

**ATTACHMENT 1**

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

**DISCUSSION OF CHANGE, TECHNICAL ANALYSIS, SIGNIFICANT HAZARDS  
DETERMINATION, AND ENVIRONMENTAL CONSIDERATIONS**

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

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AND EMERGENCY ACTION LEVEL SCHEME**

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DETERMINATION AND ENVIRONMENTAL CONSIDERATIONS**

**1.0 SUMMARY DESCRIPTION**

Pursuant to 10 CFR 50.90, Dominion Energy Kewaunee, Inc. (DEK) requests 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 are being 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.

By letter dated May 14, 2013, DEK submitted a certification of permanent removal of fuel from the reactor vessel (Reference 1). Consequently, as specified in 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for KPS no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel. Since KPS is in a permanently defueled condition, the number and severity of potential radiological accidents is significantly less than when the plant was operating. Therefore, DEK is proposing a new EAL scheme to reflect the currently defueled status of the plant.

The proposed emergency plan does not meet all the standards of 10 CFR 50.47(b) and requirements of 10 CFR 50, Appendix E. 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, that the proposed emergency plan does not meet, by letter dated July 31, 2013 (Reference 2). The proposed emergency plan revisions are predicated on the approval of the exemptions requests.

Currently, there are no license amendment requests associated with the KPS emergency plan under NRC review. Therefore, disposition of other proposed KPS emergency plan changes, as they relate to this license amendment request, is not required.

**2.0 PROPOSED CHANGE**

The proposed amendment would modify the KPS license by revising the emergency plan and the associated emergency action level (EAL) scheme. The proposed changes discontinue offsite emergency planning requirements and reduce the scope of onsite emergency planning requirements to reflect the permanently defueled status of the plant. Since KPS is in a permanently defueled condition, the number and severity of

potential radiological accidents is significantly less than when the plant was operating. Therefore, the offsite radiological consequences of accidents possible at KPS are substantially lower. Offsite emergency response plans are no longer appropriate, as no design basis accident or reasonably conceivable beyond design basis accident can result in radioactive releases that exceed Environmental Protection Agency (EPA) Protective Action Guides (PAGs) beyond the site boundary (Reference 10).

The current EAL scheme is based upon NEI 99-01, "Methodology for Development of Emergency Action Levels," Revision 4, approved April 3, 2006 (Reference 5). DEK determined that a revision to the EAL scheme to implement NEI 99-01, Revision 6, "Recognition Category 'PD' (Permanently Defueled)," is appropriate for the permanently defueled condition at KPS.

### **3.0 TECHNICAL ANALYSIS**

#### **3.1 Radiological Consequences of Design Basis Events**

Kewaunee Power Station (KPS) is situated in rural northeast Wisconsin, located in Kewaunee County on the west shore of Lake Michigan. The land area within a 20 mile radius of KPS is primarily farmland, with a population density of about 60 people per square mile. The current population of Kewaunee County is about 20,600 people. Two small cities, Two Rivers (12,000 population) and Manitowoc (34,000 population), lie about 11 and 17 miles, respectively, south of the station. The nearest population center of substance is the city of Green Bay (104,000 population), located about 27 miles west-northwest of the station. The entire 50-mile radius east of the station is occupied by the waters of Lake Michigan (i.e., unpopulated). The low population of the area, coupled with an extensively developed and well maintained road system, facilitates ease of emergency planning.

Section 14 of the KPS Updated Safety Analysis Report (USAR) previously described the design basis accident (DBA) scenarios that were applicable to KPS during power operations. During normal power operations, the forced flow of water through the reactor coolant system (RCS) removed the heat generated by the reactor core. The RCS, operating at high temperatures and pressures, transferred this heat through the steam generator tubes to the secondary system. The most severe postulated accidents for nuclear power plants involve damage to the nuclear reactor core and the release of large quantities of fission products to the reactor coolant system. Many of the USAR accident scenarios involved failures or malfunctions of systems which could affect the reactor core.

