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

Serial No. 13-495B
LIC/JG/R0
Docket No. 50-305
License No. DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
SUPPLEMENT 1 AND RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REGARDING LICENSE AMENDMENT REQUEST 257, PERMANENTLY DEFUELED
EMERGENCY PLAN AND EMERGENCY ACTION LEVEL SCHEME

By application dated January 16, 2014 (Reference 1), Dominion Energy Kewaunee, Inc. (DEK) requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). The proposed amendment would revise the emergency plan and emergency action level (EAL) scheme. The proposed changes were submitted to the NRC for approval prior to implementation, as required under 10 CFR 50.54(q)(4) and 10 CFR 50, Appendix E, Section IV.B.2.

Subsequently, the Nuclear Regulatory Commission (NRC) transmitted a request for additional information (RAI) regarding the proposed amendment (Reference 2). The RAI questions and associated DEK response are provided in Attachment 1 to this letter.

In response to the staff's comments regarding proposed changes to the emergency plan and EAL basis, DEK is revising the originally proposed amendment. Attachment 2 to this letter provides a supplemental description to the proposed amendment. Enclosures 1 and 2 to this letter provide the proposed revisions to the originally submitted emergency plan and EAL basis document, respectively, in response to the RAI.

The analyses provided in the originally submitted amendment (Reference 1) remain applicable and bounding to the proposed revisions. The conclusions of the no significant hazards consideration and the environmental considerations contained in the originally submitted amendment are not affected by, and remain applicable to, this supplement.

Both the EAL scheme provided in the originally submitted amendment and the matrix provided in Reference 1 also remain applicable to this supplement. The matrix compares the proposed EALs to the corresponding information in Nuclear Energy Institute 99-01, "Methodology for Development of Emergency Action Levels," Revision 6.

The KPS Facility Safety Review Committee has reviewed this proposed revision to the originally submitted emergency plan and a copy of this submittal has been provided to the State of Wisconsin in accordance with 10 CFR 50.91(b).

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References:

1. Letter from Mark D. Sartain (DEK) to NRC Document Control Desk, "License Amendment Request 257, Permanently Defueled Emergency Plan and Emergency Action Level Scheme," dated January 16, 2014 [ADAMS Accession Nos. ML14029A053-057 and 059-067].
2. Email from William C. Huffman (NRC) to Jack Gadzala, Craig Sly, et al (DEK), "Kewaunee Amendment Request for Emergency Plan Changes MF3411 - Draft RAIs," dated April 27, 2014.

Commitments made in this letter: None.

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ATTACHMENT 1

**LICENSE AMENDMENT REQUEST 257
PERMANENTLY DEFUELED EMERGENCY PLAN
AND EMERGENCY ACTION LEVEL SCHEME**

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION:

**KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.**

**LICENSE AMENDMENT REQUEST 257
PERMANENTLY DEFUELED EMERGENCY PLAN
AND EMERGENCY ACTION LEVEL SCHEME
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION:**

By application dated January 16, 2014 (Reference 1), Dominion Energy Kewaunee, Inc. (DEK) requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). The proposed amendment would revise the emergency plan (proposing a Permanently Defueled Emergency Plan (PDEP)) and revise the emergency action level (EAL) scheme (proposing a Permanently Defueled EAL (PDEAL) Scheme). The proposed changes were submitted to the NRC for approval prior to implementation, as required under 10 CFR 50.54(q)(4) and 10 CFR 50, Appendix E, Section IV.B.2.

Subsequently, the Nuclear Regulatory Commission (NRC) transmitted a request for additional information (RAI) regarding the proposed amendment (Reference 2). The RAI questions and associated DEK responses are provided below.

NRC Question KPS-RAI-01

Please provide a cross-reference of KPS PDEP sections to the applicable sections of NUREG-0654/FEMA-REP-1.

Response:

The following table provides a cross-reference of KPS PDEP sections to the applicable sections of NUREG-0654/FEMA-REP-1, as well as to the Planning Standards, Planning Requirements, and associated procedures (being developed to implement the PDEP).

PDEP Section	Planning Standard (10 CFR 50.47)**	Planning Requirement (Appendix E.IV)**	NUREG-0654, Section II Evaluation Criteria	Procedure
5.0	(b)(1)	A.1, 2, 4, 7	A	EP-KW-EIP-001, Emergency Response EP-KW-EIP-003, Response to Security Threat EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks
6.0	(b)(2)	A.1, 2, 4; C.1	B	EP-KW-EIP-001, Emergency Response
7.0	(b)(3)	A.6, 7	C	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks
8.0	(b)(4)	B.1, 2; C.1, 2	D	EP-KW-EIP-001, Emergency Response
9.0	(b)(5)	A.6, 7; C.1;	E	EP-KW-EIP-002, Emergency Notification

PDEP Section	Planning Standard (10 CFR 50.47)**	Planning Requirement (Appendix E.IV)**	NUREG-0654, Section II Evaluation Criteria	Procedure
		D.1, 3; E		
10.0	(b)(6)	C.1; D.1, 3; E	F	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks EP-KW-EMP-009-002, Emergency Communication System and Equipment Inventory Verification
11.0	(b)(7)	Exempt	G	EP-KW-EIP-001, Emergency Response
12.0	(b)(8)	E; G	H	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks EP-KW-EMP-009-002, Emergency Communication System and Equipment Inventory Verification
13.0	(b)(9)	A.4; B.1; C.2; E	I	EP-KW-EIP-001, Emergency Response EP-KW-EIP-005, Emergency Radiation
14.0	Exempt	C.1; E	J	EPIP-SEC-03, Personnel Assembly and Accountability
15.0	(b)(11)	E	K	EP-KW-EIP-005, Emergency Radiation Controls
16.0	(b)(12)	A.6, 7; E	L	EP-KW-EIP-001, Emergency Response
17.0	(b)(13)	H	M	EP-KW-EIP-001, Emergency Response
18.0	(b)(14)	E9; F	N	EP-KW-400, Drill and Exercise Program EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks
19.0	(b)(15)	F	O	TR-KW-TPG-2400, Emergency Preparedness Training Program
20.0	(b)(16)	G	P	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks TR-KW-TPG-2400, Emergency Preparedness Training Program

** Refer to the KPS exemptions from portions of 10CFR50.47 and Appendix E for applicability

In certain cases, information related to a specific Planning Standard, Planning Requirement or Evaluation Criteria may appear in more than one section of the plan.

The above table has been added to Appendix B of the PDEP. Supplement 1 to the PDEP, which incorporates this table, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-02

Please provide further justification for extending the notification time requirement for emergency declarations to designated offsite response organizations for 15 minutes to 60 minutes.

Response:

The change in notification time from 15 minutes to 60 minutes is appropriate because events described in the design basis accident analyses and the postulated beyond design basis accident analyses demonstrate that initiation of the State and local government emergency response actions within 15 minutes is not necessary to protect the health and safety of the public.

In SECY-99-0168, "Improving Decommissioning Regulations for Nuclear Power Plants," the NRC staff proposed a rulemaking plan to provide alternative requirements for emergency planning, onsite and offsite insurance protection, safeguards, operator staffing and training, and backfitting rule applicability. The staff used calculations for the time it takes for fuel in the spent fuel pool to heatup from 30 degrees Celsius (°C) to 900°C under adiabatic conditions. 900°C is the temperature that is generally considered for the onset of rapid cladding oxidation. The staff determined that a calculated minimum period of 10 hours to raise temperature of the fuel cladding to 900°C would provide sufficient time to take mitigative actions and, if necessary, offsite protective measures, without preplanning. KPS specific calculations (based on 17 months decay time) have demonstrated that the time required for the hottest fuel assembly in the spent fuel pool to heat adiabatically to 900°C would take 10 hours. Site-specific assessments show that the maximum expected evacuation times for the KPS 10 mile Evacuation Planning Zone (EPZ) are significantly less than this 10 hour period, thus supporting this 10 hour timeframe as an appropriate period for responding to such an event without preplanning. Because notification activities occur in parallel with mitigative and protective actions, the requested extension in notification time from 15 minutes to 60 minutes would not reduce the time available for the completion of protective actions within the timeframe considered adequate per SECY-99-0168.

The need for an operating reactor to provide 15 minute notification to the State and local governments was based on a rapidly progressing event that results in a General Emergency declaration and the need to promptly initiate protective actions for members of the public. Since a rapid event resulting in releases above the EPA PAGs is no longer credible nor postulated, the need for such prompt notification is no longer warranted. Entry into the KPS emergency plan would require no response from State and local governments other than to monitor the situation. As a result, notification within 60 minutes affords them appropriate opportunity without placing undue burden on the on-shift staff. An extreme condition in the permanently defueled condition is the adiabatic heat up of the spent fuel, which has been shown to take at least 10 hours (as of October 21, 2014) before onset of rapid cladding oxidation occurs. Relaxing the notification time to the State and local governments from 15 minutes to 60 minutes

continues to provide ample opportunity to implement protective measures for members of the public (under the offsite agency all-hazards plan) before any potential for release beyond the site boundary in excess of EPA PAG limits could occur (even from such extreme and unlikely events as fuel damage caused by adiabatic heat up of the spent fuel).

Existing agreements with offsite support agencies (e.g., fire, ambulance, local law enforcement) are unaffected by this change in notification time. These agencies would be notified of needed support via the public 911 emergency telephone system, and respond in accordance with their established processes.

The KPS PDEP has been revised (in PDEP Section 9.0) in response to the staff's question. Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-03

Please provide basis for not formatting the KPS PDEP in accordance with NUREG-0654 (i.e., Section A equates to 10 CFR 50.47(b)(1) and applicable portions of 10 CFR 50 Appendix E, and so forth), to ensure consistency in PDEP development throughout the industry.

Response:

The KPS PDEP was developed using the format from the current KPS Emergency Plan. Additionally, the Zion Emergency Plan, which is a similar format to the KPS plan, was referenced during development. However, to facilitate NRC review and to help ensure consistency in PDEP development throughout the industry, the KPS PDEP was reformatted to better align with NUREG-0654.

Supplement 1 to the KPS PDEP, which addresses the staff's question by reformatting the PDEP in accordance with NUREG-0654, is provided as Enclosure 1 to this letter. The associated discussion of change and technical analysis is provided in Attachment 2 to this letter.

NRC Question KPS-RAI-04

The staff noted several placeholders throughout the document where information is to be filled in later. Please address these placeholders and the expected timeframe when they will be completed after determination.

Response:

The KPS PDEP contained the following placeholders that are dependent upon future events and can only be completed upon NRC approval of the proposed PDEP.

- 1) Page 1: Next to last sentence, "...Nuclear Regulatory Commission (NRC) per XXX." This placeholder refers to the future exemption, from certain emergency preparedness regulations, to be granted to DEK by NRC in response to Reference 4.
- 2) Page 1: Last sentence, "...Safety Evaluation Report (SER) XXX." This placeholder refers to the future SE that NRC will prepare in response to the submittal that is the topic of this RAI.
- 3) Page 5: 12th bullet item, "XXX, Exemption from Selected Portions of 10 CFR 50.47 and Appendix E, dated xxx." This placeholder refers to the future exemption, from certain emergency preparedness regulations, to be granted to DEK by NRC in response to Reference 4.
- 4) Page 5: 13th bullet item, "SER XXX, NRC Approval of PDEP, Revision 0, dated xxx." This placeholder refers to the future SE that NRC will prepare in response to the submittal that is the topic of this RAI.

NRC approval of the exemption request and the PDEP is expected by October 31, 2014. These placeholders would be completed either concurrent with, or during the 60-day implementation period following, NRC approval of the PDEP.

NRC Question KPS-RAI-05

Please explain for the on-shift staff, whether there has been an evaluation for potential conflicts between their assigned normal and emergency duties to verify that emergency plan functions can be performed as stated. Additionally, who on-shift is assigned to be a member of the fire brigade and has an evaluation been performed to identify any potential conflicts between normal assigned duties and the fire brigade?

Response:

DEK has evaluated on-shift staffing for potential conflicts between their normal assigned duties and emergency duties and has concluded that emergency plan functions can be performed as stated.

Declaration of an event, notification to State and county authorities, and communication to the NRC will be provided by the Shift Manager (SM)/Emergency Director (ED). During normal operations, the SM/ED provides an oversight/command and control function and will continue to provide this function during a declared event. The declaration, notification, and communication functions of the SM/ED will be carried out in series and can readily be performed within the proposed time of 60 minutes. Due to the limited number of events that can occur at KPS in the permanently defueled

condition and the significant length of time that would be needed to heat up the spent fuel pool before any actions are required, oversight/command and control would have a minimal impact on the ability of the SM/ED to perform emergency functions.

KPS plans to transition to an incipient fire brigade for fire response. The incipient fire brigade would consist of the on-shift plant operator as the Incident Commander and two designated members from the security staff (or other qualified personnel). Members of the fire brigade would attend to normal plant duties until a fire alarm is received. Individual responsibilities then immediately change to higher fire response roles. Incipient fire responses consist of assessing the alarm condition and extinguishing small fires with fire extinguishers or small hand lines (manual hose systems used to apply extinguishing agents). Offsite fire and rescue resources would be called to respond for fires having the potential to exceed the incipient fire response capability. Duties and responsibilities of the fire brigade are contained in the Fire Protection Program Plan.

The table below lists on-shift positions and the augmented positions that fulfill emergency staffing capabilities.

On-Shift Positions and Assigned Functions

FUNCTIONAL AREA	LOCATION	ON-SHIFT STAFF	AUGMENTED STAFF 4 HOUR RESPONSE
Plant Operations and Assessment of Operational Aspects	Control Room	Emergency Director	---
Emergency Direction and Control	Control Room	Emergency Director	---
Notification / Communication	Control Room	Emergency Director	Technical Director
Radiological Assessment	Control Room	Emergency Director	Radiation Protection Director
Plant System Engineering, Repair, and Corrective Actions	Control Room	Emergency Director Plant Operator	Technical Director
Protective Actions	Control Room	Emergency Director	Radiation Protection Director
Fire Fighting	On Scene	Per Fire Protection Program Plan*	Off-Site Response Organization***
Rescue and First Aid Treatment	On Scene	2**	Off-Site Response Organization***
Site Access Control and Accountability	Security Station	Per Security Plan	---

* Fire Brigade composed of Plant Operator, Security personnel, or other qualified personnel.

** Provided by on-shift personnel who may be assigned other functions.

*** Response time is based upon Fire Protection Program Plan (fire fighting) or response capability of off-site organization (ambulance).

The above table has been added to Section 6.4 of the PDEP. Supplement 1 to the PDEP, addressing functional responsibilities (in Section 6.4), is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-06

Please explain the following:

- a. Which on-shift staff is qualified to perform the first aid function and whether this has been evaluated as a potential conflict between their normal and emergency duties?
- b. How NUREG-0654/FEMA-REP-1, Section II Evaluation Criteria L.2 and O.3 are addressed in the KPS PDEP.

