

SAFETY EVALUATION BY
THE OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
KEWAUNEE POWER STATION
LICENSE AMENDMENT CHANGE REQUEST
RELATED TO THE UNLOADED SPENT FUEL POOL
DOCKET NO. 50-305

1.0 BACKGROUND

By letter dated February 25, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13058A065), Dominion Energy Kewaunee, Inc. (DEK, the licensee), submitted a certification to the U.S. Nuclear Regulatory Commission (NRC) indicating that it would permanently shut down Kewaunee Power Station (KPS) on May 7, 2013. On May 7, 2013, DEK permanently ceased power operations at KPS. On May 14, 2013, DEK certified that it had permanently defueled the KPS reactor vessel (ADAMS Accession No. ML13135A209). Consequently, pursuant to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.82(a)(2), the KPS renewed facility operating license no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel.

DEK is the current holder of Facility Operating License No. DPR-43. The license, pursuant to the Atomic Energy Act of 1954 and 10 CFR Part 50, allows DEK to possess spent nuclear fuel at the permanently shutdown and defueled KPS facility. DEK also holds a general license, issued pursuant to 10 CFR 72.210, for the storage of spent fuel in an Independent Spent Fuel Storage Installation (ISFSI) (Docket 72-64). DEK is in the process of decommissioning KPS. In support of this activity, the spent fuel is being transferred from the spent fuel pool to the onsite ISFSI. In a letter dated April 25, 2014 (ADAMS Accession No. ML14118A382), DEK notified the NRC that all spent nuclear fuel is expected to be transferred to the ISFSI by the end of 2016.

2.0 INTRODUCTION

By letter dated September 14, 2015 (ADAMS Accession No. ML15261A236), DEK proposed, pursuant to 10 CFR 50.90, to amend its license—DPR-43—and revise the KPS Technical Specifications to reflect the removal of all the spent fuel from the KPS spent fuel pool. The proposed changes will result in Technical Specifications (TS) that will be applicable to the KPS once the last spent fuel assembly has been removed from the spent fuel pool and placed at the ISFSI.

The proposed changes to Renewed Facility Operating License DPR-43 are as follows:

- Eliminate License Condition 2.C.(10) related to mitigation strategy.
- Eliminate License Condition 2.C.(11) related to the seismic analysis methodology for the auxiliary building crane.
- Eliminate License Condition 2.C.(12) related to implementation of new and revised surveillance requirements associated with conversion to Improved Standard TS.

- Eliminate License Condition 2.C.(13) related to removal of details and requirements that were relocated to other controlled documents (associated with conversion to Improved Standard TS).
- Eliminate License Condition 2.C.(16), related to spent fuel pool neutron absorber material surveillance programs.

The proposed changes to the TS eliminate provisions of the specifications applicable to spent fuel stored in the spent fuel pool and relocate much of the remaining TS administrative requirements to either the Quality Assurance Program Description (QAPD) or to the Technical Requirements Manual (TRM). These changes are proposed pursuant to the criteria contained in 10 CFR 50.36 and in accordance with recommendations contained in NRC Administrative Letter 95-06.

3.0 REGULATORY EVALUATION

In 10 CFR 50.36, the Commission established its regulatory requirements related to the content of TS. In doing so, the Commission placed emphasis on those matters related to the prevention of accidents and mitigation of accident consequences; the Commission noted that applicants were expected to incorporate into their TS “those items that are directly related to maintaining the integrity of the physical barriers designed to contain radioactivity.” [“Technical Specification for Facility License; Safety Analysis Reports,” 33 FR 18,610 (December 17, 1968)]. Pursuant to 10 CFR 50.36, TS are required to include items in the following five categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. However, the rule does not specify the particular requirements to be included in a plant’s TS.