DEK submitted a Post-Shutdown Decommissioning Activities Report (PSDAR) (Reference 11), which identified that KPS will decommission using a SAFSTOR method in which most fluid systems are drained and the plant is left in a stable condition until final decontamination and dismantlement activities begin. On May 7, 2013 the KPS

reactor was permanently shutdown. After the reactor was shut down, all fuel assemblies were removed from the reactor vessel and placed in the spent fuel pool. The irradiated fuel will be stored in the spent fuel pool (SFP) and in the Independent Spent Fuel Storage Installation (ISFSI) until it is shipped off site in accordance with the schedules described in the PSDAR and updated Irradiated Fuel Management Plan (Reference 12). Since the reactor is permanently defueled, the SFP and its supporting systems are being modified and dedicated only to spent fuel storage. With the reactor defueled, the reactor vessel, RCS, and secondary system are no longer in operation and have no function related to the safe storage and management of irradiated fuel.

10 CFR 50.82(a)(2) specifies that the 10 CFR 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel after docketing the certifications for permanent cessation of operations and permanent removal of fuel from the reactor vessel. Following the termination of reactor operations at KPS and the permanent removal of the fuel from the reactor vessel, the postulated accidents involving failure or malfunction of the reactor, RCS, or secondary system are no longer applicable.

As discussed in our previously submitted request for exemption from various regulations contained in 10 CFR 50.47 and 10 CFR 50, Appendix E (Reference 2), an analysis of the potential radiological impact of a design basis accident at KPS in a permanently defueled condition indicates that any potential radiological releases beyond the site boundary are below the EPA 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).

A revised fuel handling accident (FHA) analysis has been developed to address the permanently defueled condition. The revised FHA analysis assumes scrubbing based on 23 feet of water over the failed fuel assembly and shows that after 90 days of decay after reactor shutdown, the dose consequences at the exclusion area boundary (EAB) would be 0.001 Rem, which is a small fraction of the EPA PAG. The calculation supporting this analysis is provided in Enclosure 4 (Calculation RA-0028, "Kewaunee Fuel Handling Accident Post-Cessation of Operations").

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

Although the limited scope of design basis accidents that remain applicable to KPS justify a reduction in the necessary scope of emergency response capabilities, DEK also assessed beyond design basis events using past industry precedence, including information contained in NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants" (February 2001) (Reference 6). The first six of these analyses are discussed in our previously submitted exemption request from various regulations contained in 10 CFR 50.47 and 10 CFR 50, Appendix E (Reference 2). Supporting calculations for these assessments are provided in Enclosure 4 to this submittal.

NUREG-1738 contains the results of the NRC staff's evaluation of the potential accident risk in spent fuel pools at decommissioning plants in the United States. As stated therein, the study was undertaken to support development of a risk-informed technical basis for reviewing exemption requests and a regulatory framework for integrated rulemaking. The NRC staff performed analyses and sensitivity studies on evacuation timing to assess the risk significance of relaxed offsite emergency preparedness requirements during decommissioning. The staff based its sensitivity assessment on the guidance in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment In Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The staff's analyses and conclusions apply to decommissioning facilities with SFPs that meet the design and operational characteristics assumed in NUREG-1738.

The study documented in NUREG-1738 found that the risk at decommissioning plants is low and well within the Commission's Safety Goals. The risk is low because of the very low likelihood of a zirconium fire (resulting from a postulated irrecoverable loss of SFP cooling water inventory) even though the consequences from a zirconium fire could be serious.

DEK assessed the following beyond design basis events associated with irradiated fuel stored in the KPS SFP. A summary of the assessments (the first six of which are detailed in Reference 2) is provided below.

