EAL #1: Replaced "2 times the alarm setpoint established by a current radioactivity discharge permit" with "the reading shown" and included IPEC site-specific calculated effluent radiation monitor threshold values on which to base the declaration of a UNUSUAL EVENT. EAL #2: Added "Confirmed" EAL #2: Inserted "ODCM" as the site-specific effluent release controlling document

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison																				
	<table border="1" data-bbox="741 323 1352 667"> <thead> <tr> <th colspan="3">Effluent Monitor Classification Thresholds - NOUE</th></tr> <tr> <th colspan="2">Monitor</th><th>NOUE</th></tr> </thead> <tbody> <tr> <td rowspan="4">Gaseous</td><td>U2 R-27</td><td>1.6E+00 µCi/cc 4.1E+07 µCi/sec</td></tr> <tr> <td>U2 R-44</td><td>4.2E-02 µCi/cc</td></tr> <tr> <td>U3 R-27</td><td>1.0E+00 µCi/cc 3.6E+07 µCi/sec</td></tr> <tr> <td>U3 R-14</td><td>1.5E-02 µCi/cc</td></tr> <tr> <td rowspan="2">Liquid</td><td>U2 R-54 WDST</td><td>4.0E-04 µCi/cc</td></tr> <tr> <td>U3 R-18 Monitor Tanks</td><td>1.0E-03 µCi/cc</td></tr> </tbody> </table> <p data-bbox="785 688 825 712">OR</p> <p data-bbox="741 737 1331 850">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 - NOUE			Monitor		NOUE	Gaseous	U2 R-27	1.6E+00 µCi/cc 4.1E+07 µCi/sec	U2 R-44	4.2E-02 µCi/cc	U3 R-27	1.0E+00 µCi/cc 3.6E+07 µCi/sec	U3 R-14	1.5E-02 µCi/cc	Liquid	U2 R-54 WDST	4.0E-04 µCi/cc	U3 R-18 Monitor Tanks	1.0E-03 µCi/cc	
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<p data-bbox="107 878 191 902">Basis:</p> <p data-bbox="107 919 711 1162">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 data-bbox="107 1179 711 1446">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 data-bbox="741 878 825 902">Basis:</p> <p data-bbox="741 919 1362 1162">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 data-bbox="741 1179 1362 1446">IPEC 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 data-bbox="1394 878 1961 902"><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul data-bbox="1394 927 1992 1325" style="list-style-type: none"> • Replaced "plant" with "facility" • Added "uncontrolled" without changing the intent of the EAL • Replaced "Nuclear power plants" with "IPEC" to incorporate IPEC site-specific information • 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 • Provided IPEC site-specific basis information and references 																				

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<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 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>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 the release path, then the effluent 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 ECL would be via IC PD-AA1.</p> <p><u>Additional IPEC Site-Specific Bases Information</u></p> <p>Gaseous and liquid releases in excess of two times the Off-site Dose Calculation Manual (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</p>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
	<p>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.</p> <p>The values shown for each monitor represents two times the calculated monitor alarm set-points which are set in accordance with the ODCM (Reference 2).</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 2) 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.</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> <p>Basis Reference(s):</p> <ol style="list-style-type: none"> 1. NEI 99-01 Rev. 6 PD-AU1 2. IP-CALC-20-00019 (ENTGIP144-CALC-001), Revision 2 3. IPEC Off-Site Dose Calculation Manual 	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>PD-AA1</p> <p>ECL: Alert</p> <p>Initiating Condition: Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels: (1 or 2 or 3 or 4)</p> <p>Notes:</p> <ul style="list-style-type: none"> 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 actions to isolate 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. 	<p>PD-AA1</p> <p>ECL: ALERT</p> <p>Initiating Condition: Release of gaseous or liquid radioactivity resulting in off-site dose greater than 10 mRem TEDE or 50 mRem thyroid CDE.</p> <p>Emergency Action Levels (EALs): (1 or 2 or 3 or 4)</p> <p>Notes:</p> <ul style="list-style-type: none"> 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. 	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition Removed "Example" from EALs as they are no longer examples Notes, Bullet #3: Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path"
<p>1) Reading on ANY of the following radiation monitors greater than the reading shown for 15 minutes or longer:</p>	<p>1. Reading on ANY 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> <ul style="list-style-type: none"> Added "OR" between the EALs as an operator aid to facilitate EAL navigation.

