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Dominion

April 4, 2008

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

Serial No. 07-0632
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Docket No.: 50-305
License No.: DPR-43

DOMINION ENERGY KEWAUNEE, INC.
KEWAUNEE POWER STATION
LICENSE AMENDMENT REQUEST 237: REMOVAL OF SHIELD BUILDING AND AUXILIARY BUILDING SPECIAL VENTILATION TRAIN FILTER HEATER REQUIREMENTS

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). This amendment requests removal of operability and surveillance requirements for the shield building ventilation (SBV) and auxiliary building special ventilation (ABSV) heaters. Additionally, with the removal of the operability and surveillance requirements for the SBV heaters, DEK requests a reduction in the operating time required to demonstrate SBV system operability from 10 hours to 15 minutes.

DEK has determined that this proposed amendment does not constitute a significant hazard as defined in 10 CFR 50.92. This determination is based on the proposed amendment not changing any previously evaluated accident contained in the updated safety analysis report (USAR), does not change the design function of the affected ventilation systems, and does not alter the safety margins contained in the radiological accident analysis.

This amendment is being submitted as part of DEKs efforts to increase margin in the post-accident loading of the KPS emergency diesel generators. Approval and implementation of this proposed amendment will eliminate about 64 kW of post-accident electrical load from each emergency diesel generator. In addition, this amendment gains margin on safety related equipment environmental temperature.

DEK requests approval of the proposed amendment by March 31, 2009. Once approved, the amendment shall be implemented within 60 days.

DEK might request the approval date be adjusted based on future ambient heat load analysis results associated with safety related equipment. Current heat-load analysis assumes a recirculation airflow rate with both trains of auxiliary building special ventilation in service. The amount of recirculation airflow assumed affects the heat load calculation for the room containing the auxiliary building special ventilation fans. The current analysis conservatively assumes that all the air is recirculated, adding the most heat-load to the room. Current analysis results in the maximum post-accident ambient room temperature limit being exceeded when Lake Michigan water temperature at the

KPS service water inlet exceeds 71°F. The current analysis also assumes outside air temperature and solar load typical for April weather conditions at KPS. DEK is planning to perform additional testing, updating of the heat-load analysis, and providing additional compensatory measures, if necessary, that will allow continued operation for a service water inlet water temperature exceeding 71°F. However, if this additional testing and analysis shows operation through the summer is not possible, DEK may request an expedited review of this submittal.

Attachment 1 to this letter contains a description, a safety evaluation, a significant hazards determination, and environmental considerations for the proposed changes. Attachment 2 contains the marked-up KPS Technical Specification pages.

The KPS Plant Operations Review Committee has approved the proposed change and a copy of this submittal has been provided to the State of Wisconsin in accordance with 10 CFR 50.91(b).

If you have any questions or require additional information, please contact Mr. Gerald Riste at (920) 388-8424.

Very truly yours,

Gerald T Bischof
Vice President – Nuclear Engineering

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Gerald T. Bischof, who is Vice President – Nuclear Engineering of Dominion Energy Kewaunee, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 4TH day of April, 2008.

My Commission Expires: May 31, 2010.

Vicki L. Hull
Notary Public

VICKI L. HULL
Notary Public
Commonwealth of Virginia
140642
My Commission Expires May 31, 2010

Attachments:

1. Discussion of Change, Safety Evaluation, Significant Hazards Determination and Environmental Considerations
2. Marked-up TS Pages

Commitments made by this letter: None

cc: Regional Administrator, Region III
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ATTACHMENT 1

LICENSE AMENDMENT REQUEST 237
REMOVAL OF SHIELD BUILDING AND AUXILIARY BUILDING SPECIAL VENTILATION TRAIN FILTER HEATER REQUIREMENTS

DISCUSSION OF CHANGE, SAFETY EVALUATION, SIGNIFICANT HAZARDS DETERMINATION AND ENVIRONMENTAL CONSIDERATIONS

KEWAUNEE POWER STATION
DOMINION ENERGY KEWAUNEE, INC.

LICENSE AMENDMENT REQUEST 237: REMOVAL OF SHIELD BUILDING AND AUXILIARY BUILDING SPECIAL VENTILATION TRAIN FILTER HEATER REQUIREMENTS.

INTRODUCTION

Dominion Energy Kewaunee, Inc. (DEK) is requesting an amendment to the Kewaunee Power Station (KPS) technical specifications (TS) to remove the operability and surveillance requirements for the heaters contained in the shield building ventilation (SBV) system and in the auxiliary building special ventilation (ABSV) system. DEK has determined that these heaters add unnecessary electrical load to the KPS emergency diesel generators and that the ABSV heaters add an unnecessary heat load to the auxiliary building.

Additionally, with the removal of the operability and surveillance requirements for the SBV heaters, DEK requests a reduction in the operating time required to demonstrate SBV system operability from 10 hours to 15 minutes.

The purpose of these heaters is to heat the incoming air stream and reduce its relative humidity before it enters the ventilation system high-efficiency particulate air (HEPA) filters and iodine adsorbers, thus minimizing adsorption of water vapor from the air by the iodine adsorbers. However, the currently required testing methodology for the ABSV and SBV verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident analysis of record (AOR), with a safety factor of 2, without crediting the heaters.

