UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 29, 2011

Mr. David A. Heacock
President and Chief Nuclear Officer
Dominion Energy Kewaunee, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: KEWAUNEE POWER STATION - ISSUANCE OF AMENDMENT RE: LICENSE AMENDMENT REQUEST TO CHANGE THE CURRENT LICENSING BASIS FOR AUTOMATIC OPERATION OF TRANSFORMER LOAD TAP CHANGERS (TAC NO. ME4011)

Dear Mr. Heacock:

By application dated June 1, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101590218), as supplemented by letters dated January 18, March 14, and June 27, 2011 (ADAMS Accession Nos. ML110250287, ML110740158, and ML111780675, respectively), Dominion Energy Kewaunee, Inc. (the licensee), requested an amendment to Renewed Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 209 to Renewed Facility Operating License No. DPR-43.

The amendment revises the KPS current licensing basis (CLB) to allow the use of new automatic load tap changers (LTCs) on new transformers that provide offsite power to KPS. The revised CLB documents are the KPS Updated Safety Analysis Report Section 8.2 and the Technical Specifications (TSs) Bases Section B3.7. The TSs are not revised. Please note that the NRC staff review was limited to the addition of automatic LTCs associated with offsite power sources only

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

Karl Feintuch

Karl Feintuch, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures:
1. Amendment No. 209 to License No. DPR-43
2. Safety Evaluation

cc w/encls: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DOMINION ENERGY KEWAUNEE, INC.

DOCKET NO. 50-305

KEWAUNEE POWER STATION

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 209
Renewed License No. DPR-43

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Dominion Energy Kewaunee, Inc. dated June 1, 2010, as supplemented by letters dated January 18, March 14, and June 27, 2011, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

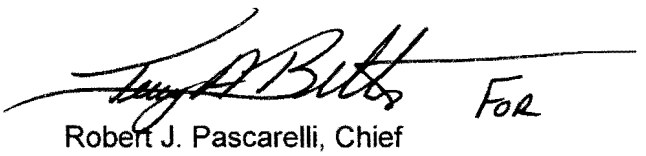
2. Accordingly, the license is amended by changes to the paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-43, which is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 209, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert J. Pascarelli, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the
Renewed Facility Operating License

Date of Issuance: July 29, 2011

ATTACHMENT TO LICENSE AMENDMENT NO. 209

RENEWED FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Replace the following page of the Renewed Facility Operating License No. DPR-43 with the attached revised page. The changed area is identified by a marginal line.

REMOVE	INSERT
Page 3	Page 3

(4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct, source, or special nuclear material without restriction to chemical or physical form for sample analysis or instrument calibration or associated with radioactive apparatus or components;

(5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter 1: (1) Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and (2) is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and (3) is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady-state reactor core power levels not in excess of 1772 megawatts (thermal).

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 209, are hereby incorporated in the renewed license. The licensee shall operate the facility in accordance with the Technical Specifications. I

(3) Fire Protection

The licensee shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in the licensee's Fire Plan, and as referenced in the Updated Safety Analysis Report (USAR), and as approved in the Safety Evaluation Reports, dated November 25, 1977, and December 12, 1978 (and supplement dated February 13, 1981), subject to the following provision:

The licensee may make changes to the approved Fire Protection Program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 209 TO

RENEWED FACILITY OPERATING LICENSE NO. DPR-43

DOMINION ENERGY KEWAUNEE, INC.

KEWAUNEE POWER STATION

DOCKET NO. 50-305

1.0 INTRODUCTION

By application dated June 1, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101590218), as supplemented by letters dated January 18, March 14, and June 27, 2011 (ADAMS Accession Nos. ML110250287, ML110740158 and ML111780675, respectively), Dominion Energy Kewaunee, Inc. (DEK, the licensee), requested an amendment to Renewed Facility Operating License Number DPR-43 for Kewaunee Power Station (KPS). The supplements dated January 18, March 14, and June 27, 2011, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U. S. Nuclear Regulatory Commission (NRC, the Commission) staff original proposed no significant hazards consideration determination as published in the *Federal Register* on August 10, 2010 (75 FR 48374).

The proposed amendment would revise the KPS current licensing basis (CLB) to allow the use of new load tap changers (LTCs) on new transformers that provide offsite power to KPS. The tap changers will operate in automatic or manual mode.