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison																				
<p>(site-specific monitor list and threshold values)</p> <p>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).</p> <p>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.</p> <p>4) Field survey results indicate EITHER of the following at or beyond (site-specific dose receptor point):</p> <ul style="list-style-type: none"> Closed window dose rates greater than 10 mR/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. 	<table border="1" data-bbox="743 363 1352 712"> <thead> <tr> <th colspan="3">Effluent Monitor Classification Thresholds - ALERT</th></tr> <tr> <th colspan="2">Monitor</th><th>ALERT</th></tr> </thead> <tbody> <tr> <td rowspan="4">Gaseous</td><td>U2 R-27</td><td>1.4E+02 µCi/cc 3.6E+09 µCi/sec</td></tr> <tr> <td>U2 R-44</td><td>4.2E-01 µCi/cc</td></tr> <tr> <td>U3 R-27</td><td>9.5E+01 µCi/cc 3.1E+09 µCi/sec</td></tr> <tr> <td>U3 R-14</td><td>1.5E-01 µCi/cc</td></tr> <tr> <td rowspan="2">Liquid</td><td>U2 R-54 WDST</td><td>3.8E-02 µCi/cc</td></tr> <tr> <td>U3 R-18 Monitor Tanks</td><td>3.8E-02 µCi/cc</td></tr> </tbody> </table> <p>OR</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>OR</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>OR</p> <p>4. Field survey results indicate EITHER of the following at or beyond the site boundary:</p> <ul style="list-style-type: none"> Closed window dose rates greater than 10 mRem/hr expected to continue for 60 minutes or longer. <p>Analyses of field survey samples indicate thyroid CDE greater than 50 mRem for one hour of inhalation.</p>	Effluent Monitor Classification Thresholds - ALERT			Monitor		ALERT	Gaseous	U2 R-27	1.4E+02 µCi/cc 3.6E+09 µCi/sec	U2 R-44	4.2E-01 µCi/cc	U3 R-27	9.5E+01 µCi/cc 3.1E+09 µCi/sec	U3 R-14	1.5E-01 µCi/cc	Liquid	U2 R-54 WDST	3.8E-02 µCi/cc	U3 R-18 Monitor Tanks	3.8E-02 µCi/cc	<ul style="list-style-type: none"> EAL #1: Provided IPEC site-specific effluent radiation monitors and calculated threshold values EAL #2: Provided “the site boundary” as the site-specific dose receptor point EAL #3: Added "Confirmed" EAL #3: Provided “the site boundary” as the site-specific dose receptor point EAL #4: Provided “the site boundary” as the site-specific dose receptor point
Effluent Monitor Classification Thresholds - ALERT																						
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NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>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 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>This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual off-site 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).</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 IPEC Site-Specific Bases Information</u></p> <p>None</p> <p>Basis Reference(s):</p> <ol style="list-style-type: none"> 1. NEI 99-01 Rev. 6, PD-AA1 2. IP-CALC-20-00019 (ENTGIP144-CALC-001), Revision 2 	<ul style="list-style-type: none"> • Replaced “plant” with “facility” • Replaced "have stopped due to actions to isolate the release path" with "have stopped due to isolation of the release path" • Provided IPEC site-specific basis information and references