On July 22, 1993, the Commission published a Policy Statement (58 FR 39,132) on the scope and purpose of TS for nuclear power plants. This Policy Statement included guidance criteria to be used in determining which of the LCOs and associated surveillance requirements should remain in the TS. The Policy Statement established four criteria to define the scope of equipment and parameters to be included in the improved standard technical specifications. These criteria were developed for licenses authorizing operation and focused on instrumentation to detect degradation of the reactor coolant system pressure boundary and on equipment or process variables that affect the integrity of fission product barriers during design-basis accidents (DBAs) or transients. The fourth criterion refers to the use of operating experience and probabilistic risk assessment to identify and include in the TS structures, systems, and components shown to be significant to public health and safety. These criteria, codified by 10 CFR 50.36, are the source of the TS requirements for facilities licensed under 10 CFR Part 50. A general discussion of these considerations is provided below.

Criterion 1—10 CFR 50.36(c)(2)(ii)(A)—states that TS LCOs must be established for “installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.” Since the KPS facility is no longer licensed to operate, this criterion is not applicable.

Criterion 2—10 CFR 50.36(c)(2)(ii)(B)—states that TS LCOs must be established for a “process variable, design feature, or operating restriction that is an initial condition of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.” The purpose of this criterion is to capture those process variables that have initial values assumed in the DBA and transient analyses and that are monitored and controlled during power operation. Since the KPS facility is no longer licensed to operate, this criterion is not applicable.

Criterion 3—10 CFR 50.36(c)(2)(ii)(C)—states that TS LCOs must be established for structures, systems, or components (SSCs) that are part of the primary success path and that function or actuate to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The intent of this criterion is to capture into the TS those SSCs that are part of the primary success path of a safety sequence analysis. The primary success path of a safety sequence analysis consists of a combination and sequences of equipment needed to operate (including consideration of the single failure criterion), so that the plant response to DBAs and transients limits the consequences of these events to within the appropriate acceptance criteria. Since fuel will have been removed from the spent fuel pool at the KPS facility prior to implementation of this amendment, this criterion is not applicable.

Criterion 4—10 CFR 50.36(c)(2)(ii)(D)—states the TS LCOs must be established for SSCs that operating experience or probabilistic risk assessment has shown to be significant to public health and safety. The intent of this criterion is that risk insights and operating experience be factored into the establishment of TS LCOs. Since fuel will have been removed from the spent fuel pool at the KPS facility prior to implementation of this amendment, this criterion is not applicable.

Administrative controls, 10 CFR 50.36(c)(5) states that they “are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner.” The particular administrative controls to be included in the TS, therefore, are the provisions that the Commission deems essential for the safe operation of the facility that are not already covered by other regulations. Accordingly, the NRC staff has determined that administrative controls that are not specifically required under 10 CFR 50.36(c)(5) may be relocated to more appropriate documents (e.g., Quality Assurance Program, Technical Requirements Manual, Security Plan, or Emergency Plan), which are subject to regulatory controls. Similarly, while the required content of TS administrative controls are specified in 10 CFR 50.36(c)(5), particular details may be relocated to licensee-controlled documents, where other regulations provide adequate regulatory control.

The Quality Assurance (QA) program is a logical candidate for relocations of administrative controls due to the controls imposed by such regulations as Appendix B to 10 CFR Part 50, the existing NRC-approved QA plans and commitments to industry QA standards, and the established QA program change control process of 10 CFR 50.54(a). The Technical Requirements Manual (TRM) is another logical candidate for relocations of administrative controls. The TRM is part of the USAR and therefore subject to the requirements of 10 CFR 50.59. Maintaining relocated requirements in accordance with the change control process of 10 CFR 50.59 provides adequate regulatory control.

The NRC Administrative Letter (AL) 95-06, "Relocation of Technical Specification Administrative Controls Related to Quality Assurance," (<http://www.nrc.gov/reading-rm/doc-collections/gen-comm/admin-letters/1995/al95006.html>) provides guidance to licensees requesting amendments that relocate administrative controls to NRC-approved QA program descriptions, where subsequent changes are controlled pursuant to 10 CFR 50.54(a). AL 95-06 provides specific guidance in the areas of: (1) independent safety engineering group, (2) reviews and audits, (3) procedure review process, and (4) records and record retention.