1.0 DESCRIPTION

This letter is a request to amend Operating License DPR-43 for Kewaunee Power Station (KPS).

The proposed amendment would revise the KPS Operating License to remove the technical specification requirements associated with heaters in the shield building ventilation and auxiliary building special ventilation systems. This proposed change would eliminate heat load added to the auxiliary building by the ABSV system heaters when the system is in recirculation and reduce post-accident electrical loading on the emergency diesel generators. In addition, with removal of the TS requirements associated with the special ventilation heaters, a reduction in the TS required operating time for demonstrating SBV system operability is proposed.

Additionally, with the removal of the operability and surveillance requirements for the SBV heaters, DEK requests a reduction in the operating time required to demonstrate SBV system operability from 10 hours to 15 minutes.

2.0 PROPOSED CHANGE

The proposed amendment would modify KPS technical specifications (TS) TS 3.6, "Containment System," and TS 4.4, "Containment Tests," related to the SBV and ABSV heaters. These TS contain requirements related to SBV and ABSV heater operability and testing.

Specifically, DEK is proposing to change the following technical specifications as indicated by strikethrough (for deleted text) and double-underlined (for added text).

DEK is proposing to modify KPS TS 3.6.c as follows:

c. All of the following conditions shall be satisfied whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required:

1. Both trains of the Shield Building Ventilation System, including filters, ~~and heaters~~ shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

2. Both trains of the Auxiliary Building Special Ventilation System, including filters, ~~and heaters~~ shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

DEK is proposing to modify KPS TS 4.4.c and KPS TS 4.4.d as follows.

c. Shield Building Ventilation System

1. At least once per operating cycle or once every 18 months, whichever occurs first, the following conditions shall be demonstrated:

a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is < 10 inches of water and the pressure drop across any HEPA filter bank is < 4 inches of water at the system design flow rate (±10%).

b. Automatic initiation of each train of the system.

c. ~~Operability of heaters at rating and the absence of defects by visual observation~~. Deleted.

2. Shield Building Ventilation System Filter Testing

   a. The in-place DOP test for HEPA filters shall be performed (1) at least once per 18 months and (2) after each complete or partial replacement of a HEPA filter bank or after any maintenance on the system that could affect the HEPA bank bypass leakage.

   b. The laboratory tests for activated carbon in the charcoal filters shall be performed (1) at least once per 18 months for filters in a standby status or after 720 hours of filter operation, and (2) following painting, fire, or chemical release in any ventilation zone communicating with the system.

   c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any maintenance on the system that could affect the charcoal adsorber bank bypass leakage.

   d. Each train shall be operated ~~with the heaters on~~ at least ~~10 hours~~ 15 minutes every month.

3. An air distribution test on these HEPA filter banks will be performed after any maintenance or testing that could affect the air distribution within the systems. The test shall be performed at design flow rate (±10%). The results of the test shall show the air distribution is uniform within ±20%.(1)

4. Each train shall be determined to be operable at the time of its periodic test if it produces measurable indicated vacuum in the annulus within 2 minutes after initiation of a simulated safety injection signal and obtains equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits.

d. Auxiliary Building Special Ventilation System

1. Periodic tests of the Auxiliary Building Special Ventilation System, including the door interlocks, shall be performed in accordance with TS 4.4.c.1 through TS 4.4.c.3, except for TS 4.4.c.2.d.

2. Each train of Auxiliary Building Special Ventilation System shall be operated ~~with the heaters on~~ at least 15 minutes every month.

3. Each system shall be determined to be operable at the time of periodic test if it starts with coincident isolation of the normal ventilation ducts and produces a measurable vacuum throughout the special ventilation zone with respect to the outside atmosphere.

In summary, DEK is requesting an amendment to the KPS TS to remove the operability and surveillance requirements for the heaters contained in the shield building ventilation (SBV) and auxiliary building special ventilation (ABSV) systems. DEK has determined that these heaters are not necessary to ensure charcoal adsorber iodine removal efficiency is greater than assumed in the KPS AOR. Therefore, the heaters add unnecessary electrical load to the KPS emergency diesel generators as well as unnecessary heat load, via recirculated air, to the auxiliary building.

Additionally, because the SBV heaters are being removed from KPS TS, the associated 10-hour operation of the ventilation train is no longer necessary. Fifteen minutes is appropriate.

3.0 BACKGROUND

3.1 Basic System Description

The KPS total containment consists of two systems; a primary containment system and a secondary containment system as shown in KPS USAR Figure 5.1-1.

The primary containment system consists of a steel structure and its associated engineered safety features (ESF) systems. The primary containment system, also referred to as the reactor containment vessel, is a low-leakage steel shell, including all its penetrations, designed to confine the radioactive materials that could be released by a loss of integrity of the reactor coolant system pressure boundary. Systems directly associated with the primary containment system include the containment vessel internal spray, containment air-cooling and containment isolation systems. The principal post-accident function of the containment spray and the air-cooling system is to reduce the pressure (and temperature) in the reactor containment vessel. The principal post-accident function of the containment isolation system is to confine the fission products within the primary containment system boundary.