#### 1. Complete Loss of Cooling Water Inventory With Air Cooling

DEK performed a qualitative comparison of the heatup characteristics of the KPS spent fuel that would result from a beyond design basis event involving the complete loss of spent fuel pool (SFP) water (when cooling depends on the natural circulation of air through the spent fuel racks), against the results documented in NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants" (Reference 7), for the reference PWR. The results of this comparison concluded that a minimum decay time to prevent a zirconium/zircaloy fire with the SFP completely drained is approximately 17 months for KPS. Therefore, as of October 2014, when the requested changes will be implemented, decay heat cannot raise the spent fuel cladding temperature sufficiently to cause clad failure (565°C) if all water is drained from the SFP. Since fuel cladding would remain intact at this temperature, a complete loss of water from the KPS SFP would not result in an offsite release exceeding the early-phase EPA Protective Action Guidelines (PAGs). Supporting information is provided in Enclosure 4 (Evaluation ETE-NAF-20130072, Kewaunee Spent Fuel Pool Zirconium Fire Parameter Comparison). A confirmatory quantitative analysis of this qualitative comparison was subsequently performed, with similar results, and is also provided in Enclosure 4 (Sargent & Lundy Calculation 2013-11284, "Maximum Cladding and Fuel Temperature Analysis for Uncovered Spent Fuel Pool").

## 2. Loss of All Heat Removal Capability

By October 2014, approximately 26 days will be available to restore water cooling to the SFP before the SFP water level reaches three feet above the top of the fuel (additional time would be available before fuel is uncovered). Because of the relative ease with which alternative means of supplying cooling water to the SFP can be established, it is not reasonable to postulate that fuel damage can occur due to a loss of normal cooling capability to the SFP.

## 3. Partial Loss of Cooling Water Inventory with No Air Cooling

A site-specific adiabatic heatup analysis to address a partial draindown of the SFP was performed to conservatively evaluate the length of time for uncovered spent fuel assemblies to reach a critical temperature for clad damage assuming no air-cooling. Per NUREG-CR/6451, 565°C is the lowest temperature where incipient cladding failure might occur and is appropriate to be used as the critical cladding temperature. Based on 17 months of decay time after permanent shutdown of KPS, the time necessary for the hottest fuel assembly to reach the critical temperature of 565°C, assuming no air cooling, is 6 hours after the fuel rods have become uncovered. Six hours is sufficient time for personnel at the station to respond with additional resources, equipment, and capability to restore cooling to the spent fuel pool, even after the most non-credible, catastrophic drain down event. Additional analysis shows that the time necessary for the hottest fuel assembly to reach the critical temperature of 900°C, which corresponds to the temperature threshold for self sustained oxidation of cladding in air, is 10 hours after the fuel rods have become uncovered. The supporting calculation for this analysis is provided in Enclosure 4 (Calculation 2013-07050, "Maximum Cladding Temperature Analysis for an Uncovered Spent Fuel Pool with No Air Cooling"). As stated in NUREG-1738 (Reference 6), 900°C is an acceptable temperature to use for assessing onset of fission product release under transient conditions (to establish the critical decay time for determining availability of 10 hours to evacuate) if fuel and cladding oxidation occurs in air.

## 4. Rapid Draindown Due to Seismic Events

Given the robust structural design of SFPs, it is expected that a seismic event with peak spectral acceleration several times larger than the safe shutdown earthquake (SSE) would be required to produce catastrophic failure of the structure. Based on the low probability of a seismic event of sufficient magnitude to cause failure of the SFP in the geographic region where KPS is located, a catastrophic beyond design basis seismic event as an initiator of a rapid SFP draindown event is not considered credible at KPS.

#### 5. Rapid Draindown Due to Cask Drop Event

KPS has a single-failure proof auxiliary building crane that is used for lifting heavy loads, such as spent fuel casks, over the SFP. The seismic analysis methodology for the auxiliary building crane is required by KPS License Condition 2.C.(11) and is being maintained in the KPS license. Because the auxiliary building crane will not lower its load in an uncontrolled fashion during a seismic event, a cask drop event is not considered a credible initiator of a rapid SFP draindown event at KPS.