Some relocations are specifically discussed in AL 95-06, while others are similar in nature. Relocations not specifically discussed in AL 95-06 are evaluated with respect to the appropriateness of the relocation. Editorial changes regarding the QA program are allowed without basis by 10 CFR 50.54(a)(3) and are not explicitly evaluated.

4.0 TECHNICAL EVALUATION

The licensee is currently in the process of transferring all the spent nuclear fuel from the spent fuel pool (SFP) to an Independent Spent Fuel Storage Installation (ISFSI). After all the spent nuclear fuel has been transferred from the SFP to the ISFSI, many of the requirements in the license or technical specifications are inapplicable or are no longer appropriate. The licensee has proposed multiple changes to the license and technical specifications to reflect the change in status of spent fuel storage. Each of the proposed changes is evaluated below based on the premise that the changes will not take effect until after all the spent nuclear fuel has been transferred to the ISFSI.

4.1 Facility Operating License Changes

The licensee has proposed to delete License Condition 2.C.(10), "Mitigation Strategy License Condition," which incorporate the requirements for the Interim Compensatory Measures (ICM) Order EA-02-026, Section B.5.b mitigation strategies (dated February 25, 2002) by providing mitigation strategies and response procedure requirements for loss of large areas of the plant due to explosions or fire. These mitigation strategies were subsequently codified in 10 CFR 50.54(hh)(2). On November 28, 2011, the NRC rescinded Item B.5.b of the ICM Order EA-02-26. Additionally, as stated in 10 CFR 50.54(hh)(3), this section of the regulation does not apply to a defueled reactor that has submitted the certification for permanent removal of fuel under 10 CFR 50.82(a). Therefore, neither the ICM Order nor 10 CFR 50.54(hh) continue to apply to KPS. Following the transfer of all spent fuel to the ISFSI, the spent fuel pool will no longer be used for spent fuel storage. Additionally, as discussed below, the licensee would add a limitation in the TS to prohibit storage of spent fuel in the spent fuel pool. With spent fuel storage no longer allowed in the spent fuel pool, these mitigation strategies would no longer be needed. Therefore, the proposed deletion is acceptable.

The licensee has proposed to delete License Condition 2.C.(11), which specifies changes to the USAR in support of NRC approval of the single-failure proof auxiliary building crane to be used for spent fuel cask loading operations. Following the transfer of all spent fuel to the ISFSI, the single-failure proof Fuel Building crane would no longer be needed for spent fuel cask loading operations and the approval of the crane for such use would no longer be needed. Therefore, the deletion of License Condition 2.C.(11) is acceptable.

The licensee has proposed to delete License Condition 2.C.(12), which specifies implementation of new and revised surveillance requirements associated with the conversion to improved TS approved by Amendment 207. With all irradiated fuel stored within the ISFSI, there are no applicable Surveillance Requirements (SRs). Therefore, as discussed below, all the TS that use or refer to SRs are to be deleted. Without any reference to SRs, there is no need for a license condition that specifies their implementation. Therefore, this license condition is no longer required and the proposed deletion is acceptable.

The licensee has proposed to delete License Condition 2.C.(13), which specifies relocation of details and requirements (associated with conversion to improved TS approved by Amendment 207) to other controlled documents. The licensee stated that relocation of the requisite items to licensee-controlled documents was completed as required by the amendment implementation process, completion of which was documented in a letter from DEK to NRC dated February 21, 2011 (ADAMS Accession No. ML110530159). Therefore, License Condition 2.C.(13) has fulfilled its purpose and is no longer needed. The proposed deletion is acceptable.