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>PD-AU2</p> <p>ECL: Notification of Unusual Event</p> <p>Initiating Condition: UNPLANNED rise in plant radiation levels.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>(1) a. UNPLANNED water level drop in the spent fuel pool as indicated by ANY of the following:</p> <p style="padding-left: 40px;">(Site specific level indications).</p> <p style="text-align: center;">AND</p> <p>b. UNPLANNED rise in area radiation levels as indicated by ANY of the following radiation monitors:</p> <p style="padding-left: 40px;">(Site specific level indications).</p> <p>(2) Area radiation monitor reading or survey result indicates an UNPLANNED rise of 25 mR/hr over NORMAL LEVELS.</p>	<p>PD-AU2</p> <p>ECL: UNUSUAL EVENT</p> <p>Initiating Condition: UNPLANNED rise in facility radiation levels.</p> <p>Emergency Action Levels (EALs): (1 or 2)</p> <p>1. a. UNPLANNED water level drop in the SFP as indicated by ANY of the following:</p> <ul style="list-style-type: none"> • LC-650 • Visual observation of SFP water level • Manual SFP water level measurement <p style="text-align: center;">AND</p> <p>b. UNPLANNED rise in area radiation levels as indicated by the following radiation monitor:</p> <ul style="list-style-type: none"> • R-5 Fuel Storage Building (FSB) Area Radiation Monitor <p style="text-align: center;">OR</p> <p>2. Area radiation monitor reading or survey result indicated an UNPLANNED rise of 25 mRem/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"> • ECL: Changed "Notification of Unusual Event" to "UNUSUAL EVENT" to maintain continuity with the previous IPEC EAL scheme • Initiating Condition: Replaced "plant" with "facility" • Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition • Removed "Example" from EALs as they are no longer examples • Added "OR" between the EALs as an operator aid to facilitate EAL navigation. • EAL #1.a: Provided IPEC site-specific SFP level indications • EAL # 1.b: Provided IPEC site-specific area radiation monitors
<p>Basis:</p> <p>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</p>	<p>Basis:</p> <p>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</p>	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> • Replaced "plant" with "facility" • Provided IPEC site-specific basis information and references

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>potential degradation in the level of safety of the plant.</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 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>potential degradation in the level of safety of the facility.</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 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 ECL would be via IC PD-AA1 or PD-AA2.</p> <p><u>Additional IPEC 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 IP2 SFP Technical Specification minimum water level is 92' 2". The SFP low water level alarm setpoint is 93' 3". High and low SFP water level is indicated by LC-650 and alarmed in the IP2 Control Room.</p> <p>The IP3 SFP water level is required to be 23 feet over the top of the irradiated fuel assemblies seated in the storage racks. LC-650 actuates the SFP level alarm in the IP3 Control Room.</p>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
	<p>For the IP2 and IP3 R-5 area radiation monitors, remote readouts are located in each of the IP2 and IP3 Fuel Storage Buildings (FSBs). For the IP3 R-5 area radiation monitor, a remote readout is also located in the PAB. Remote readouts and audible alarms are provided for R-5 in each respective Control Room.</p> <p>Basis Reference(s):</p> <ol style="list-style-type: none"> 1. NEI 99-01 Rev. 6, PD-AU2 2. 2-AOP-FH-1, "Fuel Damage or Loss of SFP/Refueling Cavity Level" 3. 3-AOP-FH-1, "Fuel Damage or Loss of SFP/Refueling Cavity Level" 4. 2-SOP-12.3.3, "Radiation Monitor Set-Point Control" 5. 3-SOP-RM-010, Radiation Monitor Set-Point Control" 	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison				
<p>PD-AA2</p> <p>ECL: Alert</p> <p>Initiating Condition: UNPLANNED rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels: (1 or 2)</p> <p>(1) UNPLANNED dose rate greater than 15 mR/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:</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 ANY 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>PD-AA2</p> <p>ECL: ALERT</p> <p>Initiating Condition: UNPLANNED rise in facility radiation levels that impedes facility access required to maintain spent fuel integrity.</p> <p>Emergency Action Levels (EALs): (1 or 2)</p> <p>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.</p> <ul style="list-style-type: none">Control Room (Area Radiation Monitor R-1)Central Alarm Station (CAS) (by survey) <p>OR</p> <p>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.</p> <table><tr><td><u>Unit 2</u></td><td><u>Unit 3</u></td></tr><tr><td><ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 80' elevationPAB 98' elevation</td><td><ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 55' elevationPAB 73' elevation</td></tr></table>	<u>Unit 2</u>	<u>Unit 3</u>	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 80' elevationPAB 98' elevation	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 55' elevationPAB 73' elevation	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none">Initiating Condition: Replaced “plant” with “facility”Removed "Operating Mode Applicability" as it does not apply in the permanently defueled conditionRemoved “Example” from EALs as they are no longer examplesAdded "OR" between the EALs as an operator aid to facilitate EAL navigation.EAL #1: Provided applicable IPEC site-specific areasEAL #2: Re-worded to better align with the IC without changing the intent of the EALEAL #2: Eliminated the word "results" because the use of survey results is impliedEAL #2: Provided applicable IPEC site-specific areas
<u>Unit 2</u>	<u>Unit 3</u>					
<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 80' elevationPAB 98' elevation	<ul style="list-style-type: none">Fuel Storage Building (FSB)Control Building 33' elevationPAB 55' elevationPAB 73' elevation					