Response:

- a. The following on-shift staff is qualified to perform the first aid function. The duties of these on-shift staff members have been evaluated and determined to not create a potential conflict between their normal and emergency duties.

Rescue and first aid treatment is provided by two qualified on-shift personnel (Plant Operator, Security staff, or other qualified personnel). The members assigned rescue/first aid treatment duties will attend to normal plant duties until notified of an incident. Individual responsibilities then immediately change to the higher priority role. The health and safety of personnel take precedence over other normally assigned responsibilities. Rescue/first aid duties of on-shift staff do not create a conflict between their normal and emergency duties. Should first aid and other emergency duties both be required, the Emergency Director would assess the needs and determine the response priority accordingly (as per guidance in NUREG-0654).

PDEP Section 16.0 was enhanced to state:

Arrangements are made for medical services for contaminated injured individuals. The Kewaunee Power Station maintains on-shift personnel and equipment to provide first aid for personnel working at the site. Medical supplies for emergency first aid treatment are provided on site at various plant locations. Stretchers are available for transporting non-mobile, injured personnel.

The following additional detail was added to PDEP Section 19.1:

First aid training for personnel assigned to the on-shift responsibility shall include courses equivalent to Red Cross Multi-Media.

- b. NUREG-0654/FEMA-REP-1, Section II Evaluation Criteria L.2 and O.3, which refer to medical and public health support, are addressed in the KPS PDEP as follows.

Section II Evaluation Criterion L.2 states that each licensee shall provide for onsite first aid capability. Criterion O.3 states that training for individuals assigned to licensee first aid teams shall include courses equivalent to Red Cross Multi-Media. As discussed above, Sections 16.0 and 19.1 of the PDEP were enhanced to address these two evaluation criteria.

Supplement 1 to the PDEP, addressing the staff's questions (in Section 16.0 and Section 19.1), is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-07

Please address NUREG-0654/FEMA-REP-1, Section II Evaluation Criteria B.5 and H.4 in the KPS PDEP, including when the emergency response organization is required to relieve the on-shift staff of emergency preparedness functions.

Response:

Section II Evaluation Criterion B.5 discusses specifying the positions to be performed by the persons to be assigned to the functional areas of emergency activity. Evaluation Criterion H.4 discusses providing for timely activation and staffing of facilities described in the plan.

The KPS PDEP has been enhanced to address Evaluation Criterion B.5 (in PDEP Section 6.4) and Evaluation Criterion H.4 (in PDEP Section 6.2 and Section 12.1) in response to the staff's question. In particular, a table of functional responsibilities is provided in PDEP Section 6.4. The requirement for relieving on-shift staff of emergency preparedness functions is addressed in the column labeled "Augmented Staff 4 Hour Response." These are the positions that relieve the on-shift staff of emergency preparedness functions (within 4 hours). Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-08

Please address NUREG-0654/FEMA-REP-1, Section II Evaluation Criteria G.3.a and G.4.a in the KPS PDEP.

Response:

NUREG 0654, Section II Evaluation Criterion G.3.a, states that each principal organization shall designate the points of contact and physical locations for use by news media during an emergency. Evaluation Criterion G.4.a, states that each principal organization shall designate a spokesperson who should have access to needed information.

During non-emergencies or at the initiating stages of an emergency, DEK has a corporate media line that is available at all times (24/7) for media inquires. In addition, the positional duties of the KPS local affairs spokesperson include maintaining liaison with local media. As such, the person filling this position would also serve as the spokesperson who would have access to needed information regarding the event.

The ERO callout system is designed to notify communications department personnel of a declared emergency at KPS. The communication department would monitor media activity and coordinate with senior management to disseminate information to the public per communications department protocols. News conferences would be conducted on site or other locations as needed. The plant spokesperson function would be performed by either communications department personnel or by senior plant or corporate management.

The KPS PDEP has been revised to address Evaluation Criteria G.3.a and G.3.b (in PDEP Section 11.0) in response to the staff's question. Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-09

Please address NUREG-0654/FEMA-REP-1, Section II Evaluation Criterion J.5, in the KPS PDEP, as it relates to maintaining accountability after it has been initially completed.

Response:

NUREG 0654, Section II Evaluation Criterion J.5 specifies a capability to account for all individuals onsite at the time of the emergency and account for individuals continuously thereafter.

Procedure EPIP-SEC-03, "Personnel Assembly and Accountability," provides instruction for establishing and maintaining personnel assembly and accountability at Kewaunee Power Station. Additional instructions for maintaining accountability can be found in EPIPF-SEC-03-02, Assembly Area Checklist where the senior person in the area assumes responsibility for assembly and subsequent movement to other areas of the site using form EPIPF-SEC-03-01, Emergency Assembly/Accountability Log.

The KPS PDEP has been revised to address Evaluation Criterion J.5 (in PDEP Section 14.0) in response to the staff's question. Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-10

Please address NUREG-0654/FEMA-REP-1, Section II Evaluation Criterion P.1 in the KPS PDEP, as it relates to the training provided to the staff responsible for maintaining an effective emergency plan.

Response:

NUREG 0654, Section II Evaluation Criterion P.1 states that each organization shall provide for the training of individuals responsible for the planning effort.

Emergency Preparedness Staff personnel will be trained in accordance with KPS Permanently Defueled Emergency Preparedness Training Program (TR-KW-TPG-2400). This training program specifies requirements for the training to be provided to staff responsible for effectively maintaining the emergency plan.

The KPS PDEP has been revised to address Evaluation Criterion P.1, as it relates to the training provided to the staff responsible for maintaining an effective emergency plan (in PDEP Section 20.1), in response to the staff's question. Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-11

Please provide a listing of emergency plan implementing procedures as stated in NUREG-0654/FEMA-REP-1, Section II Evaluation Criterion P.7.

Response:

NUREG 0654, Section II Evaluation Criterion P.7 states that each plan shall contain an appendix listing procedures required to implement the plan.

The table provided in response to NRC Question KPS-RAI-01 (above), includes a listing of emergency plan implementing procedures (being developed to implement the PDEP) as stated in NUREG-0654/FEMA-REP-1, Section II Evaluation Criterion P.7. The table (including the listing of emergency plan implementing procedures) has been added to Appendix B of the revised PDEP provided in Enclosure 1.

NRC Question KPS-RAI-12

Please address NUREG-0654/FEMA-REP-1, Section II Evaluation Criterion P.9 in the KPS PDEP, as it relates to the independent audit of the emergency preparedness program.

Response:

NUREG 0654, Section II Evaluation Criterion P.9 discusses arranging for and conducting independent reviews of the emergency preparedness program, including details regarding the extent of the reviews.

Dominion maintains a corporate Nuclear Oversight (NOS) department that supports audits of the KPS PDEP according to Corporate NOS audit practices and instructions that implement the requirements of 10 CFR 50.54(t). The audits will be completed by Corporate NOS personnel and will include reviews of the PDEP, its implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments. The independent review by Corporate NOS personnel ensures independence from the audited organization.

NUREG-0654, Section II Evaluation Criterion P.9, as it relates to independent audits of the emergency preparedness program, is addressed in Section 20.1 of the KPS PDEP (in the subsection titled "Oversight") provided as Enclosure 1.

NRC Question KPS-RAI-13

Please address NUREG-0654/FEMA-REP-1, Section II Evaluation Criteria N.2.d and N.2.e in the KPS PDEP, as it relates to radiation monitoring drills and health physics drills.

Response:

Section II Evaluation Criteria N.2.d and N.2.e discuss requirements for radiological monitoring drills and health physics drills.

Radiation monitoring drills demonstrate the ability to perform plant environment and radiological monitoring. These drills are conducted annually.

Health physics drills involve response to, and analysis of, simulated airborne and direct radiation measurements within the plant. These drills are conducted semi-annually.

The KPS PDEP has been revised to address Evaluation Criteria N.2.d and N.2.e as they relate to radiation monitoring drills and health physics drills (in PDEP Section 18.0) in response to the staff's question. Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-14

Please provide more detail related to the area radiation monitors (ARMs) discussed in Section 8.3, specific to the following:

- a. Are these ARMs in range for the expected, reduced, radiation levels?
- b. Is the resolution of these ARMs appropriate?
- c. Will these ARMs be maintained after the spent fuel is relocated to the independent spent fuel storage installation (ISFSI)?

Response:

- a. Yes, the area radiation monitors (ARMs) that are being maintained to support the functions listed in Section 8.3 of the Emergency Plan are in range for the expected, reduced, radiation levels.
- b. The resolution of these ARMs is also appropriate.

The range and resolution of the area radiation monitors discussed in Section 8.3 of the Emergency Plan are appropriate for the expected, reduced radiation levels, and decommissioned EAL threshold levels (e.g., PD-AA2.1 and PD-AU2.2). A partial listing of the area radiation monitors that will be maintained is provided below.

Instrument	Instrument Range	Instrument Resolution
R-1 Control Room	0.1 mR/hr – 100 R/hr	Remote and local auto-ranging digital readout with two decimal resolution.
R-5 Fuel Handling Area	0.1 mR/hr – 100 R/hr	Remote and local auto-ranging digital readout with two decimal resolution.
R-25 RWS Drum Room	0.1 mR/hr – 10 R/hr	Remote auto-ranging digital readout with two decimal resolution. Local logarithmic scale meter readout with 10 marking increments per decade (e.g., 1 mR/hr marking increments from 1 to 10 mR/hr; 10 mR/hr marking increments from 10 to 100 mR/hr).
R-28 SGBT IX Room	0.1 mR/hr – 10 R/hr	Remote auto-ranging digital readout with two decimal resolution. Local logarithmic scale meter readout with 10 marking increments per decade (e.g., 1 mR/hr marking increments from 1 to 10 mR/hr; 10 mR/hr marking increments from 10 to 100 mR/hr).

Instrument	Instrument Range	Instrument Resolution
R-39 Sludge Intercept Filter	0.01 mR/hr – 0.1 R/hr	Local logarithmic scale meter readout with 10 marking increments per decade (e.g., 1 mR/hr marking increments from 1 to 10 mR/hr; 10 mR/hr marking increments from 10 to 100 mR/hr).

The range and resolution provided by these ARMs are appropriate for personnel to determine if the radiation dose rate EAL thresholds have been exceeded.

- c. These ARMs will be maintained after the spent fuel is relocated to the independent spent fuel storage installation (ISFSI) until such time as a new emergency plan for ISFSI-only storage is approved by NRC.

NRC Question KPS-RAI-15

Please address why 10 CFR 50.54(q) is not referenced in Section 9.4 to ensure the PDEP is maintained appropriately.

Response:

In response to the staff's question, the KPS PDEP has been revised to add a reference to 10 CFR 50.54(q) to ensure the PDEP is maintained appropriately (in PDEP Section 20.2). Supplement 1 to the PDEP, addressing the staff's question, is provided as Enclosure 1 to this letter.

The Following RAIs are Related to the Emergency Action Level (EAL) Scheme

NRC Question KPS-RAI-16a

In several sections of Enclosure 3, "Permanently Defueled Emergency Action Level Basis Document," statements alluding to removing certain EALs from the approved EAL scheme when all of the spent fuel is removed to the ISFSI are made. Please provide basis for not considering the development, and submittal, of two KPS PDEPs, one to address all of the requirements (including the EAL scheme) for when the spent fuel is in the spent fuel pool, and one to address all of the requirements when all of the spent fuel has been relocated to the ISFSI. This, including a commitment to formally inform the NRC, the State, and the counties of the transition, may provide a much clearer method of addressing the different EP requirements, as well as providing the staff the opportunity to pre-approve a future EAL scheme change.

Response:

DEK concurs with the staff's position that two separate KPS PDEPs should be developed to address requirements (including EAL scheme) for when spent fuel is in the spent fuel pool and to address requirements after all spent fuel has been relocated to the ISFSI. As such, the Permanently Defueled Emergency Action Level Basis Document is being supplemented to remove statements in several sections of that document which alluded to removal of certain EALs from the approved EAL scheme after all spent fuel is removed to the ISFSI. DEK is planning to submit a separate request for subsequent PDEP changes (including the EAL scheme) to address requirements after all of the spent fuel has been relocated to the ISFSI. Therefore, there is no need for the statements regarding spent fuel having been relocated to the ISFSI.

Supplement 1 to the Permanently Defueled Emergency Action Level Basis Document, now only addresses requirements for the condition when all spent fuel is in the spent fuel pool and is provided as Enclosure 2 to this letter.

NRC Question KPS-RAI-16b

Please address why reference to 10 CFR 50.54(q) was not added to Section 1.0, "Purpose," to ensure the EAL Technical Basis Document is maintained appropriately.

Response:

In response to the staff's question, a reference to 10 CFR 50.54(q) was added to Section 1.0, "Purpose," to ensure that the EAL Technical Basis Document is maintained appropriately. Supplement 1 to the Permanently Defueled Emergency Action Level Basis Document, addressing the staff's question, is provided as Enclosure 2 to this letter.

NRC Question KPS-RAI-16c

For EALs PD-AU1 and PD-AA1, please provide evidence that the stated instrumentation is capable of indicating at the stated value(s), including the range and resolution of these instruments.

Response:

For EALs PD-AU1 and PD-AA1, instrumentation is capable of indicating at the stated Emergency Action Level (EAL) values, as shown in the table below. Range and resolution of these instruments is also listed. Instruments that have digital readout are indicated as such.

Instrument	EAL Action Values (AU/AA)	Instrument Range	Instrument Resolution
R-13 Aux. Bldg. Vent Exhaust	4.0E+05 cpm 4.0E+06 cpm	1.0E+01 – 1.0E+07 cpm	Remote and local auto-ranging digital readout with two decimal resolution.
R-14 Aux. Bldg. Vent Exhaust			This range and the resolution provided by the digital readout allows personnel to determine if the EAL thresholds for gaseous effluent radiation levels of 4.0E+05 cpm (PD-AU1.1) and 4.0E+06 cpm (PD-AA1.1) have been exceeded.
R-18 Waste Disposal System Liquid Effluent	2 x discharge limit (1.25E+05 cpm based on default ODCM setpoint) 50 x discharge limit (3.13E+06 cpm based on default ODCM setpoint)	1.0E+01 – 1.0E+07 cpm	Remote and local auto-ranging digital readout with two decimal resolution. This range and the resolution provided by the digital readout allows personnel to determine if the EAL thresholds for liquid effluent radiation levels of 2 x discharge permit limit for PD-AU1.1, and 50 x discharge permit limit for PD-AA1.1 have been exceeded.
R-20 Aux Bldg Service Water Return Liquid Effluent	2.0E+03 cpm 5.0E+04 cpm	1.0E+01 – 1.0E+07 cpm	Remote and local auto-ranging digital readout with two decimal resolution. This range and the resolution provided by the digital readout allows personnel to determine if the EAL thresholds for liquid effluent radiation levels of 2.0E+03 cpm (PD-AU1.1), and 5.0E+04 cpm (PD-AA1.1) have been exceeded.