The licensee has proposed to delete License Condition 2.C.(16), which specifies changes to the control of spent fuel pool neutron absorber material surveillance programs in the event that all spent fuel assemblies have not been removed from the spent fuel pool by December 31, 2017. Following the transfer of all spent fuel to the ISFSI, this license condition is rendered moot.

However, this Amendment, approving deletion of License Condition 2.C.(16), does not become effective until the last spent fuel assembly has been removed from the spent fuel pool and placed at the ISFSI. Therefore, so long as any spent fuel assemblies remain in the spent fuel pool, License Condition 2.C.(16) would remain in effect. Additionally, as discussed below, the licensee would add a limitation in the TS to prohibit storage of spent fuel in the spent fuel pool. With spent fuel storage no longer allowed in the spent fuel pool, spent fuel pool neutron absorber material surveillance programs would no longer be needed. Therefore, the deletion of License Condition 2.C.(16) is acceptable.

4.2 Technical Specification Changes

The licensee has proposed to delete TS Section 1.0. "Use and Application," which includes: "Definitions," "Logical Connectors," "Completion Times," and "Frequency." As will be discussed later in this safety evaluation, all the TS that use or refer to the definition of actions, logical connectors, completion times, or frequency are to be deleted. Without any reference to actions, logical connectors, completion times, or frequency, they need not be defined in the TS. The proposed deletion is administrative and acceptable.

The licensee has proposed to delete TS Section 3.0, which includes: "Limiting Condition for Operation (LCO) Applicability," and "Surveillance Requirement (SR) Applicability." As will be discussed later in this safety evaluation, all the TS that use or refer to LCOs or SRs are to be deleted. Without any reference to LCOs or SRs there is no need for them to be defined in the TS. The proposed deletion is administrative and acceptable.

The licensee has proposed to delete TS Section 3.7, "Plant Systems," which includes: TS 3.7.13, "Spent Fuel Pool Water Level," 3.7.14 "Spent Fuel Pool Boron Concentration," and 3.7.15 "Spent Fuel Pool Storage." TS 3.7.13 specifies the minimum water level in the spent fuel pool during movement of irradiated fuel assemblies in the spent fuel pool and provides surveillance and action requirements for not meeting the specification. TS 3.7.14, specifies the minimum boron concentration in the spent fuel pool during storage of fuel assemblies in the spent fuel pool and provides surveillance and action requirements for not meeting the specification. TS 3.7.15, specifies the enrichment and burn-up limits for fuel stored in the spent fuel pool and provides surveillance and action requirements for not meeting the specification. Following the transfer of all spent fuel to the ISFSI, the spent fuel pool will no longer be used for spent fuel storage. Additionally, as discussed below, the licensee is adding a limitation in the TS that prohibits storage of spent fuel in the spent fuel pool. With spent fuel storage no longer allowed in the spent fuel pool the specifications included in TS 3.7 are no longer needed, so the proposed deletion is acceptable.

The licensee has proposed deletion of the portion of TS Section 4.1, "Site Location," that specifies the minimum distance from the center line of the reactor containment to the site exclusion radius. Because the KPS renewed facility operating license no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel, this design feature is no longer needed. As such, this portion of TS Section 4.1 may be deleted.

The licensee has proposed the deletion of the current contents of TS Section 4.3, "Fuel Storage," which includes TS 4.3.1, "Criticality," TS 4.3.2, "Drainage," and TS 4.3.3, "Capacity." TS 4.3.1, specifies fuel enrichment, Keff [K effective is the average number of neutrons from one fission that cause another fission], rack design, and pool storage location requirements to ensure that fuel stored in the pool is protected from accidental criticality. TS 4.3.2, specifies fuel pool design requirements to prevent drainage. TS 4.3.3, specifies storage capacity limits for fuel assemblies in the spent fuel pool. The license has also proposed the addition of new TS 4.3, which will read: "Spent fuel shall not be stored in the spent fuel pool." Following the transfer of all spent fuel to the ISFSI, the spent fuel pool will no longer be used for spent fuel storage. Additionally, the licensee is adding a limitation in the TS that prohibits storage of