#### 6. Shine from an Empty Spent Fuel Pool

Although a significant release of radioactive material from the spent fuel is not possible in the absence of water cooling after approximately 17 months, the potential exists for radiation exposure to an offsite individual in the event that shielding of the fuel is lost (a beyond-design-basis event). The supporting calculation for this analysis is provided in Enclosure 4 (Calculation RA-0044, "Dose Rate at the KPS Site Boundary Following a Complete Draindown of the Spent Fuel Pool"). The gamma radiation dose rate at the site boundary would be sufficiently low, such that it would take more than a month for the event to exceed the EPA early-phase Protective Action Guidelines (PAG) of 1 Rem. This would allow sufficient time to develop and implement on-site mitigative actions and provide confidence that additional offsite measures could be taken without planning if efforts to re-establish shielding over the spent fuel are delayed.

#### 7. Radioactive Waste Handling Accident

This accident evaluates the drop of a high integrity container (HIC) in the auxiliary building such that its entire contents of radioactive, dewatered demineralizer resin (i.e., 100%) escapes. This analysis did not postulate any specific mechanism for release; however, ten percent of the HIC contents are dispersed into the air in aerosol form. A small fraction (i.e., 10%) of the escaped resin is non-mechanistically assumed to be released as airborne radioactivity and pass from the auxiliary building directly to the environment. The sum of the whole body and inhalation doses at the exclusion area boundary is 0.015 rem, which is much less than the 1 rem limit of the EPA PAG. Supporting information is provided in Enclosure 4 (Calculation RA-0050, "Kewaunee Resin Cask Drop Dose Consequence Analysis").

### **3.3 Permanently Defueled Emergency Plan**

The Kewaunee Power Station (KPS) Permanently Defueled Emergency Plan (PDEP) is provided as Enclosure 1 to this submittal for NRC review and approval. The 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 PDEP describes the station's plan for responding to emergencies that may arise at KPS while in a permanently shutdown and defueled configuration. Currently, all irradiated fuel is stored in the Independent Spent Fuel Storage Installation (ISFSI) and in the spent fuel pool (SFP). Per 10 CFR 50.82(a)(2), the 10 CFR Part 50 license no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel. Since KPS is in a permanently defueled condition, the number and severity of potential radiological accidents is significantly less than when the plant was operating.

Based on the reduced number and consequences of potential radiological events at KPS, offsite emergency response plans are no longer necessary for the protection of the public beyond the site boundary. The analyses of the potential radiological impact of accidents while the plant is in a permanently defueled condition indicate that any releases beyond the site boundary are below the Environmental Protection Agency (EPA) Protective Action Guide (PAG) exposure levels, as detailed in the EPA's "Protective Action Guide and Planning Guidance for Radiological Incidents," Draft for Interim Use and Public Comment dated March 2013 (PAG Manual).

As such, the scope of the onsite emergency preparedness organization and corresponding requirements in the emergency plan may be reduced without an undue risk to the public health and safety. Since exposure levels which warrant pre-planned response measures are limited to onsite areas, radiological emergency planning is focused onsite.

### **3.4 Permanently Defueled Emergency Action Levels**

The KPS Permanently Defueled Emergency Action Level (PDEAL) scheme is provided as Enclosure 2 for NRC review and approval. The current KPS EAL scheme was approved by NRC on April 3, 2006 (Reference 5).

A comparison matrix between each generic EAL contained in NEI 99-01, Revision 6 and the proposed KPS specific PDEAL is provided in Attachment 2.

#### **1. Related Documents**

Enclosure 3 includes the site specific technical bases document for each recognition category for the proposed scheme. This technical bases document, along with the EAL comparison matrix, provides the appropriate information from the bases information contained in NEI 99-01, Revision 6. The proposed change to the KPS Emergency Plan that will implement the new emergency classification scheme is presented in Enclosure 1.