NRC Question KPS-RAI-16d

For EAL PD-AU2, please explain where the stated alarms/indications actually occur, e.g., in the Control Room?

Response:

Spent fuel pool level is included in Alarm 55-N, "Spent Fuel Pool Abnormal," which annunciates in the control room. Level indication is obtained locally at the spent fuel pool and logged by the Plant Operator once per shift.

Radiation Monitors R-5, "Fuel Handling Area Rad Monitor," and R-10, "Fuel Handling Area Rad Monitor," indicate both in the control room and locally at the radiation monitor. Both locations include indicating lights on the front of the panel that warn of an alert and a high alarm condition. Additionally, alarms for R-5 and R-10 annunciates in

the Control Room. The high alarm is received on Alarm 11-B, "Radiation Indication High" and the alert alarm is received on Alarm 12-B, "Radiation Indication Alert."

NRC Question KPS-RAI-16e

Please address why the basis language from the endorsed guidance for EAL AA3 was not incorporated into the basis language for PD-AA2, as it more clearly states the intent of the EAL.

Response:

The endorsed guidance for EAL AA3 was not incorporated into the basis language for PD-AA2 because Appendix C of the endorsed guidance was used to develop PD-AA2. However, in response to the staff's question, the basis language for PD-AA2 has been enhanced to incorporate applicable language from EAL AA3 of the endorsed guidance.

Supplement 1 to the Permanently Defueled Emergency Action Level Basis Document, addressing the staff's question, is provided as Enclosure 2 to this letter.

NRC Question KPS-RAI-16f

Please address why language to the definitions of "annual" and "monthly" does not clearly state reasonable periodicity (i.e., annual = calendar year +/- 3 months).

Response:

In response to the staff's question, the definitions for the interval periods of annual, quarterly, and monthly contained in the PDEP have been clarified to clearly state a reasonable periodicity. Rather than using "+/- 25%" to provide for a reasonable time frame within which to perform the periodic requirement, the NUREG-1431, "Standard Technical Specifications", guidance of "performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance" is used. This aligns the allowance for interval periods in the PDEP with the corresponding intervals used in plant Technical Specifications (for consistency). The resulting allowance (25%) remains the same. The revised definitions read as follows.

Annual = Frequency of occurrence is met if performed within 1.25 times a 12 month interval as measured from the previous performance (This definition does not apply to the term "annual" when it relates to the conduct of the Emergency Preparedness Exercise and off-year Drill. The Exercise and off-year Drill are performed within the calendar year.).

Quarterly = Frequency of occurrence is met if performed within 1.25 times a 92 day interval as measured from the previous performance.

Monthly = Frequency of occurrence is met if performed within 1.25 times a 31 day interval as measured from the previous performance).

Supplement 1 to the Permanently Defueled Emergency Plan (PDEP), addressing the staff's question (in PDEP Section 3.0), is provided as Enclosure 1 to this letter.

NRC Question KPS-RAI-17

Mitigative strategies for spent fuel pool cooling have been documented and addressed in several documents for mitigative strategies related to the spent fuel pool. Please provide evidence that these strategies will: (1) continue to be available and controlled in respective KPS procedures, and (2) be maintained in accordance with the requirements of 10 CFR 50.54(q). Note that the details related to spent fuel pool strategies are considered to be Security-Related information and are to be withheld from public disclosure.

Response:

- (1) Mitigative strategies for spent fuel pool cooling are required by License Condition 2.C.(10), "Mitigation Strategy License Condition" and must therefore continue to be available. As stated in our Supplement 4 to the permanently defueled Technical Specifications license amendment request (Reference 3), the elements contained in License Condition 2.C.(10) require strategies to maintain spent fuel pool cooling capabilities as described in the NRC safety evaluation that provided the basis for issuance of the license condition. This license condition is being maintained in the KPS license. Therefore, mitigative strategies for spent fuel pool cooling will continue to be available as required by this license condition.

As discussed in DEK's response to staff questions regarding a request for exemptions from portions of 10 CFR 50.47 and 10 CFR 50, Appendix E (Reference 4, as supplemented December 11, 2013, and January 10, 2014), KPS has procedures in place to ensure successful implementation of mitigation measures to supply alternate cooling water using portable equipment. Operating procedures (NOP-SFP-001, "Spent Fuel Pool Cooling and Cleanup System" and AOP-SFP-001, "Abnormal Spent Fuel Pool Cooling and Cleanup System Operation") provide direction for supplying makeup water to the spent fuel pool using existing plant systems in the event of a loss of level. If these procedurally directed strategies do not result in restoration of level, then response plans (which are in place to address large area fires) would be implemented. These response plans direct personnel to provide external makeup water via a portable diesel-driven pump. Administrative controls (GNP-03.01.01, "Directive, Implementing Document, and Procedure Administrative Controls") are in place to ensure that procedures are maintained and implemented, and that any changes to them are appropriately reviewed and approved (including any applicable requirements of 10 CFR 50.59).

- (2) The mitigation strategy license condition is implemented by associated procedures. Implementation of the emergency response organization's response to design basis and beyond design basis events is through the use of Emergency Plan Implementing Procedures and other plant response procedures consistent with the existing approach for implementation of the mitigating strategies. The procedures discussed above are controlled in accordance with the requirements of 10 CFR 50.59. Any procedure change being considered that involved discontinuing spent fuel pool mitigating strategies would require review in accordance with the process specified in 10 CFR 50.59. The 10 CFR 50.59 process at KPS requires review of procedure changes for their potential impact, *inter alia*, license conditions. Since License Condition 2.C.(10)(b)(7) requires DEK to maintain spent fuel pool mitigation measures, the process would require obtaining prior NRC approval prior to deleting these mitigation measures. By regulation, the 10 CFR 50.59 evaluation process may be exited if the activity being evaluated is fully addressed by another regulatory process, such as 10 CFR 50.54(q). Therefore, changes subject to the applicability of 10 CFR 50.54(q) would be evaluated in accordance with the requirements of that regulation. As such, mitigative strategies for spent fuel pool cooling will also continue to be maintained in accordance with the requirements of 10 CFR 50.54(q).

NRC Question KPS-RAI-18

Please explain how the emergency plan and the on-shift staffing will effectively coordinate the response of offsite emergency response organizations to an emergency onsite, including local law enforcement, and fire and emergency services response. This should include communications, plant access, coordination and radiological monitoring as required.

Response:

Although decommissioning sites have typically been exempted from formal offsite emergency planning requirements, State and local organizations continue to be relied upon for firefighting, law enforcement, ambulance and medical services. As discussed in DEK's response to staff questions regarding a request for exemptions from portions of 10 CFR 50.47 and 10 CFR 50, Appendix E (Reference 4), Memoranda of Understanding (MOU) have been established to formalize agreements for assistance of the local organizations for firefighting, law enforcement, ambulance and medical services. The MOU continue to be required per 10 CFR 50.47(b)(3) even after approval of the proposed exemption to a portion of that regulation. Applicable details are contained in the Permanently Defueled Emergency Plan (Section 5.2 and Section 7.0).

10 CFR 50.47(b)(15) requires that radiological emergency response training be provided to those who may be called on to assist in an emergency, and 10 CFR 50, Appendix E, IV.F.1 requires that a radiological orientation training program be made available to local services personnel; e.g., local emergency services, local law

enforcement personnel. These requirements would encompass training offered to offsite response organizations (firefighting, law enforcement, ambulance and medical services). Applicable details regarding the extent of the radiological orientation training program available to local services personnel are contained in the Permanently Defueled Emergency Plan (Section 19.2).

Coordination of offsite emergency response organizations' response, plant access, and radiological monitoring are performed by on-shift staff as required. Technical Specification (TS) 5.2.2, "Facility Staff" requires that each on duty shift be composed of at least a minimum shift crew composition, including a Certified Fuel Handler (Shift Manager) and an operator. Should events occur that result in an Emergency Plan entry, procedures are in place to direct personnel to establish the necessary communications and make the appropriate notifications. For example, the Emergency Director (Shift Manager) would direct notification of the emergency response organization (ERO), applicable State and county officials, and the NRC (per PDEP Section 9.0). The Emergency Director would request offsite response organization (e.g., fire, ambulance, and local law enforcement) response via the 911 emergency telephone system. This process remains unchanged from the current process. The Emergency Director coordinates offsite response organizations' response, plant access, and radiological controls with onsite activities (per PDEP Section 5.2 and Section 7.0). Additional staffing requirements associated with operational activities are included within Procedure OP-KW-100, "Conduct of Operations – SAFSTOR".

Consistent with directions provided in the Emergency Plan, DEK maintains an Emergency Telephone Directory (ETD). The ETD provides the information necessary to access necessary offsite resources in a timely manner. Appropriate station personnel are trained to use the ETD to obtain offsite resources when needed to support onsite resources.

ETD subsection ETD 02 lists contacts for government agencies, emergency equipment contacts (e.g., for fuel, electrical power, makeup water, firefighting equipment). It also identifies private agencies that would be capable of providing resources if requested.

ETD subsection ETD 03 has a section specifically for emergency contacts. It lists items such as a portable diesel driven pump, diesel fuel, construction and lifting equipment, firefighting equipment, electrical power equipment, and compressed gas.

Supplement 1 to the Permanently Defueled Emergency Plan (PDEP) contains additional information addressing the staff's question regarding how DEK will effectively coordinate the response of offsite emergency response organizations (in PDEP Section 7.0 and Section 9.0). These revised sections, along with Sections 5.2 and 19.2, describe the coordination with offsite organizations and are provided in the PDEP as Enclosure 1 to this letter.

References

1. Letter from Mark D. Sartain (DEK) to NRC Document Control Desk, "License Amendment Request 257, Permanently Defueled Emergency Plan and Emergency Action Level Scheme," dated January 16, 2014
2. Email from William C. Huffman (NRC) to Jack Gadzala, Craig Sly, et al (DEK), "Kewaunee Amendment Request for Emergency Plan Changes MF3411 - Draft RAIs," dated April 27, 2014
3. Letter from Mark D. Sartain (DEK) to NRC Document Control Desk, "Supplement 4 and Response to Request for Additional Information Regarding License Amendment Request 256, Permanently Defueled License and Technical Specifications," dated April 29, 2014
4. Letter from A. J. Jordan (DEK) to NRC Document Control Desk, "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E," dated July 31, 2013

ATTACHMENT 2

**SUPPLEMENT 1:
LICENSE AMENDMENT REQUEST 257
PERMANENTLY DEFUELED EMERGENCY PLAN
AND EMERGENCY ACTION LEVEL SCHEME**

DISCUSSION OF CHANGE AND TECHNICAL ANALYSIS

**KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.**

**SUPPLEMENT 1
LICENSE AMENDMENT REQUEST 257
PERMANENTLY DEFUELED EMERGENCY PLAN
AND EMERGENCY ACTION LEVEL SCHEME**

DISCUSSION OF CHANGE AND TECHNICAL ANALYSIS

1.0 SUMMARY DESCRIPTION

By application dated January 16, 2014 (Reference 1), Dominion Energy Kewaunee, Inc. (DEK) requested an amendment to Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). The proposed amendment would revise the emergency plan and emergency action level (EAL) scheme. The proposed changes were submitted to the NRC for approval prior to implementation, as required under 10 CFR 50.54(q)(4) and 10 CFR 50, Appendix E, Section IV.B.2.

In response to NRC staff comments (Reference 2) regarding format and level of detail of the Permanently Defueled Emergency Plan (PDEP), as well as comments regarding applicability of certain EALs (in the Permanently Defueled EAL Basis Document) after all spent fuel is removed from the spent fuel pool to the independent spent fuel storage installation (ISFSI), DEK is revising the originally proposed amendment. The revised proposal modifies the format of the emergency plan, adds detail, and removes EAL exceptions for spent fuel being removed to the ISFSI.

The discussion of change and technical analysis for this supplement is provided below. Enclosures 1 and 2 to this letter provide the proposed emergency plan and EAL basis document, respectively, incorporating the revisions affected by this supplement. The EAL scheme that was provided in Reference 1 remains unchanged and is applicable to this supplement. The analyses provided in Reference 1 remain applicable and bounding to this proposed change. The conclusions of the no significant hazards consideration and the environmental considerations contained in Reference 1 are not affected by, and also remain applicable to, this supplement.

2.0 PROPOSED CHANGE

This supplement to the proposed amendment would modify the KPS license with additional changes to the emergency plan and the associated emergency action level (EAL) basis document as discussed in the response to the staff's comments in Attachment 1. These additional changes consist of revising the format of the PDEP to better align it with the guidance contained in NUREG-0654, as well as enhancing the level of detail of the PDEP. Additionally, the Permanently Defueled Emergency Action Level Basis Document was revised to remove statements that were contained in several

sections of that document, which alluded to non-applicability of certain EALs in the EAL scheme after all spent fuel is removed from the spent fuel pool to the ISFSI.

The revised PDEP and EAL Basis Document are enclosed with this supplement and replace the originally submitted counterparts in their entirety. The EAL scheme that was provided in the original submittal (as Enclosure 2 to Reference 1) remains unchanged.

3.0 TECHNICAL ANALYSIS

The technical analyses provided in the originally submitted LAR 257 remain applicable to, and unaltered by, this supplement.

Enclosure 1 to this submittal provides a revised version of the originally proposed Kewaunee Power Station (KPS) Permanently Defueled Emergency Plan (PDEP) for NRC review and approval. The revised PDEP addresses the applicable regulations stipulated in 10 CFR 50.47, "Emergency Plans," and 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," and is consistent with the applicable guidelines established in 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." The format and level of detail changes made to the PDEP in this supplement are bounded by the technical analyses provided in the originally submitted LAR 257.

Enclosure 2 to this submittal includes the revised site specific technical basis document for each recognition category in the proposed EAL scheme. This technical basis document, along with the EAL comparison matrix, provides the appropriate information from the basis information contained in NEI 99-01, Revision 6 (Reference 3). The changes made to the EAL technical basis document in this supplement are either more restrictive from that originally proposed, clarifications, or editorial. As such, they are bounded by the technical analyses provided in the originally submitted LAR 257.

The KPS Permanently Defueled Emergency Action Level (PDEAL) scheme previously provided for NRC review and approval as Enclosure 2 to Reference 1, including its accompanying comparison matrix (between each generic EAL contained in NEI 99-01, Revision 6 (Reference 3) and the proposed KPS specific PDEAL), is unaltered by this supplement. As stated in the original submittal, the proposed EALs are only applicable to the permanently defueled station condition, with all reactor fuel permanently removed from reactor vessel.

4.0 SUMMARY

The proposed amendment (as modified by this supplement) would revise both the emergency plan and the emergency action level (EAL) scheme (including its basis document) to reflect the permanently defueled condition of the station. The revised

emergency plan and EAL scheme (including its basis document) are being submitted to the NRC for approval prior to implementation, as required under Section IV.B.2 of Appendix E to 10 CFR Part 50 and 10 CFR 50.54(q)(4).