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>Basis:</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 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>Basis:</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 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 IPEC Site-Specific Bases Information</u></p> <p>Areas that meet this threshold include the IP2 and IP3 Control Rooms and the Central Alarm Station (CAS). The Control Room Area Radiation Monitor (ARM) R-1 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. There are no permanently installed CAS area radiation monitors that may be used to assess this EAL threshold. Therefore, these thresholds must be assessed via local radiation survey for the CAS.</p> <p>Basis Reference(s):</p> <p>1. NEI 99-01 Rev. 6, PD-AA2</p>	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> • Replace “plant” with “facility” • Provided IPEC site-specific basis information, instrumentation and documented references

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>PD-HU1</p> <p>ECL: Notification of Unusual Event</p> <p>Initiating Condition: Confirmed SECURITY CONDITION or threat.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels: (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>PD-HU1</p> <p>ECL: UNUSUAL EVENT</p> <p>Initiating Condition: Confirmed SECURITY CONDITION or threat.</p> <p>Emergency Action Levels (EALs): (1 or 2 or 3)</p> <p>1. A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by the Security Shift Supervisor.</p> <p>OR</p> <p>2. Notification of a credible security threat directed at the site.</p> <p>OR</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"> ECL: Changed "Notification of Unusual Event" to "UNUSUAL EVENT" to maintain continuity with the previous IPEC EAL scheme Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition. Removed "Example" from EALs as they are no longer examples Added "OR" between the EALs as an operator aid to facilitate EAL navigation. EAL #1: Provided the Security Shift Supervisor as the IPEC "site-specific security shift supervision"
<p>Basis:</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>Basis:</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 Supervisor 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 OROs.</p>	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> Replaced "plant" with "facility" Changed "Security Shift Supervision" to "Security Shift Supervisor" and "Security Plan" to "IPEC Safeguards Contingency Plan" to reflect IPEC site-specific nomenclature Provided IPEC site-specific basis information and documented references

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<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>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>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>EAL #1 references the Security Shift Supervisor 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 the IPEC Safeguards Contingency 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 of the threat 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 IPEC Safeguards Contingency Plan</p> <p>Escalation of the ECL would be via IC PD-HA1.</p> <p><u>Additional IPEC 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</p>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
	<p>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.</p> <p>Only the plant to which the specific threat is made need declare the UNUSUAL EVENT.</p> <p>The determination of “credible” is made through use of information found in the IPEC Safeguards Contingency Plan (Reference 2).</p> <p>0-AOP-SEC-1, “Response to Security Compromise” (Reference 3) provides guidance for response to security related events based on contingency events at IPEC, including validation of the threats. Hostile Action should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on IPEC. 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>Basis Reference(s):</p> <ol style="list-style-type: none"> 1. NEI 99-01 Rev. 6, PD-HU1 2. IPEC Safeguards Contingency Plan 3. 0-AOP-SEC-1, "Response to Security Compromise" 	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>PD-HA1</p> <p>ECL: Alert</p> <p>Initiating Condition: HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels: (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>PD-HA1</p> <p>ECL: ALERT</p> <p>Initiating Condition: HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.</p> <p>Emergency Action Levels (EALs): (1 or 2)</p> <p>1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the Security Shift Supervisor.</p> <p>OR</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"> • Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition • Removed "Example" from EALs as they are no longer examples • Added "OR" between the EALs as an operator aid to facilitate EAL navigation. • EAL #1: Provided the Security Shift Supervisor as the IPEC "site-specific security shift supervision"
<p>Basis:</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 and</p>	<p>Basis:</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 Supervisor 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"> • Replaced "plant" with "facility". • Changed "Security Shift Supervision" to "Security Shift Supervisor" and "Security Plan" to "IPEC Safeguards Contingency Plan" to reflect IPEC site-specific nomenclature • Provided IPEC site-specific basis information and documented references

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>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 is expected, although not certain, that notification by</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 IPEC Safeguards 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 plane may be provided by NORAD through the NRC.</p>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>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>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 IPEC Safeguards Contingency Plan.</p> <p><u>Additional IPEC Site-Specific Bases Information</u></p> <p>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).</p>	