Supporting calculations for pertinent beyond design basis events are provided in Enclosure 4 to this submittal.

## 2. Operating Modes and Applicability

The proposed EALs are only applicable to the permanently defueled station condition, with all reactor fuel permanently removed from reactor vessel.

## 3. State and Local Government Review of Proposed Changes

State and local emergency management officials are advised of EAL changes that are implemented. Following NRC approval and prior to implementation, KPS will provide an overview of the new classification scheme to State and local emergency management officials in accordance with 10 CFR Part 50, Appendix E, Section IV.B.1.

## **4.0 SUMMARY**

By letter dated May 14, 2013, DEK submitted a certification of permanent removal of fuel from the reactor vessel (Reference 1). Consequently, as specified in 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for KPS no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel. To comport to the reduced scope of potential radiological accidents in the permanently shutdown and defueled condition, DEK is proposing a new EAL scheme and corresponding emergency plan changes.

This proposed amendment would revise both the emergency plan and the emergency action level (EAL) scheme to reflect the permanently defueled condition of the station. The new emergency plan and EAL scheme 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 2) that the proposed emergency plan does not meet. The proposed emergency plan revisions are 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**

Pursuant to 10 CFR 50.90, Dominion Energy Kewaunee, Inc. (DEK) requests 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 are being 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.

By letter dated May 14, 2013, DEK submitted a certification of permanent removal of fuel from the reactor vessel (Reference 1). Consequently, as specified in 10 CFR 50.82(a)(2), the 10 CFR Part 50 license for KPS no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel. To comport to the reduced scope of potential radiological accidents in the permanently shutdown and defueled condition, DEK proposes a new EAL scheme and corresponding emergency plan changes.

DEK has evaluated the proposed amendment to determine if a significant hazards consideration is involved by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

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

Response: No

The proposed amendment would modify the KPS renewed facility operating license by revising the emergency plan and revising the EAL scheme. KPS has permanently ceased operation and is permanently defueled. Occurrence of postulated accidents associated with reactor operation is no longer credible in a permanently defueled reactor. The proposed amendment has no effect on plant systems, structures, and components (SSCs) and no effect on the capability of any plant SSC to perform its design function. The proposed amendment would not increase the likelihood of the malfunction of any plant SSC. The proposed amendment would have no effect on any of the previously evaluated accidents in the KPS Updated Safety Analysis Report (USAR).

Since KPS has permanently ceased operation, the generation of fission products has ceased and the remaining source term continues to decay. This significantly reduces the consequences of previously postulated accidents. Therefore, the proposed amendment does not involve a significant increase in the consequences of a previously evaluated accident.

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

Response: No

The proposed amendment does not involve a physical alteration of the plant. No new or different types of equipment will be installed and there are no physical modifications to existing equipment associated with the proposed amendment. Similarly, the proposed amendment would not physically change any SSCs involved in the mitigation of any postulated accidents. Thus, no new initiators or precursors of a new or different kind of accident are created. Furthermore, the proposed amendment does not create the possibility of a new failure mode associated with any equipment or personnel failures.

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

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

Response: No

Because the 10 CFR Part 50 license for KPS no longer authorizes operation of the reactor or emplacement or retention of fuel into the reactor vessel, as specified in 10 CFR 50.82(a)(2), the occurrence of postulated accidents associated with reactor operation is no longer credible. Analyses of the remaining credible accidents, as documented in the KPS USAR, show that any releases beyond the site boundary would be below the EPA 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).

The proposed amendment does not involve a change in the plant's design, configuration, or operation. The proposed amendment does not affect either the way in which the plant structures, systems, and components perform their safety function or their design margins. Because there is no change to the physical design of the plant, there is no change to any of these margins.