The proposed emergency plan does not meet all standards of 10 CFR 50.47(b) and requirements of 10 CFR 50, Appendix E. However, DEK previously submitted requests for exemptions from portions of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50, Appendix E, Section IV, by letter dated July 31, 2013 (Reference 4) that the proposed emergency plan would not meet. The proposed emergency plan (as modified by this supplement) continues to be predicated on the approval of these exemption requests. Upon approval of the requested exemptions, the emergency plan, as revised, will continue to meet the remaining applicable requirements in 10 CFR 50, Appendix E and the planning standards of § 50.47(b).

5.0 REGULATORY ANALYSIS

5.1 No Significant Hazards Consideration

The conclusions of the no significant hazards consideration contained in Reference 1 are not affected by, and remain applicable to, this supplement.

5.2 Applicable Regulatory Requirements/Criteria

The applicable regulatory requirements/criteria contained in Reference 1 are not affected by, and remain applicable to, this supplement.

6.0 ENVIRONMENTAL CONSIDERATION

The conclusions of the environmental considerations contained in Reference 1 are not affected by, and remain applicable to, this supplement.

7.0 REFERENCES

1. Letter from Mark D. Sartain (DEK) to NRC Document Control Desk, "License Amendment Request 257, Permanently Defueled Emergency Plan and Emergency Action Level Scheme," dated January 16, 2014.
2. Email from William C. Huffman (NRC) to Jack Gadzala, Craig Sly, et al (DEK), "Kewaunee Amendment Request for Emergency Plan Changes MF3411 - Draft RAs," dated April 27, 2014.

3. Nuclear Energy Institute (NEI) 99-01, Revision 6, "Methodology for Development of Emergency Action Levels for Non Passive Reactors," November 2012. (ADAMS Accession No. ML12326A805)
4. Letter from A. J. Jordan (DEK) to NRC Document Control Desk, "Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E," dated July 31, 2013.
5. NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," February 2001.
6. U.S. Environmental Protection Agency, "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment, dated March 2013 (PAG Manual).

ENCLOSURE 1

**SUPPLEMENT 1
LICENSE AMENDMENT REQUEST 257
PERMANENTLY DEFUELED EMERGENCY PLAN
AND EMERGENCY ACTION LEVEL SCHEME**

PERMANENTLY DEFUELED EMERGENCY PLAN

**KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.**



<u>Title:</u>	Permanently Defueled Emergency Plan (PDEP)	
<u>Revision Number</u> 0 DRAFT G		<u>Effective Date</u> TBD
<u>Revision Summary:</u> Permanently Defueled Emergency Plan (PDEP) describes the station's plan for responding to emergencies that may arise at Kewaunee Power Station while in a permanently shutdown and defueled configuration.		

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1.0 INTRODUCTION

The Permanently Defueled Emergency Plan (PDEP) describes the station's plan for responding to emergencies that may arise at Kewaunee Power Station (KPS) while in a permanently shutdown and defueled configuration. Irradiated fuel is stored in the Independent Spent Fuel Storage Installation (ISFSI) and in the Spent Fuel Pool. In this condition, no reactor operations can take place and the station is prohibited from moving the fuel from the Spent Fuel Pool to the reactor vessel. This PDEP adequately addresses the risks associated with KPS's current conditions.

The analyses of the potential radiological impacts of postulated accidents in a permanently defueled condition indicates 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 "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment dated March 2013 (PAG Manual). Exposure levels, which warrant pre-planned response measures, are limited to onsite areas.

1.1 PURPOSE

The purpose of the PDEP is to assure an adequate level of preparedness to cope with the spectrum of emergencies that could be postulated to occur, including means to minimize radiation exposure to plant personnel. This plan integrates the necessary elements to provide effective emergency response considering cooperation and coordination of organizations expected to respond to potential emergencies.

1.2 SCOPE

The PDEP has been developed to respond to potential radiological emergencies at KPS considering the permanently shutdown and defueled status of the plant. Because there are no postulated accidents that would result in offsite dose consequences that are large enough to require offsite emergency planning, the overall scope of this plan delineates the actions necessary to safeguard onsite personnel and minimize damage to property.

The concepts presented in this plan address the applicable regulations stipulated in 10 CFR 50.47, "Emergency Plans," and 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities." The plan is consistent with the applicable guidelines established in 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."

Exemption from selected portions of 10 CFR 50.47 and 10 CFR 50 Appendix E for Kewaunee Power Station were granted by the Nuclear Regulatory Commission (NRC) per XXX. The PDEP revision 0 was approved for use by the NRC per Safety Evaluation Report (SER) XXX.

2.0 DISCUSSION

2.1 OVERVIEW OF PERMANENTLY DEFUELED EMERGENCY PLAN (PDEP)

In the event of an emergency at the plant, actions are required to identify and assess the nature of the emergency and to bring it under control in a manner that protects the health and safety of plant personnel.

This plan is activated by the Shift Manager/Emergency Director (ED) upon identification of an emergency situation based upon the Emergency Action Level criteria. The emergency measures described in the subsequent sections and implementing procedures are implemented in accordance with the classification and nature of the emergency at the direction of the ED.

This Plan describes the organization and responsibilities for implementing emergency measures. It describes interfaces with Federal, State of Wisconsin, and Kewaunee County organizations which may be notified in the event of an emergency, and may provide assistance. Fire, ambulance, and law enforcement services are provided by local public entities. Medical services are provided by Aurora Medical Center in Two Rivers, Wisconsin.

Because there are no postulated accidents that would result in offsite dose consequences that are large enough to require offsite emergency planning, emergencies are divided into two classifications: 1) Notification of Unusual Event (Unusual Event) and 2) Alert.

KPS is responsible for planning and implementing emergency measures within the Site Boundary. This plan is provided to meet this responsibility. To carry out specific emergency measures discussed in this Plan, detailed implementing procedures are established and maintained.

In addition to the description of activities and steps that can be implemented during a potential emergency, this Plan also provides a general description of the steps taken to recover from an emergency situation. It also describes the training, drills/exercises, planning, and coordination appropriate to maintain an adequate level of emergency preparedness.

2.2 FACILITY DESCRIPTION

The Kewaunee Power Station has ceased power operations and is permanently defueled. On May 14, 2013, the station certified permanent removal of fuel from the reactor vessel in accordance with 10 CFR 50.82(a)(1)(i) and (ii). The 10 CFR 50 license for KPS no longer authorizes operation of the reactor, and emplacement or retention of fuel into the reactor vessel, as specified in 10 CFR 50.82(a)(2).

The plant consists of a single unit Westinghouse Electric Corporation Pressurized Water Reactor. The reactor design core power was 1,772 megawatts thermal and gross plant electrical output was approximately 600 megawatts electric. An Independent Spent Fuel Storage Installation (ISFSI) is located on the plant site.

The plant is located in the town of Carlton, Kewaunee County, along the west shore of Lake Michigan in east central Wisconsin. The topography of the region is gently rolling to flat, with elevations varying from 10 to 100 feet above the level of Lake Michigan. The land surrounding the site slopes gradually east towards Lake Michigan from the higher elevations in the west.

At the northern and southern perimeters of the site, bluffs form the boundary between the plant site and Lake Michigan.

3.0 DEFINITIONS and ACRONYMS

This section provides definitions and acronyms that are used in this document. Terms capitalized in the text of the definitions indicate that they are defined elsewhere in this section.

Alert - 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.

Annual - Frequency of occurrence is met if performed within 1.25 times a 12 month interval as measured from the previous performance. This definition does not apply to the term "annual" when it relates to the conduct of the Emergency Preparedness Exercise and off-year Drill. The Exercise and off-year Drill are performed within the calendar year.

Accountability – Discretionary protective action taken for all persons onsite (within PROTECTED AREA) that involves the gathering of personnel into pre-designated areas and subsequent verification that the location of all personnel is known.

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

Control Room - The Control Room contains the indications, controls, and communication equipment necessary for both normal and emergency conditions. It is operated under the direction of the Shift Manager/Emergency Director and serves as the primary location for Classification of the incident, Notification of incident to offsite agencies, ASSESSMENT ACTIONS, and CORRECTIVE ACTION direction.

Corrective Action - Those emergency measures taken to mitigate or terminate an emergency situation at or near the source of the problem in order to prevent an uncontrolled release of radioactive material or to reduce the magnitude of a release (e.g., equipment shutdown, fire fighting, equipment repair, and damage control).

Design Basis Accident (DBA) - A hypothetical accident assuming a fission product release based upon a major accident at the plant. The hazards that could potentially occur from this postulated accident would not exceed those resulting from any credible accident described in the Updated Safety Analysis Report.

Emergency Action Levels (EALs) - A pre-determined, site-specific, observable threshold for a plant INITIATING CONDITION (IC) that places the plant in a given emergency class.

Emergency Plan Implementing Procedures - Specific procedures describing actions needed to implement the PDEP.

Emergency Plan Maintenance Procedures - Specific procedures describing the methods established to maintain and monitor the PDEP.

Emergency Response Organization (ERO) - Individuals who have been assigned an emergency response position within the PDEP.

Hostile Action - An act toward the plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and intimidate to achieve an end. This includes, but is not necessarily limited to, attack by air, land or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Acts of civil disobedience or felonious acts that are not part of a concerted attack on the plant (e.g., violent acts between individuals in the owner controlled area) do not meet this definition.

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.

Initiating Condition (IC) – An event or condition that aligns with the definition of one of the two emergency classification levels by virtue of the potential or actual effects or consequences.

Monthly – Frequency of occurrence is met if performed within 1.25 times a 31 day interval as measured from the previous performance.

Personnel Monitoring Equipment - Radiation exposure measuring devices designed to be worn or carried by an individual for the purpose of measuring the radiation dose received (e.g., direct reading dosimeters, and TLDs).

Projected Dose - An estimate of the radiation dose, which affected individuals could potentially receive if PROTECTIVE ACTIONS are not taken.

Protected Area - That area within the perimeter of the Kewaunee Power Station security fence.

Protective Actions - Those measures taken in anticipation of or after an inadvertent release of radioactive material for the purpose of preventing or minimizing radiological exposures to onsite personnel.

Quarterly – Frequency of occurrence is met if performed within 1.25 times a 92 day interval as measured from the previous performance.

Radioactive Release - Any radioactive material beyond pre-emergency levels and not attributable to normal plant operations, either detected or suspected of migrating beyond the protected area, while in a declared emergency, shall be communicated to the State and county governments as a radioactive release.

Radiological Control Area (RCA) - An area in which radioactive material is present and the potential exists for the spread of radioactive contamination. The area will be posted for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials.

Site Boundary – The perimeter of the land owned by Dominion Energy Kewaunee Inc. surrounding the plant.

Site Relocation Facility (SRF) - A facility located approximately 3 miles northwest of the Plant. When needed, this facility may be used as a near site relocation and staging area for personnel entering or exiting the site.

Unusual Event (UE) - Events are in process 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.

4.0 REFERENCES

- 10 CFR 50.47, "Emergency Plans"
- 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities"
- 10 CFR 72.32, "Emergency Plans"
- NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (November 1980)
- Updated Safety Analysis Report
- Technical Specifications
- Emergency Preparedness Procedures
- Offsite Dose Calculation Manual (ODCM)
- NEI 99-01, Rev. 6, "Development of Emergency Action Levels for Non-Passive Reactors"
- EPA's "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment dated March 2013
- NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants", Revision 1 dated March 2007
- XXX, Exemption from Selected Portions of 10CFR50.47 and Appendix E, dated xxx
- SER XXX, NRC Approval of PDEP, Revision 0, dated xxx

5.0 ASSIGNMENT OF RESPONSIBILITY

Primary responsibilities for emergency response by Kewaunee Power Station and by State and local organizations 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.

5.1 Kewaunee Power Station Emergency Response and Responsibilities

The Shift Manager is at the station 24 hours a day and is the senior management position at the station during off-hours. This position is responsible for monitoring conditions and approving all onsite activities.

When an abnormal situation becomes apparent, the Shift Manager shall assume the position of Emergency Director (ED) once the emergency classification has been made.

The following functions are within the Emergency Director's realm of responsibilities:

- Control of operation of station activities
- Mitigation of the emergency condition
- Protection of station personnel
- Emergency event classification
- Emergency notification to Federal, State and local government agencies
- Coordination of emergency support for fire fighting, security and rescue / first aid

The on-shift staff positions are available 24 hours per day. The Emergency Response Organization (ERO) will be activated and augment the on-shift staff during an ALERT classification or at the direction of the Emergency Director. The on-shift staff can perform all required response actions until the ERO arrives.

5.2 Offsite Response Organizations (ORO)

Offsite response organization (Fire, Ambulance and local law enforcement agency (LLEA)) response is at the request and direction of the Emergency Director. The Emergency Director coordinates the offsite response organizations' response, plant access and radiological controls with the onsite activities.

State and local government agency response will be in accordance with each agency's plans and procedures, and commensurate with the hazard posed by the emergency. Letters of Agreement are in place for those local agencies that will respond to the site, and for the hospital that will treat a contaminated injured individual from the site.

City of Kewaunee Fire Department

Arrangements have been made with the City of Kewaunee Fire Department to provide assistance to the Plant Fire Brigade. The City of Kewaunee Fire Department is a volunteer department headquartered about 10 miles north of the plant.

City of Kewaunee Ambulance

Arrangements have been made with the City of Kewaunee for ambulance services. The agreement includes a commitment for medical transportation of all radiation injuries and injuries complicated with radioactive contamination.

Aurora Medical Center

Arrangements have been made for medical services with the Aurora Medical Center, located approximately 14 miles south of the Kewaunee Power Station. The agreement includes a commitment by the hospital to accept and treat plant personnel with routine industrial injuries as well as injuries complicated by radioactive contamination or radiation exposure. The Aurora Medical Center maintains the capability and facilities to provide decontamination, first aid, and emergency stabilization medical treatment to injured personnel. These services and facilities are available 24 hours a day.

Kewaunee County Sheriff's Department

An agreement is maintained with the Kewaunee County Sheriff's Department to provide emergency assistance per the Security Plan.

6.0 ONSITE EMERGENCY ORGANIZATION

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

This section of the plan describes the overall emergency organization that would be used during emergency situations at the plant.

6.1 ON-SHIFT POSITIONS

KPS has personnel on-shift at all times that provide the initial response to an event. Members of the on-shift organization are trained on their responsibilities and duties in the event of an emergency and are capable of performing all necessary response actions until the augmenting ERO arrives 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 shift personnel is unchanged when an event occurs.

SHIFT MANAGER/EMERGENCY DIRECTOR

The Shift Manager is at the station 24 hours a day and is the senior management position at the station during off-hours. This position is responsible for monitoring conditions and approving all onsite activities.

When an abnormal situation becomes apparent, the Shift Manager shall assume the position of Emergency Director (ED) once the emergency classification has been made.