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
	<p>0-AOP-SEC-1, "Response to Security Compromise" (Reference 3) provides guidance for response to security related events based on contingency events at IPEC.</p> <p>IPEC Basis Reference(s):</p> <ol style="list-style-type: none">1. NEI 99-01 Rev. 6, PD-HA12. IPEC Safeguards Contingency Plan3. 0-AOP-SEC-1, "Response to Security Compromise"	

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

• VISIBLE DAMAGE	• VISIBLE DAMAGE	
<p>Basis:</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>Basis:</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.</p> <p><u>Additional IPEC Site-Specific Bases Information</u></p> <p>None</p> <p>Basis Reference(s):</p> <ol style="list-style-type: none"> 1. NEI 99-01 Rev. 6, PD-HA1 2. 2-AOP-FLOOD, "Flooding" 3. 3-AOP-FLOOD, "Flooding" 	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> • Replaced "plant" with "facility" • 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. • Replaced "design function" with "intended function" to better align with the IC Without changing the intent of the EAL. • Provided IPEC site-specific basis information and references

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

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>PD-HA3</p> <p>ECL: Alert</p> <p>Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels:</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>PD-HA3</p> <p>ECL: ALERT</p> <p>Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of an ALERT.</p> <p>Emergency Action Level (EAL):</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"> Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition Removed "Example" from EALs as they are no longer examples Removed numbering from EAL, because there is only one EAL is associated with the IC Replaced "plant" with "facility"
<p>Basis:</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>Basis:</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 IPEC Site-Specific Bases Information</u></p> <p>None</p> <p>Basis Reference(s):</p> <ol style="list-style-type: none"> NEI 99-01 Rev. 6, PD-HA3 IPEC Permanently Defueled Emergency Plan, Part 2, Section B, Emergency Response Organization" 	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> Provided IPEC site-specific basis information and references

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>PD-SU1</p> <p>ECL: Notification of Unusual Event</p> <p>Initiating Condition: UNPLANNED spent fuel pool temperature rise.</p> <p>Operating Mode Applicability: Not Applicable</p> <p>Example Emergency Action Levels:</p> <p>(1) UNPLANNED spent fuel pool temperature rise to greater than (site-specific ° F).</p>	<p>PD-SU1</p> <p>ECL: UNUSUAL EVENT</p> <p>Initiating Condition: UNPLANNED spent fuel pool temperature rise.</p> <p>Emergency Action Level (EAL):</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"> • ECL: Changed “Notification of Unusual Event” to “UNUSUAL EVENT” to maintain continuity with the previous IPEC EAL scheme • Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition • Removed “Example” from EALs as they are no longer examples • Removed numbering from EAL, because there is only one EAL is associated with the IC • Provided IPEC site-specific temperature for the SFP
<p>Basis:</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>Basis:</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 pool will occur, and result in a loss of pool level and increased radiation levels.</p> <p>Escalation of the ECL would be via IC PD-AA1 or PD-AA2.</p> <p><u>Additional IPEC Site-Specific Bases Information</u></p> <p>The IP2 and IP3 SFPs have large capacities for heat absorption. The normal SFP water level is maintained greater than or equal to 23 feet above the top of the irradiated fuel assemblies seated in the storage racks in accordance with the Technical Specifications. Normal SFP temperature is procedurally maintained below 125° F for the IP2 SFP and below 135° F for the IP3 SFP.</p> <p>Based on IP-CALC-19-00032 (Reference 2), using the normal SFP water level and a conservative initial SFP temperature of 140° F, at 12 months after final</p>	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> • Replaced "plant" with "facility" • Provided IPEC site-specific basis information and documented references for the bases and justification for 140° F EAL threshold provided in the EAL

NEI 99-01 Rev 6 Appendix C – Permanently Defueled Station ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
	<p>core offload, 89 hours are available to mitigate a loss of SFP cooling event before the water in the SFP were to boil down to 10 ft above top of fuel, and 125 hours are available before the water in the SFP were to boil down to 3 ft. above top of fuel (Reference 3).</p> <p>Basis Reference(s):</p> <ol style="list-style-type: none">1. NEI 99-01 Rev. 6, PD-SU12. IP2 Technical Specifications Section 3.7.11, Spent Fuel Pit Water Level3. IP3 Technical Specifications Section 3.7.14, Spent Fuel Pit Water Level4. Indian Point Energy Center Calculation No. IP-CALC-19-00032, Revision 0, "Evaluation of Spent Fuel Pool Boil Off Time," issued September 25, 20195. IPEC Letter to NRC, NL-19-092, "Request for Rescission of Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)"	