spent fuel in the spent fuel pool. With spent fuel storage no longer allowed in the spent fuel pool the specifications currently included in the existing TS 4.3 are no longer needed, therefore the proposed deletion is acceptable. The proposed addition of new TS 4.3 provides a prohibition against the storage of spent fuel in the spent fuel pool, which supports the licensee's other proposed changes and ensures that fuel will not be placed in a spent fuel pool that has regulatory controls removed, and is therefore acceptable.

The licensee has proposed to relocate TS 5.1, "Responsibility," to the Quality Assurance Program Document (QAPD) except for TS 5.1.2, which specifies that the shift manager shall be responsible for the shift command function. The transfer of the administrative controls in TS 5.1 is consistent with the guidance in AL 95-06, and therefore, is acceptable. The position of shift manager described in TS 5.1.2 is a holdover from the control room function of supervising multiple functions of an operating nuclear power plant. With the limited requirements for supervision of the passive fuel storage at the ISFSI or with respect to the decommissioning of the former power generation facility, that position is no longer required and the proposed deletion of TS 5.1.2 is acceptable.

The licensee has proposed to revise TS 5.2, "Organization," by relocating to the QAPD TS 5.2.1, except for the portion of TS 5.2.1.d, related to individuals who train Certified Fuel Handlers, which will be deleted, and by deleting TS 5.2.2. The transfer of the administrative controls in TS 5.2.1, is consistent with the guidance in AL 95-06, and therefore, is acceptable. The portion of TS 5.2.1, to be deleted specifies requirements for individuals who train Certified Fuel Handlers. Following the transfer of all spent fuel to the ISFSI and the new prohibition from placing fuel in the spent fuel pool, there will no longer be a need for Certified Fuel Handlers; therefore this proposed deletion is acceptable. TS 5.2.2, "Facility Staff," currently specifies the organizations and positions for activities affecting the safe storage of irradiated fuel. The licensee's QAPD addresses any necessary organizational requirements for the fuel in the ISFSI. Therefore the deletion of TS 5.2.2 after the fuel has been moved will have no impact and is acceptable.

The licensee has proposed the relocation of TS 5.3, "Facility Staff Qualifications," to the QAPD except for TS 5.3.2, which is being deleted. The transfer of the administrative controls in TS 5.3 is consistent with the guidance in AL 95-06, and therefore, is acceptable. TS 5.3.2 currently specifies requirements for a certified fuel handler training program. Following the transfer of all spent fuel to the ISFSI and the new prohibition from placing fuel in the spent fuel pool, there will no longer be a need for Certified Fuel Handlers or an associated training program. Therefore the deletion of this requirement from the TS is acceptable.

The licensee has proposed the relocation of TS 5.4, "Procedures," to the QAPD except for TS 5.4.1.a., which is to be deleted. The transfer of the administrative controls in TS 5.4 is consistent with the guidance in AL 95-06, and therefore, is acceptable. TS 5.4.1.1 addresses the wet storage of nuclear fuel in a spent fuel pool. Following the transfer of all spent fuel to the ISFSI, the spent fuel pool will no longer be used for spent fuel storage. Additionally, as discussed above, the licensee is adding a limitation in TS 4.3 that prohibits storage of spent fuel in the spent fuel pool. With spent fuel storage no longer allowed in the spent fuel pool, the specifications included in TS 5.4.1.a., would no longer be needed, so the proposed deletion is acceptable.