The Emergency Director assumes overall Command and Control of a classified event. The Emergency Director cannot delegate the following responsibilities:

- Classification of event
- Authorization of radiation exposures in excess of 10 CFR 20 limits

Other responsibilities assumed by the Emergency Director include:

- Notification of the emergency classification to the NRC, State of Wisconsin, and Kewaunee County
- Management of available station resources

- Initiation of mitigative actions
- Initiation of corrective actions
- Initiation of onsite protective actions
- Decision to call for offsite police, fire or ambulance assistance
- Augmentation of the emergency staff, as deemed necessary
- Coordination of Security activities
- Termination of the emergency condition when appropriate
- Performance of initial Dose Assessment
- Maintaining a record of event activities

PLANT OPERATOR

Plant Operator performs system and component manipulations. The organizational relationship to the Shift Manager/Emergency Director is the same during normal situations and during situations where the PDEP has been implemented.

SECURITY

Station Security is administered by the Security Plan. The Security force will report to the Emergency Director when implementing the PDEP. During non-security events, Security will activate the station ERO callout system and perform accountability at the direction of the Emergency Director.

6.2 ERO AUGMENTED POSITIONS

The Emergency Response Organization (ERO) augments the on-shift station organization to respond to declared emergencies when activated. Personnel are trained and assigned to the ERO based on either their normal job qualifications or by being specifically trained to fill a position.

The ERO is activated when an Alert is declared or at the discretion of the Emergency Director for an Unusual Event. The on-shift staff is supplemented by station personnel who report to the Emergency Director after being notified. The Emergency Director is responsible for ensuring that the ERO callout system is initiated to augment the on-shift staff.

The minimum augmented staff is a Radiation Protection Director and a Technical Director. The Shift Manager assumes the responsibilities of the Emergency Director. The Radiation Protection Director and Technical Director will augment the on-shift station organization within 4 hours of an Alert classification.

Augmenting the ERO is accomplished by the assignment of specific personnel to assist the ERO as needed.

TECHNICAL DIRECTOR

The Technical Director reports to the Emergency Director. The responsibilities of the Technical Director when implementing the PDEP include:

- Evaluation of technical data pertinent to plant conditions
- Augmentation of the emergency staff as deemed necessary
- Recommend mitigative and corrective actions
- Direction of search and rescue
- Coordination of maintenance and equipment restoration

- Establishing and maintaining communications as desired by the Emergency Director
- Maintaining a record of event activities

RADIATION PROTECTION DIRECTOR

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

- Monitoring of personnel accumulated dose
- Advising the Emergency Director concerning Radiological EALs
- Augmentation of the emergency staff as deemed necessary
- Directing of radiological monitoring, analysis, and controls
- Dose Assessment
- Establishing and maintaining communications as desired by the Emergency Director
- Maintaining a record of event activities

6.3 AUGMENTATION OF EMERGENCY RESPONSE ORGANIZATION

In the event of an emergency at KPS that requires personnel and other support resources beyond those available within the KPS ERO, augmentation is available from other KPS staff and Dominion facilities and can be requested from various contractors. Additional support to KPS is available from offsite organizations, as previously discussed in Section 5.0 of this Plan.

6.4 FUNCTIONAL RESPONSIBILITIES

The table below provides a graphical representation of the functional responsibilities of on-shift positions and the augmented positions that fulfill emergency staffing capabilities.

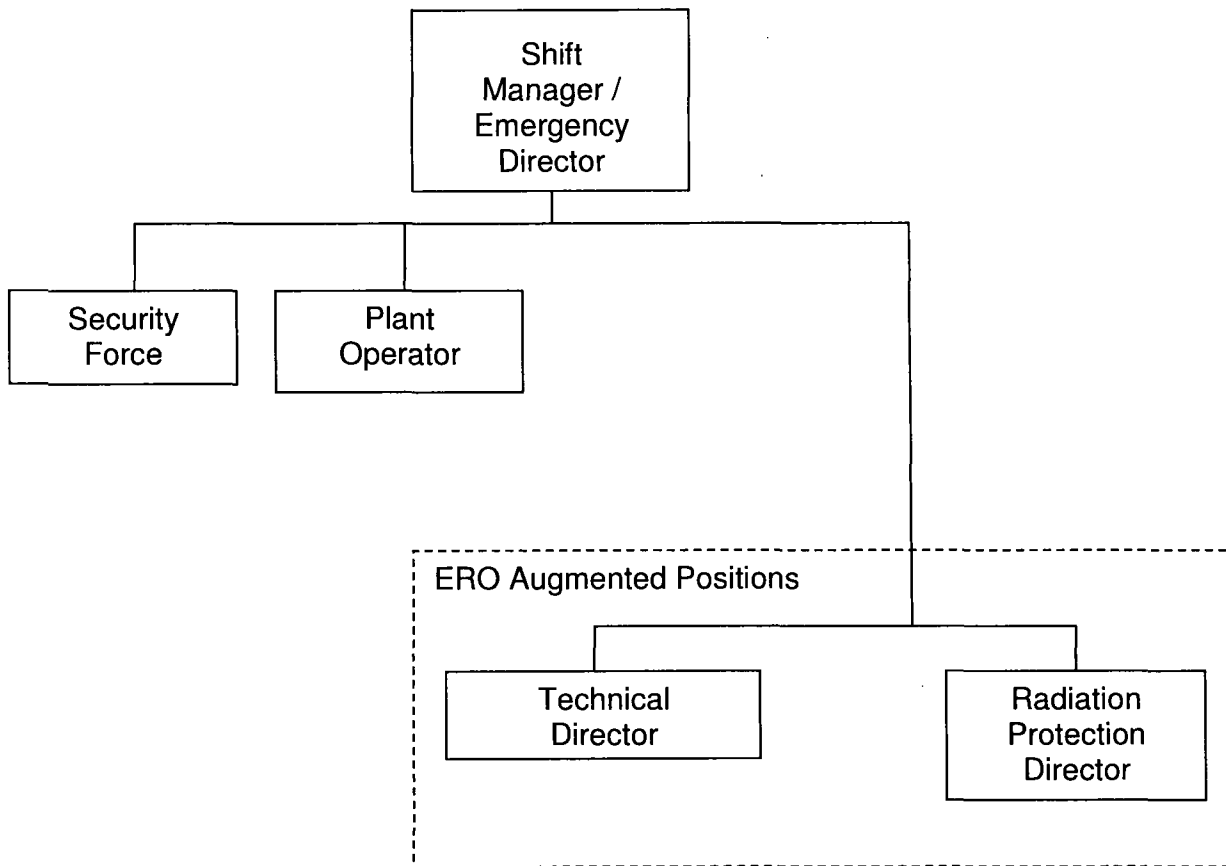
FUNCTIONAL AREA	LOCATION	ON-SHIFT STAFF	AUGMENTED STAFF 4 HOUR RESPONSE
Plant Operations and Assessment of Operational Aspects	Control Room	Emergency Director	---
Emergency Direction and Control	Control Room	Emergency Director	---
Notifications / Communications	Control Room	Emergency Director	Technical Director
Radiological Assessment	Control Room	Emergency Director	Radiation Protection Director
Plant System Engineering, Repair and Corrective Actions	Control Room	Emergency Director Plant Operator	Technical Director
Protective Actions	Control Room	Emergency Director	Radiation Protection Director
Fire Fighting	On Scene	Per Fire Protection Program Plan*	Offsite Response Organization ***
Rescue and First Aid Treatment	On Scene	2**	Offsite Response Organization ***
Site Access Control and Accountability	Security Station	Per Security Plan	---

* Fire Brigade composed of Plant Operator, Security personnel or other qualified personnel

** Provided by On-shift personnel who may be assigned other Functions

*** Response time is based upon Fire Protection Program Plan (Fire Fighting) or response capability of Offsite Organization (ambulance).

FIGURE 6-1
On-shift and Emergency Response Organization Positions



7.0 EMERGENCY RESPONSE SUPPORT AND RESOURCES

Arrangements for requesting and effectively using assistance resources have been made and other organizations capable of augmenting the planned response have been identified. Letters of Agreement are in place for those local agencies (Fire, Ambulance and Local Law Enforcement) that will respond to the site, and for the hospital that will treat a contaminated injured individual from the site.

Fire, Ambulance and LLEA response is at the request and direction of the Emergency Director as previously discussed in Section 5.2 of this Plan.

8.0 EMERGENCY CLASSIFICATION SYSTEM

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use. This section describes KPS emergency classifications, initiating events, emergency action levels, and postulated emergency situations.

EMERGENCY CLASSIFICATION SYSTEM

The emergency classification system covers an entire spectrum of possible radiological and non-radiological emergencies at the Kewaunee Power Station. The emergency classification system categorizes accidents and/or emergency situations into one of two emergency classification levels depending on emergency conditions at the time of the incident. The emergency classification levels applicable at Kewaunee Power Station, in order of increasing severity, are Unusual Event and Alert. Each of these emergency classes requires notification to the station's ERO, State and county agencies, as well as the NRC.

The emergency classification system is based on NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors".

Once indications are available to plant operators that an Emergency Action Level (EAL) has been met, the event is assessed and classified, and the corresponding emergency classification level is declared. Notification to the State and county offsite authorities and the NRC is required within 60 minutes of the event being declared.

Incidents may be classified in a lower emergency classification level at first and then escalated to the higher level if the situation deteriorates.

The following subsections outline the plant actions at each classification level. Refer to Permanently Defueled Emergency Action Level Technical Bases for actual parameter values, annunciators, and equipment status used by emergency response personnel to classify emergencies.

Actions associated with an Unusual Event:

- Bring the Emergency Response Organization (ERO) to a state of readiness.
- Notify Federal, State, and county government authorities.
- Initiate the systematic handling of information and decision making.
- Augment shift personnel, if needed.

The Unusual Event status will be maintained until an escalation in emergency class occurs or the event is terminated. Offsite authorities will be informed of the change in the emergency status and the necessary documentation will be completed as specified in the Emergency Plan Implementing Procedures.

Actions associated with an Alert:

- Activate the Emergency Response Organization (ERO).
- Notify Federal, State, and county government authorities.
- Initiate the systematic handling of information and decision making.
- Initiate immediate and follow-up notification(s) including current plant status information to offsite authorities.

The Alert status shall be maintained until termination of the event or de-escalation in emergency class occurs. The plant may enter recovery operation without de-escalating from a declared Alert. Offsite authorities will be informed of the change in the emergency status and the necessary documentation shall be completed as specified in the Emergency Plan Implementing Procedures.

SPECTRUM OF POSTULATED ACCIDENTS

The Updated Safety Analysis Report Chapter 14 describes the postulated accidents applicable to Kewaunee Power Station. Methods for detecting and evaluating for emergency classification of these events include the use of installed systems, instrumentation, alarms, and approved procedures.

9.0 NOTIFICATION METHODS AND PROCEDURES

Procedures have been established for notification, by the licensee, of State and local organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations has been established.

ERO Activation

The ERO is activated by a plant announcement and by the ERO callout system directed by the Emergency Director.

Nuclear Accident Reporting System (NARS)

NARS is a communication system used to notify the State and county agencies of a declared emergency. The NARS form contains information that identifies the station, classification, meteorological data and Emergency Action Level (EAL). Notification to the State and county agencies will be made within 60 minutes of event classification. Notification using NARS is the responsibility of the Emergency Director.

NRC Event Notification System (ENS)

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/county notifications and within 60 minutes of event classification. In the event of failure of the ENS, commercial phone lines will be used to notify the NRC. Notification to the NRC is the responsibility of the Emergency Director.

Support Organizations

Medical, local law enforcement agency (LLEA), and fire fighting support services are primarily notified for assistance via the public 911 process. Request for support services are the responsibility of the Emergency Director.

10.0 EMERGENCY COMMUNICATIONS

Provisions exist for prompt communications among principal response organizations to emergency personnel. The following communication methods provide 24-hour capability intraplant and plant-to-offsite communications:

- PBX telephone system
- Commercial telephone system
- Plant public address system
- Portable radios
- NARS
- ERO callout system
- NRC FTS Network (NRC Emergency Notification System (ENS))

11.0 PUBLIC INFORMATION

Communications Department personnel will be notified of a declared emergency via the ERO callout system. Communications Department will monitor media activity and coordinate with senior management disseminating public information per communication protocols. As necessary, news conference(s) can be conducted on site or other coordinated location. Communications Department personnel, or senior plant or corporate management will represent the station as the plant spokesperson.

12.0 EMERGENCY FACILITY AND EQUIPMENT

Adequate emergency facilities and equipment to support the emergency response are provided and maintained. This section of the plan identifies and describes the emergency response facilities, the communication systems, the assessment facilities and equipment, the first aid and medical facilities, and protective equipment and supplies that can be utilized during an emergency.

12.1 EMERGENCY RESPONSE FACILITIES

Emergency Response Facilities (ERFs) are staffed in accordance with Section 6.0.

Control Room

The Control Room is where plant systems and equipment parameters are monitored. The Control Room is the onsite center for emergency Command and Control. Control Room personnel assess plant conditions; evaluate the magnitude and potential consequences of abnormal conditions; initiate preventative, mitigating and corrective actions; and perform notifications. When activated, the ERO reports to the Control Room.

Site Relocation Facility

The Site Relocation Facility (SRF) is located in the Carlton Township Hall, 1.6 miles North of KPS on Highway 42 and approximately 2 miles West on County Road G. The SRF functions as a staging area for augmentation of emergency response staff if the site is under threat of or experiencing Hostile Action. The SRF has telephone and Fax communication capability.

12.2 EMERGENCY EQUIPMENT

This section describes the monitoring instruments and laboratory facilities used to initiate emergency measures and provide continuing assessment of conditions throughout the course of an emergency.

Meteorological Equipment

The meteorological equipment at the site consists of wind-speed and direction transmitters, signal translators, and recorders. In addition, the temperature measurement consists of recorders and resistance temperature detectors (RTDs). RTDs on the primary tower are used to monitor ambient temperature and calculate differential temperature. Recorded ambient temperature comes from the ten (10) meter RTD. A RTD on the backup tower is available for monitoring ambient temperature.

Radiation Monitoring System

The Radiation Monitoring System provides continuous radiological surveillance. The system performs the following basic functions:

- Warns personnel of potential radiological health hazards.
- Gives early warning of certain plant malfunctions which might lead to a radiological health hazard or plant damage.
- Prevents or minimizes the effects of inadvertent releases of radioactivity to the environment by consequence-limiting automatic responses.
- Provides routine monitoring of controlled offsite plant releases.

The Radiation Monitoring System is divided into two sub-systems. The Process Radiation Monitoring System monitors various liquid and air streams for indication of radiation levels within those streams. The Area Radiation Monitoring System monitors radiation levels in various areas of the plant.

Portable Radiation and Contamination Monitoring Instruments

Portable radiation and contamination monitoring instruments and sampling equipment normally utilized and maintained by the Radiation Protection group are available for emergency use.

Laboratory Facilities

Facilities for analyzing radioactive samples are equipped with instruments that can detect alpha and beta radioactivity and a gamma spectroscopy system with automatic spectrum analysis.