The licensee is upgrading the switchyard and transformers used for offsite power sources to the plant. The proposed amendment would revise the KPS CLB to allow the use of LTCs in automatic mode on new transformers that provide offsite power to KPS. The tap changers will operate in automatic or manual mode. The proposed amendment requests approval to operate the LTCs in the automatic mode since this mode of operation has the potential to create a failure mode that has not been previously evaluated in the licensing basis of the plant. There are no changes to the technical specifications (TSs) associated with the offsite power source.

2.0 REGULATORY EVALUATION

The licensee's Updated Safety Analysis Report (USAR) Section 1.3, states that the KPS was designed, constructed, and is being operated to comply with Wisconsin Public Service Corporation's (the original licensee) understanding of the intent of the Atomic Energy Commission (AEC) General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967. Since the construction of the plant was about 50

percent completed prior to the issuance of the February 20, 1971, Title 10 of the *Code of Federal Regulations* (10 CFR 50) Appendix A, GDC, the plant was not required to be reanalyzed and the USAR was not required to be revised to reflect these later criteria. However, the AEC Safety Evaluation Report, issued July 24, 1972, acknowledged that the AEC staff assessed the plant, as described in the USAR (Amendment No. 7), against the Appendix A design criteria and " . . . are satisfied that the plant design generally conforms to the intent of these criteria."

In AEC Criterion 17, "Electric Power Systems," it states that an onsite power system and an offsite electric power system shall be provided to permit functioning of structures, systems and components important to safety. The safety function for each system (assuming the other is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents. The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

The licensee's USAR Sections 1.3 and 8.1.1.2, states that the plant is supplied with normal, auxiliary, standby and emergency power sources as follows: The normal source of auxiliary power for safety features equipment is the off-site power source. Power is supplied via the high- and low-voltage Unit Auxiliary Transformers. Two emergency diesel generators (EDGs) are connected to the emergency buses to supply power in the event of loss of all other alternating current auxiliary power. Each of the two diesel generators is capable of supplying automatically the Engineered Safety Features load required for an acceptable post-blowdown containment pressure transient for any loss-of-coolant accident.

The current GDC in 10 CFR 50, Appendix A, has the following requirements:

In GDC 17, "Electric Power Systems," an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

In GDC 18, "Inspection and testing of electric power systems," requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing to assess the continuity of the systems and the conditions of their components.

Section 50.59 of 10 CFR, "Changes, Tests and Experiments," provides guidance for licensees to make changes in the facility as described in the final safety analysis report (as updated), make changes in the procedures as described in the final safety analysis report (as updated), and conduct tests or experiments not described in the final safety analysis report (as updated) without obtaining a license amendment pursuant to Section 50.90.

Section 50.65 of 10 CFR, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," requires that preventive maintenance activities must not reduce the overall availability of the systems, structures and components.

Regulatory Guide 1.32, "Criteria For Power System for Nuclear Power Plants" describes a method acceptable to the NRC staff for complying with the NRC's regulations for the design, operation, and testing of electric power systems in nuclear power plants.

3.0 DETERMINISTIC TECHNICAL EVALUATION

3.1 Description of the Kewaunee Power Station Electrical Power System

The KPS USAR, Section 8.1, states that the electrical power system is designed with independent power systems with adequate capacity and testability to supply the engineered safety features and protection systems. The main source of power for the auxiliary systems during plant operation is the main generator with a 20/4.16 kilovolt (kV), three-winding, main auxiliary transformer (MAT), which is connected to the main leads from the turbine generator.

The primary source of offsite electrical power for the auxiliaries associated with engineered safety features (ESF) is the 13.8/138/345kV KPS substation and two on site transformers, the reserve auxiliary transformer (RAT) and the tertiary auxiliary transformer (TAT). Power is normally supplied to one bus (Bus 1-6) through the 138/4.16 kV, three-winding RAT which is connected to the 138 kV portion of the Kewaunee Substation. Power is normally supplied to the second bus (Bus 1-5) through the 13.2/4.16 kV, two-winding TAT which is connected by an underground line, to the 138/13.8 kV tertiary supply transformer (TST) in the Kewaunee Substation. A LTC is used in the TST to adjust the voltage to the TAT as necessary. The maximum and minimum range of the LTC is ±10 percent of the nominal secondary voltage of the TST. The LTC can be manually adjusted locally at the TST control panel. Automatic functioning of the LTC is currently disabled.