The secondary containment system consists of the shield building, its associated ESF systems, and a special ventilation zone in the auxiliary building. The shield building is a medium-leakage concrete structure surrounding the reactor containment vessel and designed to provide:

- Biological shielding for design basis accident (DBA) conditions.
- Biological shielding for parts of the reactor coolant system (RCS) during operation.
- Protection of the reactor containment vessel from low temperatures, adverse atmospheric conditions, and external missiles.
- A means for collection and filtration of fission-product leakage from the reactor containment vessel following a design basis accident.

The shield building ventilation system is the ESF utilized for collection and filtration of fission-product leakage from the reactor containment vessel following a design basis accident. The special ventilation zone in the auxiliary building provides a medium-leakage boundary, which confines leakage that could conceivably by-pass the shield building annulus. The safety system associated with the auxiliary building special ventilation zone is the auxiliary building special ventilation (ABSV) system. The principal function of the ABSV system is to confine and filter any potential fission products that may by-pass the shield building annulus.

3.2 Shield Building Ventilation System

The SBV system is discussed in KPS USAR Section 5.5 and shown on KPS USAR Figure 5.4-1. The SBV system consists of two full-capacity redundant fan and filter trains, which share a common system exhaust vent with the containment purge and vent system. The ventilation exhaust pipe is located in the shield building annulus and extends approximately five feet above the shield building. The SBV fans and filters are located in the auxiliary building (see KPS USAR figure 1.2-7, General Arrangement Reactor and Auxiliary Building Misc. Floor Plans). Each train is made up of a demister, pre-filter, electric heater, absolute filter, charcoal filter, a final absolute filter, and one fan. The fan is used for both the exhausting and recirculation functions. The discharge for each fan splits into two flow paths, the exhaust and recirculation paths, each sized to accommodate the full capacity of the fan. Each flow path contains a gravity check damper and a hydraulically operated control damper. The exhaust flow from each train is directed to the common exhaust vent, and the recirculation flow from each train is returned to the annulus through ducting located to enhance circulation within the annulus.

Following a LOCA, a safety injection signal places both SBV trains into operation. The system may also be started manually from the control room. The operation of the system, after initiation by either automatic or manual means, is as follows:

1. Initiating signal starts the SBV fan.
2. Start of the fan will energize the filter heater, and open the filter inlet damper. The recirculation control damper will remain closed, and the exhaust control damper will be fully open.
3. The SBV fan, exhausting to atmosphere, will rapidly draw down pressure in the annulus.
4. At -1.0 inch water column (WC) in the shield building, the control dampers receive a permissive signal to modulate.
5. Because annulus pressure is lower than the pressure the system is designed to control, the exhaust control damper will modulate to the fully closed position and the recirculation control damper will modulate to the fully open position.
6. When annulus in-leakage has increased the annulus pressure to the set pressure of the controller, the control dampers will automatically modulate to maintain

annulus pressure at setpoint by allowing a portion of the SBV fan discharge to be exhausted to the atmosphere.

7. The system then modulates the exhaust and recirculation dampers to maintain a slight vacuum in the annulus.

KPS USAR Section 5.5.1.1 states that the heating elements are designed to increase the temperature of the incoming air by a sufficient amount to assure a maximum of 70 percent relative humidity entering the charcoal bed with an assumed 100 percent saturated air entering the demisters at rated conditions.

3.3 Auxiliary Building Special Ventilation System (Zone SV)

The auxiliary building special ventilation system is discussed in KPS USAR Section 9.6.5.

The auxiliary building special ventilation (ABSV) system is designed to reliably collect any containment system leakage that might bypass the shield building annulus and to cause it to pass through charcoal filters before reaching the environment. To ensure confinement of such bypass leakage and its removal by the auxiliary building ventilation system, the areas within the auxiliary building where there is the potential for such leakage are designated as Zone SV. KPS USAR Figures 1.2-2, 1.2-4, 1.2-6, 1.2-7, and 1.2-10 show the areas included in Zone SV. A detailed analysis of leakage paths from primary containment to the auxiliary building is provided in KPS USAR Appendix H.2. The analysis demonstrates that leakage from the containment system does not impose a severe burden on the ABSV system and that such leakage will be very small when compared to the potential leakage from the containment system to the shield building annulus.

The leakage specification for Zone SV stipulates there be no ex-filtration of air from the Zone SV boundary with only one of the redundant ABSV trains in operation. Initial acceptance tests demonstrated the integrity of the Zone SV perimeter, as well as the capacity of the ventilation system.

The ABSV system is provided with redundant intakes, which connect to redundant filter assemblies each containing roughing filters, electric heaters, HEPA filters, charcoal filters, and another set of HEPA filters. The air is directed to redundant exhaust fans and to a common exhaust duct, as shown in KPS USAR Figure 9.6-7. Zone SV pressure is controlled by weighted back-draft dampers that re-circulate a portion of the exhaust fan air at approximately 0.25-inch water column, thus maintaining a slight negative pressure in Zone SV.