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

Based on the above, Dominion Energy Kewaunee, Inc. concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

## 5.2 Applicable Regulatory Requirements/Criteria

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.47, "Emergency plans," sets forth emergency plan requirements for nuclear power plant facilities. The regulations in 10 CFR 50.47(a)(1)(i) state, in part,

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

Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that the licensee can and will take adequate protective measures in the event of a radiological emergency. Planning Standard (4) of this section requires that a licensee's emergency response plan contain the following:

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

10 CFR 50.54(q)(4) specifies the process for revising emergency plans where the changes reduce the effectiveness of the plan. This regulation states the following:

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

Section IV.B.1 of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, states, in part:

*The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within*

*and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant.*

Section IV.B.2 of 10 CFR 50, Appendix E states that a licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change.

Section IV.C.1 of Appendix E requires each emergency plan to define the emergency classification levels that determine the extent of the participation of the emergency response organization. The emergency classification levels include: (1) Notification of Unusual Event (UE); (2) Alert; (3) Site Area Emergency (SAE); and (4) General Emergency (GE). EALs are used by plant personnel in determining the appropriate emergency classification level to declare.

In November 2012, NEI published NEI 99-01, Revision 6 (Reference 3). The changes being requested herein are based on Revision 6 to NEI 99-01. NRC endorsed NEI 99-01, Revision 6, by letter dated March 28, 2013 (Reference 4). The proposed changes are considered a significant change to the EAL scheme development methodology. Pursuant to 10 CFR Part 50, Appendix E, Section IV.B.2, a revision to an entire EAL scheme must be approved by the NRC before implementation.

### **5.3 Precedent**

Similar changes to emergency plans and associated emergency action levels for plants that have transitioned to permanently defueled status were approved by NRC for the Zion station, as described in References 8 and 9.

### **5.4 Conclusion**

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

## **6.0 ENVIRONMENTAL CONSIDERATION**

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

## **7.0 REFERENCES**

1. Letter from Daniel G. Stoddard (DEK) to NRC Document Control Desk, "Certification of Permanent Removal of Fuel from the Reactor Vessel," dated May 14, 2013. (ADAMS Accession No. ML13135A209)
2. 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.
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 Mark Thaggard (NRC) to Susan Perkins-Grew (NEI), "U.S. Nuclear Regulatory Commission Review and Endorsement of NEI 99-01, Revision 6, dated November, 2012 (TAC No. D92368)," dated March 28, 2013. (ADAMS Accession No. ML12346A463)
5. Letter from David H. Jaffe (NRC) to David A. Christian (DEK), "Kewaunee Power Station - Emergency Action Levels Based on Revision 4 to Nuclear Energy Institute 99-01, 'Methodology for Development of Emergency Action Levels,' for Kewaunee Power Station (TAC No. MC8816)," dated April 3, 2006.
6. NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," February 2001.
7. NUREG/CR-6451, "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," August 1997.
8. Letter from U.S. Nuclear Regulatory Commission to Zion Nuclear Power Station, Unit Nos. 1 and 2, "Request For Approval of Defueled Station Emergency Plan and Exemption from Certain Requirements of 10 CFR 50.47, "Emergency Plans"-

Zion Nuclear Power Station, Unit Nos. 1 and 2 (TAC NOS MA5253 and MA554)," dated August 31, 1998.

9. Letter from U.S. Nuclear Regulatory Commission to Zion Nuclear Power Station, Unit Nos. 1 and 2, "Emergency Action Level Revisions for Zion Nuclear Power Station (TAC Nos. J00327 and J00328)," dated February 25, 2008.
10. 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).
11. Letter from Daniel G. Stoddard (DEK) to NRC Document Control Desk, "Post-Shutdown Decommissioning Activities Report," dated February 26, 2013. (ADAMS Accession No. ML13063A248)
12. Letter from Daniel G. Stoddard (DEK) to NRC Document Control Desk, "Update to Irradiated Fuel Management Plan Pursuant to 10 CFR 50.54(bb)," dated February 26, 2013. (ADAMS Accession No. ML13059A028)