Two EDGs are connected to the 4160V ESF buses (1-5 and 1-6) to supply emergency shutdown power in the event of loss of offsite power.

Buses 1-5 and 1-6 can be connected to the MAT, RAT or TAT. Each bus can also be connected to the dedicated EDG. The plant has the capability to supply the busses from a common source via two bus tie breakers in series, one on each bus. The bus tie breakers are interlocked and normally open to preclude parallel operation of EDGs. Each bus supplies two of the four 4160/480V station service transformers for the plant's 480V engineered safety features equipment. In normal configuration, Bus 1-5 is supplied from the TAT and Bus 1-6 is supplied-from the RAT. Thus, no bus transfer is required for the engineered safety features in the event of a unit trip. The plant was designed with an automatic bus transfer feature, which has been manually overridden.

The KPS switchyard is currently being upgraded to improve the reliability of the offsite power sources and provide flexibility for equipment maintenance. The license amendment request (LAR) provided an overview of the changes that have been implemented or are in the implementation process. Specifically, the changes include:

I. Upgrade of RAT and TAT with higher ratings.

II. A new transformer called TST with an automatic load tap changer connected between the TAT and 138kV switchyard buses.

III. A new transformer called reserve supply transformer (RST) with an automatic load tap changer connected between the RAT and 138kV switchyard buses.

IV. A new generator output breaker.

V. The offsite line configuration consisting of a four 345kV breaker arrangement will be changed to a six 345kV double-bus/double breaker arrangement.

VI. A new interface auto-transformer (T20) will be added in parallel to the existing T10 auto-transformer between the 345kV and 138kV systems.

VII. The 138kV switchyard breakers will be upgraded and the configuration changed to a double-bus double breaker scheme.

VIII. Other changes include a new switchyard control house, new cabling and revised protective relay settings.

3.2 Proposed change requiring approval

In order to compensate for wider voltage variations in offsite power system, DEK has installed automatic LTCs on the new RST and TST. The LTCs have a range of -10 percent to +10 percent and can be operated in manual or automatic mode. The primary LTC microcontroller is set with an initial time delay of 30 seconds during normal operation. In the event of a voltage dip with an accident signal (train associated safety injection signal), the initial primary LTC microcontroller time delay of 30 seconds is bypassed and the LTC can complete a tap change in two seconds. In the automatic mode, the LTCs can maintain acceptable voltage on the safety-related buses for a wider range of variations in the offsite power system. Each transformer LTC has a primary microcontroller that monitors secondary bus voltages and sends a signal to a drive motor that changes the transformer ratio. For added reliability, a backup microcontroller is also installed in each LTC to monitor the bus voltages to ensure that a failure of the primary microcontroller does not result in voltage levels outside the established band.

The failure modes of the LTCs may potentially result in bus voltages that are different than those previously evaluated in the USAR. The licensee considers the modification to be outside the bounds of the 10 CFR 50.59 process and therefore, to require approval. The changes to the TS Bases and the USAR will be made in accordance with the 10 CFR 50.59 program.

3.3 NRC Staff Evaluation of the Proposed Change

The installation of automatic LTCs into the offsite power scheme for KPS introduces potential failure modes that can result in sustained high or low bus voltages which may degrade safety-related equipment performance capabilities. The LAR provided an overview of the functional

capability of the LTCs and the design features incorporated into the LTCs to preclude or reduce the consequences of malfunctions.

The LAR states that the LTCs will provide a range of -10 percent to +10 percent of the rated secondary voltage in 32 steps (plus the nominal tap position), each step being in 0.625 percent increments. By providing automatic adjustment of the voltage to the auxiliary power system from the offsite 138 kV system, the TST and RST LTCs can compensate for a wider range of 138 kV system operating voltages. The nominal secondary voltage is set at approximately 4266.5V and the operating band is maintained between 4232V and 4300V by the primary microcontroller. In case of a malfunction of the primary controller, a backup microcontroller maintains control within pre-established limits, outside the above band, but within the maximum allowable voltages. An alarm is actuated if sustained operation outside the allowable band is detected. The backup microcontroller sends an emergency 'off' signal to the LTC motor drive and actuates another alarm if the detected bus voltage exceeds an extreme upper voltage. The second alarm setpoint and actuation of a 'stop' signal is below 4400V, the design limit of the 4160V system. If the regulated voltage goes below the extreme lower voltage limit, an additional alarm is actuated but no further action is taken by the backup microcontroller (i.e., all actions associated with the undervoltage limit are suppressed). Protection of safety-related equipment for sustained low voltage conditions is maintained by the degraded voltage relaying (DVR). According to the LAR, the design also allows operators to override both LTC microcontrollers and take manual control, if necessary.