The automatic initiating signals for the ABSV system are a safety injection signal, a high radiation signal from the radiation detection instruments in the auxiliary building ventilation exhaust stack, or a steam exclusion zone SV area isolation signal. When the ABSV system is actuated, the normal supply and exhaust ducts from Zone SV

automatically close, and the normal supply and exhaust fans for the auxiliary building stop.

The ABSV electric heating elements are capable of sufficiently increasing the incoming air temperature to ensure a maximum 70 percent relative humidity entering the charcoal filter bed assuming an initial relative humidity of 80 percent entering the heaters. The heaters are verified by testing to be capable of lowering the humidity from 80 to a maximum of 70 percent. An interlock with the Zone SV exhaust fans assures that an electric heater cannot operate unless its associated train's fan starts.

The ABSV exhaust air is discharged through the auxiliary building ventilation exhaust stack, which extends through the roof of the auxiliary building. The ABSV system flow capacity is sufficient to provide a measurable total negative pressure in Zone SV under credible environmental and operating conditions.

4.0 TECHNICAL ANALYSIS

Dominion Energy Kewaunee, Inc. (DEK) is requesting an amendment to the Kewaunee Power Station (KPS) technical specifications (TS) to remove the operability and surveillance requirements for the heaters contained in the shield building ventilation (SBV) and auxiliary building special ventilation (ABSV) systems. DEK has determined that these heaters are not necessary to ensure charcoal adsorber iodine removal efficiency is greater than assumed in the KPS AOR or to ensure safety functions are accomplished consistent with the AOR. Furthermore, the heaters add unnecessary electrical load to the KPS emergency diesel generators. In addition, the ABSV heaters add an unnecessary heat load, via re-circulated air, to the auxiliary building without a commensurate benefit to safety of the plant.

Specifically the proposed amendment would:

1. Remove the operability requirements for the SBV and ABSV system heaters located in TS 3.6.c.
2. Remove the surveillance requirements for the SBV system heaters located in TS 4.4.c.
3. Remove the surveillance requirements for the ABSV system heaters located in TS 4.4.d.
4. Modify TS surveillance requirement 4.4.c, which requires monthly operation of the SBV system, to change the period that each SBV train must be operated from 10 hours to 15 minutes.

4.1 Heater Removal

The purpose of the SBV and ABSV system is to collect leakage from the reactor containment vessel and discharge it through filters (particulate-absolute-charcoal). The KPS TS provides acceptance criteria for the performance of the SBV and ABSV filters

to ensure post-accident dose consequences remain within NRC mandated criteria. For KPS, these criteria are contained in 10 CFR 50.67.

10 CFR 50.67, "Accident Source Term," provides the following criteria for licensees who wish to use an alternate source term methodology in their design basis radiological analysis.

1. An individual located at any point on the boundary of the exclusion area for any 2-hour period following the onset of the postulated fission product release would not receive an excessive radiation dose, and;
2. An individual located at any point on the outer boundary of the low population zone, who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage), would not receive an excessive radiation dose, and;
3. Adequate radiation protection is provided to permit access to and occupancy of the control room under accident conditions without personnel receiving excessive radiation exposures.

The NRC staff has provided a method that is acceptable for meeting the requirements contained in 10 CFR 50.67. This method is contained in NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," (RG-1.183) (reference 1). In KPS Operating License Amendment 190 (reference 2), the NRC approved an alternative radiological accident analysis for KPS based on the methodology in RG-1.183. In this license amendment the maximum charcoal adsorber filter iodine removal efficiency assumed for the ABSV and SBV is 95% (see Table 7, Large Break Loss-of-Coolant Accident). Using a charcoal adsorber filter iodine removal efficiency of 95% and the methodology contained in RG-1.183, the KPS radiological accident analysis obtained acceptable results.

10 CFR 50.36, "Technical Specifications," states that technical specifications will be derived from the analyses and evaluation included in the safety analysis report and that limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Additionally, 10 CFR 50.36 states that surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

Thus, limiting conditions for operation and surveillance requirements are not required to be included in the facility TS for equipment which is not required to ensure acceptable results of the analysis and evaluations included in the safety analysis report. The currently required testing methodology for the ABSV and SBV systems verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident analysis of record (AOR), with a safety factor of 2, without crediting the

heaters. Since the heaters are not required to obtain acceptable results in the AOR the heaters are not required to be included in the KPS TS.