NEI 99-01 Rev 6, Section 8 ISFSI ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>E-HU1</p> <p>ECL: Notification of Unusual Event</p> <p>Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p>Operating Mode Applicability: All</p> <p>Example Emergency Action Levels:</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>E-HU1</p> <p>ECL: UNUSUAL EVENT</p> <p>Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY.</p> <p>Emergency Action Level (EAL):</p> <p>Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than EITHER of the following:</p> <ul style="list-style-type: none"> • 40 mRem/hr (gamma + neutron) on the top of the OVERPACK • 220 mRem/hr (gamma + neutron) on the side of 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"> • ECL: Changed "Notification of Unusual Event" to "UNUSUAL EVENT" to maintain continuity with the previous IPEC EAL scheme • Removed "Operating Mode Applicability" as it does not apply in the permanently defueled condition • Removed "Example" from EALs as they are no longer examples. • Removed numbering from EAL, because there is only one EAL is associated with the IC • Included the cask-specific technical specification values
<p>Basis:</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</p>	<p>Basis:</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 PD-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</p>	<p><input type="checkbox"/> No Change <input checked="" type="checkbox"/> Difference <input type="checkbox"/> Deviation</p> <ul style="list-style-type: none"> • Provided IPEC site-specific and cask-specific basis information and references

NEI 99-01 Rev 6, Section 8 ISFSI ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
<p>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>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 IPEC Site Specific Bases Information</u></p> <p>The results of the ISFSI Safety Analysis Report (SAR) [per NUREG 1536], or a SAR referenced in the cask Certificate of Compliance (CoC) and the related NRC Safety Evaluation Report, identify the natural phenomena events and accident conditions that could potentially affect the CONFINEMENT BOUNDARY. This EAL addresses damage that could result from the range of identified natural or man-made events (e.g., a dropped or tipped over cask, EXPLOSION, FIRE, EARTHQUAKE, etc.).</p> <p>An UNUSUAL EVENT in this EAL is categorized on the basis of the occurrence of an event of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. This includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.</p> <p>CONFINEMENT BOUNDARY means the outline formed by either: (1) the sealed, cylindrical enclosure of the Multi-Purpose Canister (MPC) shell welded to a solid baseplate, a lid welded around the top circumference of the shell wall, the port cover plates welded to the lid, and the closure ring welded to the lid and MPC shell providing the redundant sealing; or (2) the sealed, cylindrical enclosure of the Shielded Transfer Canister (STC) inner shell welded to a solid base plate and an upper flange, with the</p>	

NEI 99-01 Rev 6, Section 8 ISFSI ICs/EALs	Proposed Permanently Defueled EAL for IPEC	Comparison
	<p>upper flange bolted to a solid closure lid with the lid to flange interface having a double elastomeric o-ring seal, and with the lid having vent and drain ports with bolted solid cover plates with each cover plate having an elastomeric o-ring seal.</p> <p>The on-contact radiation readings equate to 2 times the value presented in Appendix A of the Holtec International HI-STORM 100 Cask System CoC No. 72-1014, Technical Specification 5.7.4 (Reference 2). Because the IPEC ISFSI contains casks loaded under Amendments 2, 4, 6, and 9 of the Holtec International HI-STORM 100 Cask System CoC No. 72-1014, this EAL utilizes the allowable levels of Amendment 2 as these would be the first to be reached in the case of a confinement boundary failure issue. On-contact radiation readings are defined in Amendment 2 as 20 mRem/hr on the top of the overpack, and 110 mRem/hr on the side of the overpack, excluding near the inlet and outlet ducts per the cask system technical specifications (Reference 2).</p> <p>Minor surface damage that does not affect storage cask boundary is excluded from the scope of this EAL.</p> <p>Basis Reference(s):</p> <ol style="list-style-type: none">1. NEI 99-01 Rev. 6, E-HU12. Holtec International HI-STORM 100 Cask System CoC No. 72-1014 Amendments 2, 4, 6, and 93. Technical Specifications for the HI-STORM 100 Cask System, Administrative Control 5.7.4	