The licensee evaluated overvoltage conditions resulting from gradually evolving grid conditions over a period of time with potential LTC malfunctions and concluded that the alarms built into the LTC system and bus monitoring system will provide adequate time for operator action to rectify abnormally high voltages before equipment damage. Similarly, the alarms for low voltage conditions will provide time for manual actions or the DVR will ultimately separate the plant from the grid and provide protection for the safety-related equipment. The licensee has stated that plant procedures are in place to protect auxiliary equipment in the event that sustained over voltage conditions are observed when the LTCs are in automatic mode, and mitigating actions to reduce equipment damage can also be taken in the event that suitable voltage conditions cannot be achieved with the LTCs in manual mode.

The primary LTC microcontroller is set with an initial time delay of 30 seconds during normal operation to reduce tap changer cycling during transient voltage conditions. The licensee evaluated a sudden change in grid voltage resulting from a generator trip. The LAR states that analytical limits have been established for the maximum permissible voltage decay that can occur following a generator trip with the LTCs in automatic mode. This analytical value will be verified with real time data provided by American Transmission Company (ATC), the transmission system operator. The analytical analysis provides assurance that there will not be a premature separation of safety busses from the offsite source following a generator trip.

In its letter dated January 18, 2011, the licensee provided responses to NRC staff's request for additional information related to transient voltages that can occur during sudden changes in plant or transmission system loading conditions with LTC in automatic mode. The licensee provided responses to specific questions from the NRC staff.

I. The NRC staff requested an explanation for the consequences of a fast bus transfer to a second qualified source in the event of loss of power from the first source, or during plant operation with RAT and TAT and safety busses 1-5 and 1-6 powered from a single offsite source, as allowed by plant design and discussed in USAR. The licensee stated that procedural guidance prevents loading of safeguards buses, 1-5 and 1-6, when the reactor coolant system temperature is above 200 degrees Fahrenheit. The automatic transfer has been blocked by repositioning a manual switch with the result that loss of offsite power to either safety train from its dedicated source will result in transferring the safety bus to the dedicated EDG. This configuration is considered the plant 'design' for normal operation and further evaluation was not performed.

II. The NRC staff requested an explanation for the consequences of a single failure in the auto transfer scheme, which could potentially result in a single source supplying the safety busses 1-5 and 1-6. The licensee evaluated several failure modes associated with the bus transfer scheme.

- For an event with loss of offsite power, a single failure in the transfer scheme may erroneously indicate that a source of offsite power was available and preclude the EDG from powering the bus. The resultant configuration would be one electrical train energized from an EDG and one train remaining deenergized. Such a condition is within the design and licensing basis of KPS.

- For an event when offsite power was available, a single failure in the transfer scheme could erroneously indicate undervoltage conditions on the related bus and result in the separation of the safeguard bus from the offsite source and an electrical train energized by the EDG. The final result would be one electrical train energized from an offsite source and one electrical train energized from an EDG.

- Plant operation with safeguards busses aligned to one offsite source using RAT or TAT, is not within the licensing basis. However, the licensee evaluated this configuration and concluded that a dual unit trip of the nearby Point Beach Nuclear Plant, or loss of two 345kV lines, or loss of the two 345/138kV autotransformers or loss of a 345kV line Q303, coupled with loss of 138kV line F84 results in a maximum voltage drop of 2.76 percent when RAT is the common source of power. This could potentially cause actuation of the DVR and separation of the plant from the grid. The TAT supply voltage does not actuate the DVR under any analyzed switchyard scenarios. Since plant operation with safeguards busses aligned to one offsite source is outside the licensing basis, the NRC staff did not evaluate this scenario further. The NRC staff requested that the licensee confirm if a spurious actuation in the bus transfer scheme could result in such a plant configuration. In the letter dated March 14, 2011, the licensee has stated that a spurious actuation of the transfer scheme will not result in transferring the redundant safeguard busses to one offsite source.