NRC Generic Letter 99-02 (reference 3) describes two different acceptable relative humidity (RH) values for testing of charcoal adsorbers, 70% or 95%. The RH value used is dependent upon whether humidity control is credited in the radiological accident analysis. NRC Generic Letter 99-02, attachment 2, "Sample Technical Specifications," states:

> *"ASTM D3803-1989 is a more stringent testing standard because it does not differentiate between used and new charcoal, it has a longer equilibration period performed at a temperature of 30 °C [86 °F] and a relative humidity (RH) of 95% (or 70% RH with humidity control), and it has more stringent tolerances that improve repeatability of the test."*
>
> *"Humidity control can be provided by heaters or an NRC approved analysis that demonstrates that the air entering the charcoal will be maintained less than or equal to 70 percent RH under worst-case design-basis conditions."*

KPS TS 3.6.c.3.B requires that the results of laboratory charcoal sample analysis from the SBV and ABSV charcoal shall show greater than or equal to 97.5% methyl iodine removal when tested in accordance with ASTM D3803-89 at conditions of 30 °C and 95% RH. This testing requirement is consistent with testing standard for ventilation systems without humidity control (e.g. heaters). KPS TS 3.6.c.3.B also provides margin in meeting the assumptions of the KPS radiological AOR (reference 2). Specifically, the TS 3.6.c.3.B acceptance criteria for iodine removal efficiency is greater than or equal to 97.5% while the KPS radiological AOR assumes 95% iodine removal. Thus, as recommended in Generic Letter 99-02, a safety factor of at least 2 is provided in the TS acceptance criteria.

In conclusion, the currently required testing methodology for the ABSV and SBV verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident analysis of record (AOR), with a safety factor of 2, without crediting the heaters. In addition, the required testing methodology for charcoal adsorber efficiency reflects the assumption of no credit for humidity control. Therefore, the operability and surveillance requirements for the ABSV and SBV heaters can be removed from KPS TS.

4.2 SBV operation for 15 minutes per month

Current KPS TS 4.4.c.2.d requires each SBV train to be operated 10 hours each month with the heaters on. This requirement has been in place since KPS license amendment 12, issued in January of 1977 (reference 4). In KPS license amendment 12, the NRC stated that the purpose of the 10 hour run was to demonstrate operability of the system and the ability of the heater to reduce any moisture buildup on the charcoal adsorbent.

Initially, both the SBV and ABSV were to be operated for 10 hours each month but, before the issuance of license amendment 12, the monthly 10-hour run for the ABSV system was reduced to 15 minutes. Because operating the ABSV requires the normal auxiliary building ventilation system to be shutdown, causing other operational concerns, the KPS staff requested a reduction in the time that the ABSV must be operated during the test from 10-hours to 15-minutes. The NRC stated, in reference 4, that operating each ABSV train for 15 minutes every month was acceptable because it provided reasonable assurance that at least one of the two systems [trains] will be operable whenever needed. Additionally, license amendment 12 required charcoal adsorber testing to demonstrate ≥ 90% methyl iodine removal at conditions of 130°C, 95% relative humidity (RH) for the SBV system and 66°C, 95% RH for the ABSV system.

In June of 1999, the NRC issued Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," (GL-99-02). GL-99-02 requested licensees to modify their facilities TS to require laboratory testing under conditions of 30°C and 95% RH (or 70% with humidity control), and to require laboratory testing in accordance with ASTM D3808-1989. KPS adopted these recommended testing standards under license amendment 152, which was issued February 28, 2001 (reference 5). KPS currently tests its activated charcoal at 30°C and 95% RH.

The purpose of the 10-hour run is to demonstrate the ability of the heaters to reduce moisture buildup on the charcoal adsorbent. However, the currently required testing methodology for the ABSV and SBV verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident AOR without crediting the heaters, and the heaters are proposed to be removed from the KPS TS. Therefore, operating each SBV system train for 15 minutes to demonstrate system operability is sufficient.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

Dominion Energy Kewaunee, Inc. (DEK) is proposing to amend the Kewaunee Power Station (KPS) Operating License to remove the technical specification requirements associated with the heaters in the shield building ventilation (SBV) and auxiliary building special ventilation (ABSV) systems. This proposed change would result in the reduction of the heat load added to the auxiliary building by the ABSV system heaters when the system is in recirculation and likewise reduce post-accident electrical loading on the emergency diesel generators. Additionally, because the currently required testing methodology for the ABSV and SBV verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident AOR without crediting the heaters, the requirement to operate each SBV train for 10 hours each month would be replaced with a requirement to operate each SBV train for 15 minutes each month.

DEK has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) 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?**

   No.

   The SBV or ABSV system heaters are not accident initiators. Their original purpose was to improve the effectiveness of the system's charcoal adsorbers by decreasing the air stream humidity before entering the adsorber section of the filter unit. However, the currently required testing methodology for the ABSV and SBV verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident analysis of record (AOR), with a safety factor of 2, without crediting the heaters.

   The proposed amendment would not change any of the previously evaluated accidents in the updated safety analysis report (USAR). The current radiological accident analysis of record (AOR) bounds operation of the plant without consideration of the shield building ventilation (SBV) or auxiliary building special ventilation (ABSV) heaters. In addition, the current testing requirements are adequate to validate that the charcoal adsorber remains capable of performing at its assumed efficiency without crediting humidity control. The proposed change does not increase the likelihood of a malfunction of an SSC. The result of this change will be the eventual removal of un-needed equipment. Since the equipment is not needed and the removal will make the system less complex, the probability of a malfunction of the SBV system or the ABSV system is not significantly increased.

   In addition, removal of the post-accident electrical load associated with the heaters reduces electrical load on the emergency diesel generators, which provides additional margin regarding the capability of emergency power.