Fire Detection and Suppression Equipment

The fire protection system has been designed to detect and extinguish potential fires. The system is designed in accordance with the standards of the National Fire Protection Association (NFPA) and recommendations of the Nuclear Electric Insurance Limited (NEIL).

Fire detectors have been installed throughout the plant with alarms and indicators located in the Control Room.

Protective Equipment and Supplies

Protective clothing and respiratory equipment are maintained for use by emergency in-plant teams.

13.0 ACCIDENT ASSESSMENT

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

The assessment activities required to evaluate a particular emergency depend on the specific nature and classification of the emergency. The EALs identify the system parameter and effluent parameter values which can be used to determine the emergency condition. Classification of events is performed by the Emergency Director in accordance with the EAL scheme.

Onsite capabilities and resources are available to provide initial and continuing information for accident assessment throughout the course of an event.

Dose Assessment

Implementing procedures utilize radiological instrumentation readings and meteorological data to provide a rapid method of determining the magnitude of a radioactive release during an accident condition. Dose Assessment is capable of being performed on a 24-hour per day basis. Initial dose assessment is the responsibility of the Emergency Director. Subsequent dose assessments are the responsibility of the Radiation Protection Director.

14.0 PROTECTIVE RESPONSE

Protective actions for onsite personnel are provided for their health and safety. Implementation guidelines for onsite protective actions are provided in Emergency Plan Implementing Procedures. Station procedures provide for a range of protective actions to protect onsite personnel during hostile actions.

Accountability

Accountability should be considered and used as a protective action whenever a site wide risk to health or safety exists and prudence dictates. If personnel accountability is required, at the direction of the Emergency Director all individuals at the site (including employees without emergency assignments, visitors and contractor personnel) shall be notified of an emergency over the public address system and by the sounding of the plant alarm. Accountability of all personnel onsite should be accomplished within 60 minutes after the announcement and maintained thereafter. If personnel are unaccounted for, teams shall be dispatched to locate the personnel.

Access Control

Normal access control shall be maintained unless otherwise directed. The Emergency Director is responsible for control access to the station when the ERO is activated.

15.0 RADIOLOGICAL EXPOSURE

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Radiological Control Areas (RCAs)

As necessary, the Radiation Protection Director (RPD) will ensure Radiological Control Areas (RCAs) are established in response to the event. The RPD shall direct control of access to all RCAs unless immediate access is authorized by the Emergency Director to facilitate emergency repairs.

Exposure Control

Individuals authorized to enter RCAs are required to have in their possession dosimetry capable of measuring a dose received from external sources of ionizing radiation.

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, corrective actions or assessment actions within applicable limits specified in 10 CFR 20. The Emergency Director is responsible for authorizing plant and emergency response personnel to receive doses in excess of 10 CFR 20 limits, if necessary. This authorization is coordinated with the Radiation Protection Director. Table 15-1 contains the guidelines for emergency exposure criteria, which is consistent with the EPA's, "Protective Action Guide and Planning Guidance for Radiological Incidents," Table 2-2, "Response Worker Guidelines."

Personnel Contamination Control

All personnel are monitored for radioactive contamination prior to leaving the site. Portable radiation survey meters are available to frisk personnel for potential contamination. Documentation of surveys, contamination, and decontamination activities shall be maintained in accordance with Radiation Protection procedures.

**TABLE 15-1
Response Worker Guidelines**

Guideline	Activity	Condition
5 rem	All occupational exposures	All reasonably achievable actions have been taken to minimize dose.
10 rem ^(a)	Protecting valuable property necessary for public welfare	Exceeding 5 rem unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose
25 rem ^(b)	Lifesaving or protection of large populations	Exceeding 5 rem unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose

- (a) For potential doses >5 rem, medical monitoring programs should be considered.
- (b) In the case of a very large incident, may need to consider raising the property and lifesaving response worker guidelines to prevent further loss of life and massive spread of destruction.

16.0 MEDICAL AND HEALTH SUPPORT

Arrangements are made for medical services for contaminated injured individuals. The Kewaunee Power Station maintains on-shift personnel and equipment to provide first aid for personnel working at the site. Medical supplies for emergency first aid treatment are provided on the site at various plant locations. Stretchers are available for transporting non-mobile, injured personnel.

If immediate professional medical help is required, local ambulance services are available to assist in the transport of seriously injured or radioactively contaminated injured personnel. Arrangements have been made with the Aurora Medical Center for the medical treatment of plant personnel. Hospital personnel have been instructed and trained in the treatment and care of patients with contamination and radiation overexposure.

When personnel are transported to the Aurora Medical Center while in a contaminated condition, personnel trained in radiological monitoring will be dispatched to monitor and maintain radiological controls.

17.0 RECOVERY AND REENTRY PLANNING AND POST ACCIDENT PLANT RECOVERY ORGANIZATION

The plant recovery organization will be based on the normal Kewaunee Power Station (KPS) organization and would function with the KPS executive management position being responsible for directing all site activities.

PLANT RECOVERY OPERATIONS

Kewaunee Power Station is responsible for plant recovery measures and restoring the plant to a stable condition. Notification of onsite personnel and offsite response organizations that the plant recovery is to commence will be performed in accordance with Emergency Plan Implementing Procedures.

The extent and nature of the corrective and protective measures and the extent of plant recovery will depend on the emergency conditions at hand and the status of plant areas and equipment. The general goals for plant recovery are:

- An orderly evaluation of the cause and effect of the emergency and implementation of solutions to prevent immediate recurrence of the incident.
- A planned approach for returning the plant to a stable condition by obtaining the appropriate manpower, materials, and equipment.
- A planned approach to coordinate with offsite authorities to identify and resolve situations that may impact the general public.
- An evaluation of the radiation exposure records for all onsite emergency response personnel involved in the incident.
- A planned approach to ensure that radiation exposures and contamination controls are consistent with the ALARA program.
- To ensure that all nuclear safety related procedures associated with the recovery operation are submitted to the Facility Safety Review Committee (FSRC) for review and approval prior to their implementation.

During a declared emergency, a point will be reached where the plant will be placed in a stable condition. With the understanding that this condition could be attained even though specific Emergency Action Levels are still exceeded, the Emergency Director will determine that there is no longer a need to keep the emergency organization in effect and to begin plant recovery. Although de-escalation to a lower emergency level may be performed, it is not necessary to de-escalate prior to initiating plant recovery.

Plant recovery activities shall be in accordance with the plant Technical Specifications and other license documents. During plant recovery, the radiation exposure limits of 10 CFR 20 shall apply.

If, during plant recovery, an emergency situation again occurs, the KPS emergency response organization would be activated in accordance with this plan and its implementing procedures. Plant recovery efforts will be suspended until the emergency condition is resolved. The Emergency Director will re-evaluate plant conditions prior to resuming plant recovery.

PLANT RECOVERY TERMINATION

The plant recovery will be terminated by the KPS executive management position after the plant has been returned to a stable condition.

18.0 EXERCISE AND DRILLS

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

Exercise and Drill

KPS conducts a biennial Exercise to test the adequacy of timing and content of implementing procedures and methods; to test emergency equipment and communication networks; and to ensure that emergency personnel are familiar with their duties. KPS will invite offsite response organizations to participate in the Exercise.

For alternating years, a Drill is conducted for the purpose of testing, developing, and maintaining the proficiency of emergency responders.

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

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

Critiques will evaluate the performance of the organization. The ability of KPS personnel to self-evaluate weaknesses and identify areas for improvement is the key to successful drill conduct.

Equipment and Proficiency Drills

Equipment and Proficiency Drills may be performed as part of an Exercise, a Drill or as an independent drill.

Communication Drills

Communications with State and county governments shall be tested annually. These communication drills will include the aspect of understanding the content of messages.

Medical Emergency Drills

A medical emergency drill involving a simulated contaminated individual and containing provisions for participation by the Aurora Medical Center shall be conducted at least annually. Both the Kewaunee Power Station and Point Beach Nuclear Plant share the facilities provided by the Aurora Medical Center. To minimize redundant training for the hospital staff, the two plants will alternate development and conduct of the drill each year.

Radiological Monitoring Drills

Radiological monitoring drills, which are conducted annually, demonstrate the ability to perform plant environment and radiological monitoring.

Health Physics Drills

Health Physics drills, which are conducted semi-annually, involve a response to, and analysis of, simulated airborne and direct radiation measurements within the plant.

Accountability Drill

An accountability drill shall be conducted annually. The drill shall include identifying the locations of all individuals onsite.

Augmentation Capability Assessment (ACA) Drills

An unannounced off-shift ACA drill shall be conducted semi-annually. These drills shall involve implementation of the notification procedure and documentation of the estimated response time for each responder. No actual travel is required. Participants provide an estimation of the time it would take to report to their designated ERO location. This drill shall serve to demonstrate the capability to augment the on-shift staff after declaration of an emergency.

19.0 RADIOLOGICAL EMERGENCY RESPONSE TRAINING

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

19.1 EMERGENCY RESPONSE PERSONNEL TRAINING

Requirements for emergency preparedness training are specified in the Emergency Preparedness Training Program. This program identifies the level and the depth to which individuals are to be trained.

Emergency Preparedness Training Program

The training program for emergency response personnel is based on the requirements of 10 CFR 50 Appendix E and position specific responsibilities as defined in the PDEP. Emergency response personnel in the following categories receive initial training and retraining each year:

Shift Managers/Emergency Directors, Technical Directors and Radiation Protection Directors shall have training conducted such that proficiency is maintained on the topics listed below. These subjects shall be covered as a minimum on an annual basis.

- Emergency Action Level Classification
- Dose Assessment
- Nuclear Accident Reporting System (NARS) Form completion and use of the NARS system
- Federal, State and Local notification procedures as appropriate
- Site specific procedures for activating the onsite ERO

KPS personnel available during declared emergencies to perform emergency response activities as an extension of their normal duties receive duty specific training annually. Additional emergency preparedness training is provided as part of plant access training.

Plant Operators and Maintenance personnel are trained to function as emergency in-plant teams.

Radiation Protection personnel are trained to assess the radiological hazards associated with equipment repair and instruct personnel as to the appropriate protective clothing requirements, respiratory protection requirements, time limits, and other protective actions specific to the conditions present.

Security Personnel are trained in accordance with Security Program training requirements.

First Aid training for personnel assigned to the on-shift responsibility shall include courses equivalent to Red Cross Multi-Media.

Personnel who are badged for unescorted access receive plant access training annually. Information pertaining to their safety and the safety of visitors under escort during a declared emergency is included in this training.

Plant access training shall include the following emergency preparedness topics:

- Basic Emergency Plan and implementing procedure information.
- The meaning of plant alarms and the emergency classification system.
- Use of plant communication systems.
- Personnel accountability and evacuation procedures.

19.2 Non-KPS Emergency Response Support Organizations

Training is offered annually to non-KPS organizations which may provide specialized services during a nuclear plant emergency (e.g., fire-fighting, medical services, transport of injured, etc.). The training shall be structured to meet the needs of that organization with respect to the nature of their support. Topics such as event notification, basic radiation protection and interface activities between the offsite organization and KPS shall be made available.

The Point Beach Nuclear Power Plant and the Kewaunee Power Station share services from common offsite organizations and agencies. As specified in an established memorandum of understanding, the two plants keep each other informed regarding the emergency preparedness training being presented, thus allowing the two facilities to alternate presentations and minimize redundant training provided to the offsite agencies.

20.0 RESPONSIBILITY FOR PLANNING EFFORT: PERIODIC REVIEW AND DISTRIBUTION OF EMERGENCY PLANS

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

20.1 EMERGENCY PREPAREDNESS RESPONSIBILITIES

KPS Executive Management Position

Responsible for emergency response planning. This responsibility includes ensuring that the overall emergency preparedness program is maintained and implemented as described in this Plan and applicable requirements and regulations.

Emergency Preparedness Staff

Responsible for the following tasks:

- Maintaining and updating this PDEP and associated procedures.
- Drill/Exercise commitments stated in the plan are met.

- Material readiness of all emergency response facilities.
- Overseeing Emergency Preparedness Training Program.
- Maintaining Emergency Preparedness interfaces with offsite agencies.
- Performing and documenting appropriate evaluations of program and of classified emergency events.

Individuals assigned the duties of maintaining the Emergency Preparedness Program maintain an adequate knowledge of regulations, planning techniques, and the latest applications of emergency equipment and supplies. Training for these individuals includes 50.54(q) Evaluation Qualification and may include the following:

- Industry or site specific training courses specific or related to emergency preparedness.
- Observation of or participation in drills and/or exercises at other stations.
- Participation in industry review and evaluation programs.
- Participation in regional or national emergency preparedness seminars, committees, workshops or forums.

Nuclear Licensing

Responsible for the following tasks:

- Maintaining current knowledge of changes in Federal regulations and other guidance that impact emergency planning activities.
- Submit PDEP and related controlled document revisions to the NRC.

Oversight

Responsible for performance of independent audit of the emergency preparedness program to meet the requirements of 10 CFR 50.54(t).

20.2 REVIEW AND UPDATING OF THE PDEP AND EMERGENCY PLAN IMPLEMENTING PROCEDURES

It is important that a state of emergency preparedness be maintained at all times at the Kewaunee Power Station. To ensure a state of readiness, the Kewaunee Power Station emergency preparedness program was designed to meet each of the following objectives:

- Designation of responsibilities for the PDEP.
- Establishment of an Emergency Preparedness Training Program.
- Planning and conducting periodic drills/exercises.
- Annual review and update of the Emergency Plan and the Emergency Plan Implementing Procedures.
- Routine calibration, maintenance, and inventory of emergency equipment and supplies.

PDEP, Emergency Action Level Technical Bases and Emergency Plan Implementing Procedures Review

The PDEP, Emergency Action Level Technical Bases, and the Emergency Plan Implementing Procedures are reviewed annually and updated, as needed. The review shall encompass the need for changes based upon the following aspects:

- Written critiques and evaluations of drills.
- Changes in the organizational structure.
- Changes in the functions and capabilities of supporting agencies.
- Changes in Federal or State regulations.

- Modifications to the plant facility, site, or operating status which would affect emergency planning.
- Recommendations or agreement changes received from other organizations.

Any needed changes shall be incorporated in the PDEP, Emergency Action Level Technical Bases, and appropriate implementing procedures. Proposed activities that may impact the PDEP must be evaluated per 10CFR50.54(q).

Emergency Action Levels (EALs) State and County Review

The EALs shall be made available for review with State and county governmental authorities annually.

Emergency Telephone Directory

Emergency telephone numbers shall be reviewed at least quarterly and updated as necessary.

Letters of Agreements

The letters of agreement with the support agencies shall be reviewed with the support agency at least every two years (biennially). Changes shall be made and the agreements renewed, as necessary.

KPS reserves the right to enter agreements or contracts which are perpetual and free from biennial renewal, or of a period other than biennial if mutually agreed upon by the co-signers of the agreement letter or contract. However, a letter designated as a perpetual agreement shall be reviewed by KPS at least biennially.