III. Non-safety-related busses 1-1, 1-2, 1-3 and 1-4 can be transferred to RAT. The NRC staff requested the licensee to provide details about bus voltages when a safety injection signal and non-safety loads are transferred simultaneously to the RAT. The licensee stated that voltage analyses evaluated for a single source of offsite power (discussed above) were the

bounding case. If the grid voltage varied within +/-5 percent of that allowed by the Federal Energy Regulatory Commission, then the safeguard bus voltages remain within acceptable limits.

IV. The DVRs perform an automatic function to separate the safety-related loads from the offsite power in the event of sustained low voltages on the grid. Since the response time of the LTCs may be too slow to afford adequate protection for equipment that is operating or required to start due to an accident signal, the NRC staff asked the licensee if DVR performance was dependent on LTCs. The licensee has confirmed that the DVR setpoints were established without crediting the operation of the LTCs to restore bus voltages. The NRC staff has not evaluated the adequacy of the DVR setpoint as part of this safety evaluation.

V. The licensee administratively controls the starting of large motors such as reactor coolant pumps to prevent inadvertent actuation of DVR relays if the safeguards buses are below 3980V. The NRC staff asked the licensee for the consequences of a grid perturbation that result in a plant trip and low voltage conditions on plant auxiliary systems. The large running motors will re-accelerate and require inrush currents. In its response, the licensee stated that a bounding case study for grid perturbations is not in the plant specific licensing basis. The licensee provided results of a conservative slow voltage recovery fault event that was postulated on an ATC analysis. Simulating the fault conditions in a transient stability analysis, the licensee concluded that the DVR will drop out, but will reset prior to the DVR timing out (recovers in less than 6 seconds above 95 percent voltage). The analysis showed that the 4kV voltage recovered above the reset setpoint without active LTCs during the analyzed event. Since this event would result in the voltage dropping below its extreme undervoltage limit setting, the LTC would not actuate under such a condition due to the event duration being shorter than 30 seconds. Since the licensee is not relying on the operation of LTCs for similar grid perturbations, the NRC staff did not evaluate the consequences of grid perturbations and large motor starts as related to the proposed LAR.

VI. The NRC staff requested an explanation for the consequences of a failure of the LTC, when operating at maximum boost voltage and a grid transient such as the loss of large load that leads to higher sustained voltages. The licensee stated that such an event could occur when a large load on the transmission network tripped during light load conditions rather than during heavy load conditions. The results of an existing study by ATC concluded that the worst case step increase in the grid voltage would be from 142.05kV to 142.20kV. If the LTC controlling the safety bus voltage was operating at its extreme setpoint and failed to react to the change in grid voltage, the maximum observed voltage on the 4160V bus would be 4335.4V, which is below the allowable voltage of 4400V. The licensee has stated that at voltages below 4400V there is no possibility of causing an overvoltage on 4000V motors, since this is within the 110 percent allowed by industry standards. The licensee has evaluated the connected loads at the 480V level, which has an additional boost of 2.5 percent, and concluded that the overvoltage condition would be minimized due to the voltage drop in the system.

VII. The NRC staff requested information on whether the transformers were within the scope of maintenance rule. The licensee has stated that the TAT, RAT, and TST transformers are already within scope of the maintenance rule. The new supply transformer RST and the

TST and associated load tap changers are being incorporated into the scope of maintenance rule. The intent of the maintenance rule is to provide assurance that, for equipment that is not safety-related, failures will not occur that prevent the fulfillment of safety-related functions, and failures resulting in a unit trip and unnecessary actuations of safety-related systems are minimized.

VIII. The NRC staff requested information on the interface agreement between the grid operator, ATC, and KPS. ATC performs grid evaluations during evolving grid conditions to calculate post trip voltages for KPS. ATC obtains data on the loads being carried by the RAT and TAT at KPS. This data is an input for ATC computer modeling, known as Delta-V monitoring, to determine post-trip voltage. ATC is required to inform KPS of predicted post-trip voltage on request; or, immediately if the predicted grid voltage drops below 140 kV and cannot be mitigated within 15 minutes. Upon receipt of such notification, DEK would evaluate the offsite power supply circuits for operability. The Delta-V monitoring function is one of the key components for KPS to operate the LTCs in automatic mode. In the event that ATC is unable to predict post trip voltages, KPS will operate the LTCs in manual mode.