   In addition, elimination of the heaters from the ABSV reduces post-accident heat load in the SV area, which in turn reduces the potential for heat related equipment failures in the area.

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

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

   No.

The SBV and ABSV systems are accident response systems and as such do not cause or initiate accidents. The proposed change does not functionally change the design or operation of the SBV system or that of the ABSV system. Deletion of heater requirements from the TS is based on the heaters not being needed for mitigation of any accident condition and does not significantly affect the operation of these systems. These systems will continue to meet the functional requirements in the current radiological accident analysis of record for Kewaunee and maintain calculated dose consequences within acceptable limits. Because the SBV and ABSV systems are not accident initiators, this proposed change will not create the possibility of a new or different kind of accident.

Therefore, the proposed change 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?

No.

The removal of the ABSV and SBCV heaters will result in a reduction in the efficiency of the charcoal adsorber due to the removal of the humidity reduction affect. However, these changes are bounded within the assumptions of the AOR. Specifically, the currently required testing methodology for the ABSV and SBV verifies charcoal adsorber iodine removal efficiency is greater than assumed in the KPS radiological accident analysis of record (AOR), with a safety factor of 2, without crediting the heaters. The removal of these heaters does not alter the safety margins contained in the radiological accident analysis. The KPS current radiological accident analysis was performed in accordance with NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accident at Nuclear Power Reactors." Surveillance requirement acceptance criteria for the SBV and the ABSV filters are based on 95% RH and 30°C, consistent with Generic Letter 99-02 guidance for systems without humidity control. Removal of the SBV and ABSV heaters does not alter the safety margins contained in the current radiological accident analyses or the surveillance testing criteria. The charcoal adsorber sample laboratory testing protocol accurately demonstrates the required performance of the adsorbers in the SBV and ABSV systems following a design basis accident. These testing standards ensure adequate margin exists and that the charcoal will perform its design basis function. The offsite and control room dose analyses are not affected by this change, and offsite and control room doses will remain within the limits of 10 CFR 50.67 and Regulatory Guide 1.183.

The current surveillance test acceptance criteria for the ABSV and SBV systems currently provide a safety factor of 2 when compared to the assumptions for charcoal filter performance in the current radiological accident analysis. This safety factor will not be adversely affected by the proposed change.

Furthermore, removal of the TS requirement will allow the heaters to be permanently de-energized. This will result in an increase in the margin between the post-accident calculated load and the load limitations on both emergency diesel generators and between the ambient temperature limitations of certain safety related equipment and the calculated maximum post-accident ambient temperature for this equipment.

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

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

5.2 Applicable Regulatory Requirements/Criteria

The US Atomic Energy Commission (AEC) issued their Safety Evaluation (SE) of the Kewaunee Power Station (KPS) on July 24, 1972 with supplements dated December 18, 1972 and May 10, 1973. In the AEC's SE, section 3.1, "Conformance with AEC General Design Criteria," described the conclusions the AEC reached associated with the General Design Criteria in effect at the time. The AEC stated:

"The Kewaunee plant was designed and constructed to meet the intent of the AEC's General Design Criteria, as originally proposed in July 1967. Construction of the plant was about 50% complete and the Final Safety Analysis Report (Amendment No. 7) had been filed with the Commission before publication of the revised General Design Criteria in February 1971 and the present version of the criteria in July 1971. As a result, we did not require the applicant to reanalyze the plant or resubmit the FSAR. However, our technical review did assess the plant against the General Design Criteria now in effect and we are satisfied that the plant design generally conforms to the intent of these criteria."

As such, the appropriate General Design Criteria are listed below with the associated criteria KPS is licensed to from the Final Safety Analysis (Amendment 7), which has been updated and now titled the Updated Safety Analysis Report (USAR).

Criterion 10 – Containment

Containment shall be provided. The containment structure shall be designed to sustain the initial effects of gross equipment failures, such as a large coolant boundary break, without loss of required integrity and, together with other engineered safety features as may be necessary, to retain for as long as the situation requires the functional capability to protect the public.

Response:

The containment system consists of two separate structures: a reactor containment vessel and a shield building.

The reactor containment vessel is a cylindrical steel pressure vessel with hemispherical dome and ellipsoidal bottom which houses the reactor pressure vessel, the steam generators, reactor coolant pumps, the reactor coolant loops, the accumulators of the safety injection system, the reactor coolant pressurizer, the pressurizer relief tank and other branch connections of the reactor coolant system.

The reactor containment vessel is completely enclosed by the shield building. The shield building has the shape of a right circular cylinder with a shallow dome roof. A 5-ft. annular space is provided between the reactor containment vessel and the shield building. Clearance at the roof of the shield building is 7 feet.

Additional information concerning the design of the containment system and associated auxiliary systems is described in KPS USAR Chapter 5.

Criterion 37 – Engineered Safety Features Basis for Design

Engineered Safety Features shall be provided in the facility to back up the safety provided by the core design, the reactor coolant pressure boundary, and their protection systems. As a minimum, such Engineered Safety Features shall be designed to cope with any size reactor coolant pressure boundary break up to and including the circumferential rupture of any pipe in that boundary assuming unobstructed discharge from both ends.