20.3 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT AND SUPPLIES

Appendix A, "Emergency Equipment, Supplies and Reference Materials," lists each of the emergency response facilities and the required equipment, supplies and reference materials that are to be maintained in each facility.

Portable radiation monitoring equipment included in these inventories is checked and calibrated in accordance with approved procedures.

APPENDIX A
Emergency Equipment, Supplies and Reference Materials

CONTROL ROOM

ITEM

Emergency Plan

Emergency Plan Implementing Procedures

Emergency Action Level Bases Document

SITE RELOCATION FACILITY

ITEM

Emergency Plan

Emergency Plan Implementing Procedures

Communication Equipment

APPENDIX B
Cross Reference Table
PDEP Section to Planning Standards/Requirements/Criteria to Procedures

PDEP Section	Planning Standard (10 CFR 50.47)**	Planning Requirement (Appendix E.IV)**	NUREG-0654, Section II Evaluation Criteria	Procedure
5.0	(b)(1)	A.1, 2, 4, 7	A	EP-KW-EIP-001, Emergency Response EP-KW-EIP-003, Response to Security Threat EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks
6.0	(b)(2)	A.1, 2, 4; C.1	B	EP-KW-EIP-001, Emergency Response
7.0	(b)(3)	A.6, 7	C	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks
8.0	(b)(4)	B.1, 2; C.1, 2	D	EP-KW-EIP-001, Emergency Response
9.0	(b)(5)	A.6, 7; C.1; D.1, 3; E	E	EP-KW-EIP-002, Emergency Notification
10.0	(b)(6)	C.1; D.1, 3; E	F	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks EP-KW-EMP-009-002, Emergency Communication System and Equipment Inventory Verification
11.0	(b)(7)	Exempt	G	EP-KW-EIP-001, Emergency Response
12.0	(b)(8)	E; G	H	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks EP-KW-EMP-009-002, Emergency Communication System and Equipment Inventory Verification
13.0	(b)(9)	A.4; B.1; C.2; E	I	EP-KW-EIP-001, Emergency Response EP-KW-EIP-005, Emergency Radiation Controls
14.0	Exempt	C.1; E	J	EIP-SEC-03, Personnel Assembly and Accountability
15.0	(b)(11)	E	K	EP-KW-EIP-005, Emergency Radiation Controls
16.0	(b)(12)	A.6, 7; E	L	EP-KW-EIP-001, Emergency Response
17.0	(b)(13)	H	M	EP-KW-EIP-001, Emergency Response
18.0	(b)(14)	E9; F	N	EP-KW-400, Drill and Exercise Program EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks
19.0	(b)(15)	F	O	TR-KW-TPG-2400, Emergency Preparedness Training Program
20.0	(b)(16)	G	P	EP-KW-3001, Cyclic and Prompted Emergency Preparedness Tasks TR-KW-TPG-2400, Emergency Preparedness Training Program

** Refer to the KPS exemptions from portions of 10CFR50.47 and Appendix E for applicability

ENCLOSURE 2

**SUPPLEMENT 1
LICENSE AMENDMENT REQUEST 257
PERMANENTLY DEFUELED EMERGENCY PLAN
AND EMERGENCY ACTION LEVEL SCHEME**

PERMANENTLY DEFUELED EMERGENCY ACTION LEVEL BASIS DOCUMENT

<u>Title:</u>	Permanently Defueled Emergency Action Level Basis Document	
<u>Revision Number</u> 0 DRAFT 4	<u>Effective Date</u> TBD	
<u>Revision Summary:</u> Permanently Defueled Emergency Action Level Basis Document describes the station's classification scheme for emergencies that may arise at Kewaunee Power Station while in a permanently shutdown and defueled configuration.		

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Appendix C, Definitions
Appendix D, Acronyms and Abbreviations

1. Purpose

This document provides the detailed set of Emergency Action Levels (EALs) applicable to the Kewaunee Power Station (KPS) and the associated Technical Bases using the EAL development methodology found in NEI 99-01 Revision 6. As a Permanently Defueled Station, KPS will use the Recognition Category "PD" (Permanently Defueled) providing a stand-alone set of ICs/EALS for a Permanently Defueled nuclear power plant to consider for use in developing a site-specific emergency classification scheme. (Permanently defueled station ICs and EALs are addressed in Appendix C of NEI 99-01, Rev. 6.)

Personnel responsible for implementation of EPIP-AD-02, "Emergency Class Determination," and the Emergency Action Level Matrix may use this document as a technical reference and an aid in EAL implementation. The primary tool for determining the emergency classification level is the Emergency Action Level Matrix. The user of the Emergency Action Level Matrix may (but is not required to) consult the Permanently Defueled EAL Technical Basis Document in order to obtain additional information concerning the EALs under classification consideration.

Proposed activities that impact the EALs/Technical Basis Document must be evaluated per 10CFR50.54(q).

2. Discussion

2.1 Permanently Defueled Station

NEI 99-01 provides guidance for an emergency classification scheme applicable to a permanently defueled station. This is a station that generated spent fuel under a 10 CFR § 50 license, has permanently ceased operations and will store the spent fuel onsite for an extended period of time. The emergency classification levels applicable to this type of station are consistent with the requirements of 10 CFR § 50 and the guidance in NUREG 0654/FEMA-REP-1.

In order to relax the emergency plan requirements applicable to an operating station, the owner of a permanently defueled station must demonstrate that no credible event can result in a significant radiological release beyond the site boundary. It is expected that this verification will confirm 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 Initiating Conditions (ICs) and Emergency Action Levels (EALs) applicable to a permanently defueled station may result in either an Unusual Event or Alert classification.

2.2 Independent Spent Fuel Storage Installation (ISFSI)

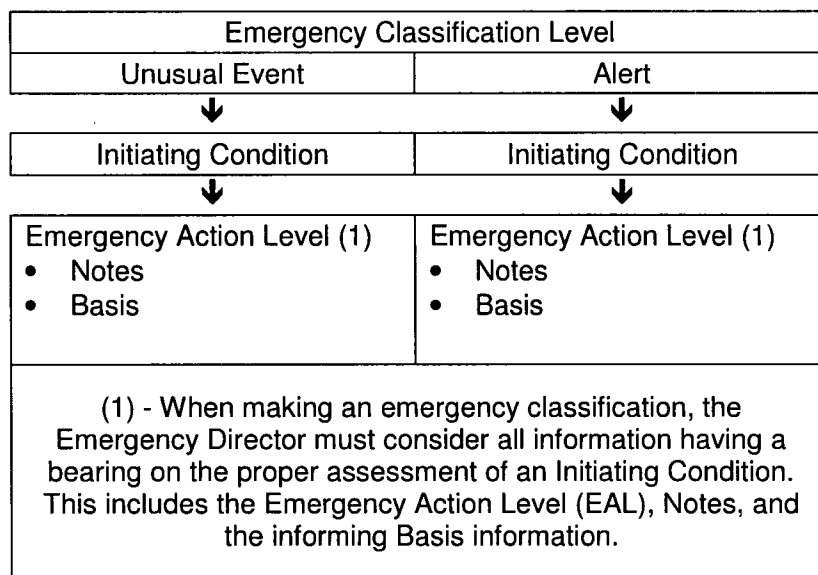
Selected guidance in NEI 99-01 is applicable to licensees electing to use their 10 CFR § 50 emergency plan to fulfill the requirements of 10 CFR § 72.32 for a stand-alone ISFSI. The emergency classification levels applicable to an ISFSI are consistent with the requirements of 10 CFR § 50 and the guidance in NUREG 0654/FEMA-REP-1. The initiating conditions germane to a 10 CFR § 72.32 emergency plan (as described in NUREG-1567) are subsumed within the classification scheme for a 10 CFR § 50.47 emergency plan.

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

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

3. Key Terminology Used

There are several key terms that appear throughout the NEI 99-01 methodology. These terms are introduced in this section to support understanding of subsequent material. As an aid to the reader, the following table is provided as an overview to illustrate the relationship of the terms to each other.



3.1 Emergency Classification Level (ECL)

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

- Unusual Event
- Alert

3.1.1 Unusual Event

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.

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

3.1.2 Alert

Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the 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 PAG exposure levels.

Purpose: The purpose of this classification is to assure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required, and provide offsite authorities current information on plant status and parameters.

3.2 Initiating Condition (IC)

An event or condition that aligns with the definition of one of the two emergency classification levels by virtue of the potential or actual effects or consequences.

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

Appendix 1 of NUREG-0654 does not contain example Emergency Action Levels (EALs) for each ECL, but rather Initiating Conditions (i.e., plant conditions that indicate that a radiological emergency, or events that could lead to a radiological emergency, has occurred). NUREG-0654 states that the Initiating Conditions form the basis for establishment by a licensee of the specific plant instrumentation readings (as applicable) which, if exceeded, would initiate the emergency classification. Thus, it is the specific instrument readings that would be the EALs.

3.3 Emergency Action Level (EAL)

A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

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

4. Guidance on Making Emergency Classification

4.1 General Considerations

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

All emergency classification assessments should be based upon valid indications, reports or conditions. A valid indication, report, or condition, is one that has been verified through

appropriate means such that there is no doubt regarding the indicator's operability, the condition's existence, or the report's accuracy. For example, validation could be accomplished through an instrument channel check, response on related or redundant indicators, or direct observation by plant 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 plant remains within the limits imposed by the operating 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 operating 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.

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 Emergency Classification Level (ECL) definitions (refer to PD-HU3 and PD-HA3). The Emergency Director will need to determine if the effects or consequences of the event or condition reasonably meet or exceed a particular ECL definition.

4.2 Classification Methodology

To make an emergency classification, the user will compare an event or condition (i.e., the relevant plant 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 Notes. If an EAL has been met or exceeded, then the IC is considered met and the associated ECL is declared in accordance with plant procedures.

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

4.3 Classification of Multiple Events and Conditions

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

- If an Unusual Event EAL and an Alert EAL are met, an Alert should be declared.

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

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

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

4.4 Classification of Imminent Conditions

Although EALs provide specific thresholds, the Emergency Director must remain alert to events or conditions that could lead to meeting or exceeding an EAL within a relatively short period of time (i.e., a change in the ECL is IMMIDENT). If, in the judgment of the Emergency Director, meeting an EAL is IMMIDENT, the emergency classification should be made as if the EAL has been met. While applicable to all emergency classification levels, this approach is particularly important at the higher emergency classification level since it provides additional time for implementation of protective measures.

4.5 Emergency Classification Level Upgrading and Downgrading

An ECL may be downgraded when the event or condition that meets the highest IC and EAL no longer exists, and other site-specific downgrading requirements are met. If downgrading the ECL is deemed appropriate, the new ECL would then be based on a lower applicable IC(s) and EAL(s). The ECL may also simply be terminated.

The following approach to downgrading or terminating an ECL is recommended.

ECL	Action When Condition No Longer Exists
Unusual Event	Terminate the emergency in accordance with plant procedures.
Alert	Downgrade or terminate the emergency in accordance with plant procedures.

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

Many of the ICs and/or EALs contained in this document employ time-based criteria. These criteria will require that the IC/EAL conditions be present for a defined period of time before an emergency declaration is warranted. In cases where no time-based criterion is specified, it is recognized that some transient conditions may cause an EAL to be met for a brief period of time (e.g., a few seconds to a few minutes). The following guidance should be applied to the classification of these conditions.

EAL momentarily met during expected plant response - In instances where an EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures.

EAL momentarily met but the condition is corrected prior to an emergency declaration – If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the applicable EAL is not considered met and the associated emergency declaration is not required.

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 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. References

- 5.1 NEI 99-01 Rev. 6 Final, Development of Emergency Action Levels for Non-Passive Reactors, November 2012
- 5.2 10 CFR § 50, Domestic Licensing of Production and Utilization Facilities
- 5.3 RIS 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events, February 2, 2007
- 5.4 NUREG-1022, Event Reporting Guidelines: 10CFR50.72 and 50.73
- 5.5 10 CFR § 50.72, Immediate Notification Requirements for Operating Nuclear Power Reactors

- 5.6 KPS Offsite Dose Calculation Manual (ODCM)
- 5.7 10 CFR 50.82, Termination of License
- 5.8 NUREG-0654/FEMA-REP-1, REV 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants
- 5.9 10 CFR § 72.32, Emergency Plan
- 5.10 NUREG-1567, Spent Fuel Dry Storage Facilities
- 5.11 10 CFR § 50.47, Emergency Plans
- 5.12 NUREG-1140, A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees
- 5.13 EPIP-AD-02, Emergency Class Determination

Appendix A

Independent Spent Fuel Storage Installation

E-HU1

ECL: Unusual Event

Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY.

Emergency Action Levels: E-HU1.1

E-HU1.1 Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than two times the ISFSI Technical Specification allowable levels

Basis:

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

The existence of "damage" is determined by radiological survey. The technical specification multiple of "2 times" is used here to distinguish between non-emergency and emergency conditions. The emphasis for this classification is the degradation in the level of safety of the spent fuel cask and not the magnitude of the associated dose or dose rate. It is recognized that in the case of extreme damage to a loaded cask, the fact that the 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.

KPS Basis Reference(s):

1. Final Safety Evaluation Report, Transnuclear Inc. Standardized NUHOMS Horizontal Modula Storage System for Irradiated Nuclear Fuel, Dkt. No. 72-1004 NUHOMS 32PT System Amendment No. 10
2. Attachment A, Technical Specifications, Transnuclear Inc. Standardized NUHOMS Horizontal Modular Storage System, Certificate of Compliance No. 1004 Amendment No. 10 Dkt. No. 72-1004

Appendix B

Abnormal Radiation Levels/Radiation Effluent

PD-AU1

ECL: Unusual Event

Initiating Condition: An uncontrolled release of gaseous or liquid radioactivity for 60 minutes or longer.

Emergency Action Levels: PD-AU 1.1 or PD-AU 1.2 or PD-AU1.3

NOTE: The Emergency Director should declare the Unusual Event promptly upon determining that 60 minutes has been exceeded, or will likely be exceeded.

NOTE: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 60 minutes.

NOTE: 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.

PD-AU1.1 Reading on ANY effluent radiation monitor that is greater than the reading shown for 60 minutes or longer.

Auxiliary Building

Action Value

R-13 Aux Bldg Vent Exhaust
R-14 Aux Bldg Vent Exhaust

4.0E+05 cpm
4.0E+05 cpm

Liquid Radwaste

R-18 Waste Disposal System Liquid
R-20 Aux Bldg SW Return

2X Discharge Permit Limit
2.0E+03 cpm

PD-AU1.2 Confirmed sample analysis for a gaseous release indicates a concentration greater than 5.4E-03 $\mu\text{Ci/cc}$ for 60 minutes or longer.

PD-AU1.3 Confirmed analysis for a liquid effluent sample indicates a concentration or release rate greater than 2 times the ODCM limits for 60 minutes or longer.

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by an uncontrolled, low level radiological release for an extended period of time. It includes any gaseous or liquid radiological release, monitored or un-monitored, including those for which a radioactivity discharge permit is normally prepared.