In its letter dated June 27, 2011, DEK committed to implementing procedural controls to prohibit automatic LTC transformer operation when the Delta-V monitoring capability is not fully functional unless an acceptable alternative modeling capability is available.

Specifically, in its letter dated June 27, 2011, the licensee proposed the following regulatory commitment to provide assurance that adequate administrative procedures will be implemented for operation of LTCs:

- DEK will develop and implement response procedures that direct management of transformer loading among the three principle onsite transformers (RAT, MAT, and TAT) so as to maintain the predicted Delta-V voltage value within its acceptable range; and to restore it as necessary to return the affected offsite power circuit to operable status.

- DEK will develop and implement procedural guidance prior to operation of the LTCs in the automatic mode. Current plans call for this new guidance to direct that operators verify the Delta-V monitoring function is available prior to placing an LTC in automatic mode. In the event that the Delta-V monitoring function is unavailable, response procedures are planned to direct that operators either operate the LTCs in manual mode or ensure an acceptable alternative modeling capability is available for continued LTC operation in automatic mode.

- DEK will develop and implement changes, via the interface coordination agreement between DEK and ATC, which will require ATC to notify KPS in a timely manner (within 30 minutes) regarding loss of monitoring capability.

Based on the above review and the evaluation provided in the LAR, the NRC staff agrees with the licensee that implementation of automatic LTC operation will provide additional assurance that the voltage provided by the transmission system is adequate to maintain operability of the offsite power sources for KPS for the expected range of switchyard voltages. The licensee has

evaluated the proposed design and potential failure modes and concluded that the results will not adversely impact the safety-related equipment.

Therefore, the proposed changes are acceptable for maintaining compliance with GDC 17.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Wisconsin State official was notified on April 5, 2011, of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20 or changes a surveillance requirement. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluent 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 this amendment involves no significant hazards consideration and there has been no public comment on such a finding (75 FR 48374 dated August 10, 2010). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

6.0 CONCLUSION

The NRC staff evaluated the licensee's request to install automatic LTCs on the transformers associated with offsite power for the safeguards buses. The NRC staff's deterministic evaluation supports the proposed plant modification for improving the bus voltages in the plant auxiliary systems for a wider operating band for the transmission system. The NRC staff's conclusion is based on the technical evaluation of the plant voltages during grid perturbations coupled with potential failure modes of the LTCs addressed by the licensee. The NRC staff considers the degraded voltage relays as the safety-related components that protect the safeguards equipment during sustained low voltage conditions. The licensee has stated that setpoints for these relays are not dependent on the proper operation of the LTCs, and there is no adverse impact on the performance of these relays. Consequently, the NRC staff has not evaluated the adequacy of the degraded voltage relay setpoint as part of this evaluation.

The NRC staff acknowledges plans by the licensee for its program of testing, monitoring and maintenance of LTCs, as stated in its January 18, 2011, Supplement, Attachment 4, Response to NRC Question 8 on pages 21 and 22 of 22. The conclusion by the NRC staff that the automatic operation of the LTCs is acceptable is not contingent upon such a program.

The NRC staff has reviewed the specific details of the regulatory commitment made by the licensee in its June 27, 2011, submittal and documented in Section 3.3.VIII, above. The NRC staff concludes that the regulatory commitment, when implemented as stated, provides assurance that adequate administrative procedures will be available for operation of LTCs.

Based on the above evaluation, the NRC staff finds that the proposed changes to the KPS licensing basis to allow operation of LTCs in automatic or manual mode provides reasonable assurance of the continued availability of the required offsite electrical power to shut down the reactor and to maintain the reactor in a safe condition after an anticipated operational occurrence or a postulated design-basis accident.

The NRC staff concludes that the proposed changes are in accordance with 10 CFR 50.65 and meet the intent of KPS AEC GDC 17, and 10 CFR 50, Appendix A, GDCs 17 and 18. Therefore, the NRC staff concludes that the proposed changes are acceptable.

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Gurcharan Singh Matharu, NRR

Date of issuance: July 29, 2011

A copy of the Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Karl Feintuch, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures:
1. Amendment No. 209 to License No. DPR-43
2. Safety Evaluation

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