Response:

The containment system, the containment isolation system, the emergency core cooling system, the special zone ventilation systems, the containment vessel internal spray system, the auxiliary feedwater system, the diesel generators, and the station batteries comprise the engineered safety features for the facility. These systems and their supporting systems (component cooling system and service water system) are designed to cope with any size reactor coolant pressure boundary break up to and including rupture of the largest reactor coolant pipe.

5.3 Precedent

This request is similar to license amendments issued to Pacific Gas and Electric on February 27, 2004, for Diablo Canyon Power Plant Units 1 & 2 (reference 6).

The 2004 amendments revised certain operational requirements of the TS for the ventilation filter testing program, the control room ventilation system (CRVS), the auxiliary building ventilation system (ABVS), and the fuel handling building ventilation

system. The amendments also incorporated a selective implementation of the alternate source term. Implementation of the alternate source term is not a part of this KPS amendment request.

Among the changes requested by Pacific Gas and Electric, three were similar to the changes requested for the KPS in this submittal. These three changes are as follows:

1. Change the relative humidity acceptance criteria for the CRVS and ABVS from 70% to 95%, and;
2. Eliminate the TS 5.5.11.e requirement to demonstrate that the charcoal pre-heaters for the CRVS and ABVS dissipate "5 ± 1kW" and "50 ± 5 kW," respectively, when tested in accordance with ANSI N510-1980 at least once per 24 months, and;
3. Revise SR 3.7.10.1 to read, "Operate each CRVS train for ≥ 15 minutes." SR 3.7.10.1 originally required that each control room ventilation system train be operated for ≥ 10 continuous hours with the heaters operating.

DEK is requesting changes to the KPS TS, which are similar to Diablo Canyon approved changes two and three listed above.

In the NRC's safety evaluation for approved change two, the staff stated that the purpose of TS 5.5.11.e is to demonstrate the capability of humidity control for the CRVS and ABVS. The requested changes to the testing criteria for the CRVS and ABVS eliminates the need for humidity control, therefore TS 5.5.11.e is no longer needed.

In the NRC's safety evaluation for approved change three, the staff found this change acceptable because the primary purpose of the requirement to operate heaters for 10 continuous hours in humidity control systems is to remove moisture from carbon adsorbers and to justify the operability of the system. The NRC staff determined that carbon adsorbers in ESF systems will remain sufficiently moisture free to perform as assumed in the radiological consequence analyses without conducting the heater test for 10 continuous hours each month, and that a 15 minute test each month is adequate to justify the operability of the CRVS and ABVS systems.

DEK is proposing similar changes using similar justification for these changes and therefore are acceptable.

5.4 Conclusion

In 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. NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," (ADAMS Accession No. ML003716792).
2. Letter from Robert F. Kuntz (NRC) to David A. Christian (DEK), "Kewaunee Power Station - Issuance of Amendment Re: Radiological Accident Analysis and Associated Technical Specifications Change (TAC NO. MC9715)," dated March 8, 2007 (ADAMS Accession No. ML070430020).
3. NRC issued Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999 (with errata dated August 23, 1999).
4. Letter from A. Schwencer (NRC) to E.W. James (WPSC), dated January 18, 1977.
5. Letter from John G. Lamb (NRC) to Mark Reddemann (NMC), "Kewaunee Nuclear Power Plant – Issuance of Amendment (TAC No. MA7279) (ADAMS Accession No. ML010600406).
6. Letter from Girija S. Shukla (NRC) to Gregory M. Rueger (PG&E), "Diablo Canyon Power Plant, Unit NOS. 1 and 2 – Issuance of Amendments RE: Control Room, Auxiliary Building, and Fuel Handling Building Ventilation Systems (TAC NOS. MB8485 and MB8486)," dated February 27, 2004. (ADAMS Accession No. ML040630575).

ATTACHMENT 2

LICENSE AMENDMENT REQUEST 237
REMOVAL OF SHIELD BUILDING AND AUXILIARY BUILDING SPECIAL VENTILATION TRAIN FILTER HEATER REQUIREMENTS

MARKED-UP TECHNICAL SPECIFICATION PAGES

MARKED-UP TS PAGES:
TS 3.6-3
TS 4.4-1
TS 4.4-2
TS 4.4-3

KEWAUNEE POWER STATION
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2. Verify the affected flow path is isolated:

   a) For isolation devices outside containment, at least once per 31 days, or

   b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN if not performed within the previous 92 days.

D. Valves and blind flanges in high radiation areas may be verified, as required by TS 3.6.b.3.A.2, TS 3.6.b.3.B.2, and TS 3.6.b.3.C.2, by use of administrative means.

4. If CONTAINMENT SYSTEM INTEGRITY is required and the OPERABILITY requirements of TS 3.6.b.3 are not met within the times specified, then initiate action to:

   A. Achieve HOT STANDBY within the next 6 hours,

   B. Achieve HOT SHUTDOWN within the following 6 hours, and

   C. Achieve COLD SHUTDOWN within the subsequent 36 hours.

c. All of the following conditions shall be satisfied whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required:

1. Both trains of the Shield Building Ventilation System, including filters, ~~and heaters~~ shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

2. Both trains of the Auxiliary Building Special Ventilation System, including filters, ~~and heaters~~ shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

4.4 CONTAINMENT TESTS

APPLICABILITY

Applies to integrity testing of the steel containment, shield building, auxiliary building special ventilation zone, and the associated systems including isolation valves.