With the station being permanently shut down for more than 100 days, the only radionuclide of any significance available to be released in gaseous form is the noble gas Kr-85. Kr-85 decays

Appendix B

emitting a beta particle and low abundance gamma, and is therefore not a significant contributor to Total Effective Dose Equivalent (TEDE). The gaseous release portion of this IC (detected by either an effluent monitor or by sample analysis) is not based on any particular ODCM values of dose or dose rate but rather the radiological release that results from damage to a fuel assembly and cannot be controlled. The liquid release portion of this IC is based on an uncontrolled release that exceeds two times the radiation monitor discharge permit limit (R-18) or ODCM default setpoint value (R-20).

KPS incorporates design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases. For gaseous and liquid releases, these controls are located in the ODCM. The occurrence of extended, uncontrolled radioactive releases 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 plant conditions alone. The inclusion of both plant 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 actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

PD-AU1.2 and PD-AU1.3 addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys.

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

Recording equipment can be used to determine the start time of a release.

Escalation of the emergency classification level would be via IC PD-AA1.

KPS Basis Reference(s):

1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 24
2. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012
3. KPS ODCM Section 1.0 Liquid Effluents Methodology, Rev. 15
4. KPS ODCM Section 2.0 Gaseous Effluents Methodology, Rev. 15
5. C10690, ODCM Setpoint Calculations, Rev. 2
6. C11805, EAL Calculation for Abnormal Radiological Releases, Rev. 0
7. Calculation RA-0049 Rev. 1, Kewaunee Emergency Action Levels for Post-Cessation of Power Operations

Appendix B

Abnormal Radiation Levels/Radiation Effluent

PD-AA1

ECL: Alert

Initiating Condition: An uncontrolled release of gaseous or liquid radioactivity resulting in detectable levels at the site boundary.

Emergency Action Levels: PD-AA1.1 or PD-AA1.2 or PD-AA1.3

NOTE: The Emergency Director should declare the Alert promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

NOTE: If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded 15 minutes.

NOTE: 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.

PD-AA1.1 Reading on ANY effluent radiation monitor that is greater than the reading shown for 15 minutes or longer:

<u>Auxiliary Building</u>	<u>Action Value</u>
R-13 Aux Bldg Vent Exhaust	4.0E+06 cpm
R-14 Aux Bldg Vent Exhaust	4.0E+06 cpm
<u>Liquid Radwaste</u>	
R-18 Waste Disposal System Liquid	50X Discharge Permit Limit
R-20 Aux Bldg SW Return	5.0E+04 cpm

PD-AA1.2 Confirmed sample analysis for a gaseous release indicates a concentration greater than 5.4E-02 $\mu\text{Ci/cc}$ for 15 minutes or longer.

PD-AA1.3 Confirmed analysis of a liquid effluent sample indicates a concentration or release rate greater than 50 times the ODCM limits for 15 minutes or longer.

Basis:

This IC addresses a release of gaseous or liquid radioactivity that results in detectable levels offsite that are below 1% of the EPA Protective Action Guides (PAGs). It includes both monitored and unmonitored 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 could potentially exceed regulatory limits (e.g., a significant uncontrolled release).

With the station being permanently shut down for more than 100 days, the only radionuclide of any significance available to be released in gaseous form is the noble gas Kr-85. Kr-85 decays emitting a low abundance gamma, and is therefore not a significant contributor to Total Effective Dose Equivalent (TEDE). The gaseous release portion of this IC (detected by either an effluent

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monitor or by sample analysis) is not based on any particular ODCM values of dose or dose rate but rather the radiological release that results from damage to multiple fuel assemblies and cannot be controlled. The liquid release portion of this IC is based on an uncontrolled release that exceeds fifty times the radiation monitor discharge permit limit (R-18) or ODCM default setpoint value (R-20).

KPS incorporates design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases. For gaseous and liquid releases, these controls are located in the ODCM. The occurrence of extended, uncontrolled radioactive releases 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 plant conditions alone. The inclusion of both plant 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 actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

PD-AA1.2 and PD-AA1.3 addresses uncontrolled gaseous or liquid releases that are detected by sample analyses or environmental surveys.

Recording equipment can be used to determine the start time of a release.

KPS Basis Reference(s):

1. USAR Section 11.2.3 Radiation Monitoring System, Rev. 24
2. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012
3. KPS ODCM Section 1.0 Liquid Effluents Methodology, Rev. 15
4. KPS ODCM Section 2.0 Gaseous Effluents Methodology, Rev. 15
5. C10690, ODCM Setpoint Calculations, Rev. 2
6. C11805, EAL Calculation for Abnormal Radiological Releases, Rev. 0
7. Calculation RA-0049 Rev. 1, Kewaunee Emergency Action Levels for Post-Cessation of Power Operations

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Abnormal Radiation Levels/Radiation Effluent

PD-AU2

ECL: Unusual Event

Initiating Condition: UNPLANNED rise in plant radiation levels.

Emergency Action Levels: PD-AU2.1 or PD-AU2.2

- PD-AU2.1 a. UNPLANNED water level drop in the spent fuel pool as indicated by EITHER of the following:
- Spent Fuel Pool low water level alarm setpoint (3 ft. 4 in. below floor)
 - Visual observation

AND

- b. UNPLANNED rise in area radiation levels as indicated by EITHER of the following radiation monitors.
- R-5 Fuel Handling Area ALERT Alarm
 - R-10 New Fuel Pit Area ALERT Alarm

PD-AU2.2 Area radiation monitor reading or survey result indicates an UNPLANNED rise of 25 mrem/hr over NORMAL LEVELS.

Basis:

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

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.

The effects of planned evolutions should be considered. Note that PD-AU2.1 is applicable only in cases where the elevated reading is due to an UNPLANNED water level drop. PD-AU2.2 excludes radiation level increases that result from planned activities such as use of radiographic sources and movement of radioactive waste materials.

Escalation of the emergency classification level would be via IC PD-AA1 or PD-AA2.

KPS Basis Reference:

1. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012

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Abnormal Radiation Levels/Radiation Effluent

PD-AA2

ECL: Alert

Initiating Condition: UNPLANNED rise in plant radiation levels that impedes plant access required to maintain spent fuel integrity.

Emergency Action Levels: PD-AA2.1 or PD-AA2.2

PD-AA2.1 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:

- R-1 Control Room Area

PD-AA2.2 Survey results that indicate an UNPLANNED rise of 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.

- Spent Fuel Pool Pump Area (survey)

Basis:

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to maintain spent fuel integrity. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

For PD-AA2.2, an Alert declaration is warranted if entry into the affected room/area is, or may be, procedurally required during the plant condition in effect at the time of the elevated radiation levels. The emergency classification is not contingent upon whether entry is actually necessary at the time of the increased radiation levels. Access should be considered as impeded if extraordinary measures are necessary to facilitate entry of personnel into the affected room/area (e.g., installing temporary shielding, requiring use of non-routine protective equipment, requesting an extension in dose limits beyond normal administrative limits).

An emergency declaration is not warranted if any of the following conditions apply.

- The increased radiation levels are a result of a planned activity that includes compensatory measures which address the temporary inaccessibility of a room or area (e.g., radiography, spent filters or resin transfer, etc.).
- The action for which room/area entry is required is of an administrative or record keeping nature (e.g., normal rounds or routine inspections).

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- The access control measures are of a conservative or precautionary nature, and would not actually prevent or impede a required action.

KPS Basis Reference:

1. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012

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System Malfunction

PD-SU1

ECL: Unusual Event

Initiating Condition: UNPLANNED spent fuel pool temperature rise.

Emergency Action Levels: PD-SU1.1

PD-SU1.1 UNPLANNED spent fuel pool temperature rise to greater than 150°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 plant. If uncorrected, boiling in the pool will occur, and result in a loss of pool level and increased radiation levels.

Escalation of the emergency classification level would be via IC PD-AA1 or PD-AA2.

KPS Basis Reference:

1. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012

Appendix B

Hazards and Other Conditions Affecting Plant Safety

PD-HU1

ECL: Unusual Event

Initiating Condition: Confirmed SECURITY CONDITION or threat.

Emergency Action Levels: PD-HU1.1 or PD-HU1.2 or PD-HU1.3

PD-HU1.1 A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by Security Supervision.

PD-HU1.2 Notification of a credible security threat directed at the site.

PD-HU1.3 A validated notification from the NRC providing information of an aircraft threat.

Basis:

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 inside of the VEHICLE BARRIER SYSTEM (VBS) boundary that are assessed as HOSTILE ACTIONS are classifiable under IC PD-HA1.

Timely and accurate communications between Security 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 Offsite Response Organizations.

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].

PD-HU1.1 references Security 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.

PD-HU1.2 addresses the receipt of a credible security threat. The procedure to determine the credibility of a threat is considered security-sensitive information and therefore withheld from the EAL. Credible security threat includes a HOSTILE ACTION within the OWNER CONTROLLED AREA outside of the VBS boundary.

PD-HU1.3 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. The procedure to validate the threat is considered security-sensitive information and therefore withheld from the EAL.

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Escalation of the emergency classification level would be via IC PD-HA1.

KPS Basis Reference:

1. Security And Safeguards Contingency Plan
2. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012

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Hazards and Other Conditions Affecting Plant Safety

PD-HA1

ECL: Alert

Initiating Condition: HOSTILE ACTION within the VBS boundary or airborne attack threat within 30 minutes.

Emergency Action Levels: PD-HA1.1 or PD-HA1.2

PD-HA1.1 A HOSTILE ACTION is occurring or has occurred within the VBS boundary as reported by Security Supervision.

PD-HA1.2 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 VEHICLE BARRIER SYSTEM (VBS) boundary 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 plant and staff for a potential aircraft impact.

Timely and accurate communications between Security Supervision 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 plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The Alert declaration will also heighten the awareness of Offsite Response Organizations, 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.

PD-HA1.1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the VBS boundary. This includes any action directed against an ISFSI that is located within the VBS boundary. A HOSTILE ACTION within the OWNER CONTROLLED AREA outside of the VBS boundary is considered a credible security threat and should be evaluated under EAL PD-HU1.2.

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PD-HA1.2 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 Offsite Response Organizations are in a heightened state of readiness. The procedure to validate threat-related information is considered security-sensitive information and therefore is withheld from this IC.

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 VBS boundary 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.

KPS Basis Reference:

1. Security And Safeguards Contingency Plan
2. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012

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Hazards and Other Conditions Affecting Plant Safety

PD-HU2

ECL: Unusual Event

Initiating Condition: Hazardous event affecting SAFETY SYSTEM equipment necessary for spent fuel cooling.

Emergency Action Levels: PD-HU2.1

- PD-HU2.1 a. The occurrence of **ANY** of the following hazardous events:
- Seismic event (earthquake)
 - Internal or external flooding event
 - Low lake level
 - 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 a SAFETY SYSTEM needed for spent fuel cooling.

AND

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

Basis:

This IC addresses a hazardous event that causes damage to a SAFETY SYSTEM needed for spent fuel cooling. At KPS, Service Water System and Spent Fuel Pool Cooling are the systems necessary for cooling the spent fuel pool. The damage must be of sufficient magnitude that the system(s) 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.

For PD-HU2.1a, the "other" bullet is not intended to address component failures within the SAFETY SYSTEM such as pump bearing failures, electrical grounds or shorts in a pump, failure of valves, etc. Declaration of an event due to the failure of a SAFETY SYSTEM component would be based on PD-SU1.1.

For PD-HU2.1c, the first bullet addresses damage to a SAFETY SYSTEM that is in service/operation since indications for it will be readily available.

For PD-HU2.1c, the second bullet addresses damage to a SAFETY SYSTEM that is not in service/operation or readily apparent through indications alone. Operators will make this

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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 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.

KPS Basis Reference:

1. NEI 99-01 Revision 6, Methodology for Development of Emergency Action Levels dated November 2012

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Hazards and Other Conditions Affecting Plant Safety

PD-HU3

ECL: Unusual Event

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a UE.

Emergency Action Levels: PD-HU3.1

PD-HU3.1 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.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a UE.

KPS Basis Reference:

None

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Hazards and Other Conditions Affecting Plant Safety

PD-HA3

ECL: Alert

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.

Emergency Action Levels: PD-HA3.1

PD-HA3.1 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.

Basis:

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

KPS Basis Reference:

None

Appendix C

Definitions

The following definitions are taken from Title 10, Code of Federal Regulations, and related regulatory guidance documents.

Alert: 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 PAG exposure levels.

Unusual Event: 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.

The following are key terms necessary for overall understanding the NEI 99-01 emergency classification scheme.

Emergency Action Level (EAL): A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

Emergency Classification Level (ECL): One of a set of names or titles established by the US Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The emergency classification levels, in ascending order of severity, are:

- Unusual Event
- Alert

Initiating Condition (IC): An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences.

Selected terms used in Initiating Condition and Emergency Action Level statements are set in all capital letters (e.g., ALL CAPS). These words are defined terms that have specific meanings as used in this document. The definitions of these terms are provided below.

CONFINEMENT BOUNDARY: The barrier(s) between areas containing radioactive substances and the environment.

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. 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.

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.

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

HOSTILE ACTION: An act toward a NPP 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 NPP. 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).

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.

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

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI): A complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.

NORMAL LEVELS: As applied to radiological IC/EALs, the highest reading in the past twenty-four hours excluding the current peak value or since the last survey.

OWNER CONTROLLED AREA: The area outside the Protected Area fence line, and isolation zones that are owned by Dominion.

PROJECTILE: An object directed toward a NPP that could cause concern for its continued operability, reliability, or personnel safety.

PROTECTED AREA: Boundary within the security isolation zone.

SAFETY SYSTEM: A system required for safe operation of the Spent Fuel Cooling System.

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

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

VEHICLE BARRIER SYSTEM (VBS) – A barrier system that is designed, constructed, installed and maintained to protect the facility against the design basis threat.

VISIBLE DAMAGE: Damage to equipment or structure that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the continued operability or reliability of the affected equipment or structure.

Appendix D

Acronyms and Abbreviations

CDE	Committed Dose Equivalent
CFR	Code of Federal Regulations
EAL	Emergency Action Level
ECL	Emergency Classification Level
EOF	Emergency Operations Facility
EPA	Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
FEMA	Federal Emergency Management Agency
FSAR	Final Safety Analysis Report
HSM	Horizontal Storage Module
IC	Initiating Condition
ISFSI	Independent Spent Fuel Storage Installation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NUMARC ¹	Nuclear Management and Resources Council
OCA	Owner Controlled Area
ODCM	Offsite Dose Calculation Manual
ORO	Off-site Response Organization
PA	Protected Area
PAG	Protective Action Guideline
R	Roentgen
SAR	Safety Analysis Report
TEDE	Total Effective Dose Equivalent
TSC	Technical Support Center
UE	Unusual Event

¹ NUMARC was a predecessor organization of the Nuclear Energy Institute (NEI).