The licensee has proposed the relocation of TS 5.5, "Programs and Manuals," to the Technical Requirements Manual (TRM) except for the final sentence of TS 5.5.3, "Radioactive Effluent Controls Program," the final sentence of TS 5.5.10, "Storage Tank Radioactivity Monitoring Program," and TS 5.5.12, "Technical Specifications (TS) Bases Control Program," which are to be deleted. The TRM is part of the USAR and therefore subject to the requirements of 10 CFR 50.59. The three programs and one manual required by the current TS 5.5 are the Radioactive Effluent Controls Program, the Storage Tank Radioactivity Monitoring Program, the Technical

Specifications (TS) Bases Control Program, and the Offsite Dose Calculation Manual (ODCM). Both the ODCM and the Radioactive Effluent Controls Program will continue to meet the requirements of 40 CFR 190, 10 CFR 20, 10 CFR 50.36(a), and 10 CFR 50, Appendix I. Since maintaining the administrative controls of TS 5.5 in accordance with the change control process of 10 CFR 50.59 provides adequate regulatory control, this relocation is acceptable. The final sentence of TS 5.5.3 specifies that the provisions of TS SR 3.0.2 and SR 3.0.3 are applicable to Radioactive Effluent Controls Program Surveillance Frequencies; while the final sentence of TS 5.5.10 specifies that the provisions of TS SR 3.0.2 are applicable to the Storage Tank Radioactivity Monitoring Program Surveillance Frequencies. Since SR 3.0.2 and SR 3.0.3 are being deleted, as described above regarding TS Section 3.0, these two sentences are no longer germane. Therefore, the provisions of the now deleted TS are no longer needed, and the proposed deletion of the final sentence of TS 5.5.3 and final sentence of TS 5.5.10, is acceptable. TS 5.5.12, specifies the process for changes to the TS Bases. Currently the TS Bases are all related to storage of spent fuel in the spent fuel pool, specifically the requirements in TS Section 3.0, which the licensee would delete as described above. Following the transfer of all spent fuel to the ISFSI, the spent fuel pool will no longer be used for spent fuel storage. Therefore the bases for now deleted TS requirements are no longer needed, and the proposed deletion of TS 5.5.12 is acceptable.

The license has proposed to relocate TS 5.6, "Reporting Requirements," to the TRM in its entirety. The TRM is part of the USAR and therefore subject to the requirements of 10 CFR 50.59. Maintaining the administrative controls of TS 5.6 in accordance with the change control process of 10 CFR 50.59 provides adequate regulatory control, and this relocation is therefore acceptable.

The licensee has proposed the deletion of the Technical Specification Bases in its entirety. Currently the TS Bases are all related to storage of spent fuel in the spent fuel pool, specifically the requirements in TS Section 3.0, which the licensee would delete as described above. Following the transfer of all spent fuel to the ISFSI, the spent fuel pool will no longer be used for spent fuel storage. Therefore the bases for now-deleted TS requirements would no longer be needed, and the proposed deletion of the Bases is acceptable.

Other editorial changes were proposed by the licensee to facilitate the transfer of the TS requirements to the QAPD and the TRM. These changes are administrative in nature and are acceptable.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments include changes to requirements with respect to installation or use of a facility component located within the protected area and changes to recordkeeping, reporting, or administrative procedures or requirements. NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on the finding, which was published in the Federal Register on November 8, 2016 (81 FR 78,646). Accordingly, the amendment request meets the eligibility criteria for categorical exclusions set forth in 10 CFR 51.22(c)(9) or 10 CFR 51.22(c)(10)(ii). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 CONCLUSION

The changes proposed by this license amendment request will delete requirements that are rendered not applicable following the transfer of spent nuclear fuel to the ISFSI and relocate administrative controls to the QAPD and the TRM. On the basis of its review, NRC staff concluded that the licensee's request will adequately address the regulatory safety requirements for a permanently shutdown nuclear power facility with the spent nuclear fuel transferred to dry cask storage in an ISFSI. The staff, therefore, concludes that the license amendment request is acceptable.

The staff has concluded, based on the considerations discussed above, that: 1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and 2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: Ted Carter