OBJECTIVE

To verify that leakage from the containment system is maintained within allowable limits in accordance with 10 CFR Part 50, Appendix J.

SPECIFICATION

a. Integrated Leak Rate Tests (Type A)

Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

As a one-time change, the Type A test frequency specified in NEI 94-01, Revision 0, Paragraph 9.2.3, as "...at least once per 10 years based on acceptable performance history" is changed to "...at least once per 15 years based on acceptable performance history." This change applies only to the interval following the Type A test performed in April 1994.

b. Local Leak Rate Tests (Type B and C)

Perform required air lock, penetration, and containment isolation valve leakage testing in accordance with the Containment Leakage Rate Testing Program.

c. Shield Building Ventilation System

1. At least once per operating cycle or once every 18 months, whichever occurs first, the following conditions shall be demonstrated:

   a. Pressure drop across the combined HEPA filters and charcoal adsorber banks is < 10 inches of water and the pressure drop across any HEPA filter bank is < 4 inches of water at the system design flow rate (±10%).

   b. Automatic initiation of each train of the system.

   c. ~~Operability of heaters at rating and the absence of defects by visual observation.~~ Deleted

2. Shield Building Ventilation System Filter Testing

   a. The in-place DOP test for HEPA filters shall be performed (1) at least once per 18 months and (2) after each complete or partial replacement of a HEPA filter bank or after any maintenance on the system that could affect the HEPA bank bypass leakage.

   b. The laboratory tests for activated carbon in the charcoal filters shall be performed (1) at least once per 18 months for filters in a standby status or after 720 hours of filter operation, and (2) following painting, fire, or chemical release in any ventilation zone communicating with the system.

   c. Halogenated hydrocarbon testing shall be performed after each complete or partial replacement of a charcoal adsorber bank or after any maintenance on the system that could affect the charcoal adsorber bank bypass leakage.

   d. Each train shall be operated ~~with the heaters on~~ at least ~~10 hours~~15 minutes every month.

3. An air distribution test on these HEPA filter banks will be performed after any maintenance or testing that could affect the air distribution within the systems. The test shall be performed at design flow rate (±10%). The results of the test shall show the air distribution is uniform within ±20%.[1]

4. Each train shall be determined to be operable at the time of its periodic test if it produces measurable indicated vacuum in the annulus within 2 minutes after initiation of a simulated safety injection signal and obtains equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits.

[1] In WPS letter of August 25, 1976 to Mr. Al Schwencer (NRC) from Mr. E. W. James, we relayed test results for flow distribution for tests performed in accordance with ANSI N510-1975. This standard refers to flow distribution tests performed upstream of filter assemblies. Since the test results upstream of filters were inconclusive due to high degree of turbulence, tests for flow distribution were performed downstream of filter assemblies with acceptable results (within 20%). The safety evaluation attached to Amendment 12 references our letter of August 25, 1976 and acknowledges acceptance of the test results.

d. Auxiliary Building Special Ventilation System

1. Periodic tests of the Auxiliary Building Special Ventilation System, including the door interlocks, shall be performed in accordance with TS 4.4.c.1 through TS 4.4.c.3, except for TS 4.4.c.2.d.

2. Each train of Auxiliary Building Special Ventilation System shall be operated ~~with the heaters on~~ at least 15 minutes every month.

3. Each system shall be determined to be operable at the time of periodic test if it starts with coincident isolation of the normal ventilation ducts and produces a measurable vacuum throughout the special ventilation zone with respect to the outside atmosphere.

e. Containment Vacuum Breaker System

The power-operated valve in each vent line shall be tested during each refueling outage to demonstrate that a simulated containment vacuum of 0.5 psig will open the valve and a simulated accident signal will close the valve. The check and butterfly valves will be leak tested in accordance with TS 4.4.b during each refueling, except that the pressure will be applied in a direction opposite to that which would occur post-LOCA.

f. Containment Isolation Device Position Verification

1. When the reactor is critical, verify each 36 inch containment purge and vent isolation valve is sealed closed every 31 days.

2. When the reactor is critical, verify each 2 inch containment vent isolation valve is closed every 31 days, except when the 2 inch containment vent isolation valves are open for pressure control, ALARA, or air quality considerations for personnel entry, or Surveillances that require the valves to be open.

3. Containment isolation manual valves and blind flanges shall be verified closed as specified in TS 4.4.f.3.a and TS 4.4.f.3.b, except as allowed by TS 4.4.f.3.c.

   a. When greater than COLD SHUTDOWN, verify each containment isolation manual valve and blind flange that is located outside containment and required to be closed during accident conditions is closed every 31 days, except for containment isolation valves that are locked, sealed, or otherwise secured closed or open as allowed by TS 3.6.b.2.