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

February 28, 2001

Mr. Mark Reddemann
Site Vice President
Kewaunee and Point Beach Nuclear Plants
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - ISSUANCE OF AMENDMENT (TAC NO. MA7279)

Dear Mr. Reddemann:

Wisconsin Public Service Corporation (WPSC) submitted a letter dated November 29, 1999, and Nuclear Management Company, LLC (NMC) submitted letters dated November 10 and December 15, 2000, requesting a license amendment. WPSC was succeeded by NMC, as the licensed operator of the Kewaunee Nuclear Power Plant (KNPP). By letter dated October 5, 2000, NMC (the licensee) requested the Nuclear Regulatory Commission (NRC) staff continue to process and disposition licensing actions previously docketed and requested by WPSC.

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 152 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment revises the Technical Specifications in response to your application dated November 29, 1999, as supplemented November 10 and December 15, 2000.

The amendment revises the Kewaunee Nuclear Plant Technical Specifications to incorporate requested changes per Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999.

NRR-058

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

Sincerely,

John G. Lamb, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures: 1. Amendment No. 152 to
License No. DPR-43
2. Safety Evaluation

cc w/encls: See next page

Kewaunee Nuclear Power Plant

cc:

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

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 152
License No. DPR-43

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

   A. The application for amendment by Wisconsin Public Service Corporation, Wisconsin Power and Light Company, and Madison Gas and Electric Company (the licensees) dated November 29, 1999, as supplemented November 10 and December 15, 2000, 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 Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-43 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 152 , are hereby incorporated in the license. The licensees shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance, and is to be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Claudia M. Craig, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: February 28, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 152

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
TS 3.6-2	TS 3.6-2
TS B 3.6-2	TS B 3.6-2
- -	TS B 3.6-3
TS 3.8-2	TS 3.8-2
TS 3.8-3	TS 3.8-3
- -	TS B 3.8-3
TS 3.12-1	TS 3.12-1
TS B 3.12-1	TS B 3.12-1
TS B 4.4-2	TS B 4.4-2
TS B 4.4-3	TS B 4.4-3
TS B 4.12-1	TS B 4.12-1
TS B 4.17-1	TS B 4.17-1

3. Performance Requirements

A. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal.

B. The results of laboratory carbon sample analysis from the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System carbon shall show ≥95% radioactive methyl iodide removal when tested in accordance with ASTM D3803-89 at conditions of 30°C, 95% RH for the Shield Building Ventilation System and 30°C, 95% RH for the Auxiliary Building Special Ventilation System.

C. Fans shall operate within ±10% of design flow when tested.

c. If the internal pressure of the reactor containment vessel exceeds 2 psi, the condition shall be corrected within 8 hours or the reactor shall be placed in a subcritical condition.

d. The reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is >40°F.

Accident analysis assumes a charcoal adsorber efficiency of 90%.[1] To ensure the charcoal adsorbers maintain that efficiency throughout the operating cycle, a safety factor of 2 is used. Therefore, if accident analysis assumes a charcoal adsorber efficiency of 90%, this equates to a methyl iodide penetration of 10%. If a safety factor of 2 is assumed, the methyl iodide penetration is reduced to 5%. Thus, the acceptance criteria of 95% efficient will be used for the charcoal adsorbers.

Although committing to ASTM D3803-89, it was recognized that ASTM D3803-89 Standard references Military Standards MIL-F-51068D, Filter, Particulate High Efficiency, Fire Resistant, and MIL-F-51079A, Filter, Medium Fire Resistant, High Efficiency. These specifications have been revised and the latest revisions are, MIL-F-51068F and MIL-F-51079D. These revisions have been canceled and superseded by ASME AG-1, Code on Nuclear Air and Gas Treatment. ASME AG-1 is an acceptable substitution. Consequently, other referenced standards can be substituted if the new standard or methodology is shown to provide equivalent or superior performance to those referenced in ASTM D3803-89.

The COLD SHUTDOWN condition precludes any energy releases or buildup of containment pressure from flashing of reactor coolant in the event of a system break. The restriction to fuel that has been irradiated during power operation allows initial testing with an open containment when negligible activity exists. The shutdown margin for the COLD SHUTDOWN condition assures subcriticality with the vessel closed even if the most reactive RCC assembly were inadvertently withdrawn. Therefore, the two parts of TS 3.6.a allow CONTAINMENT SYSTEM INTEGRITY to be violated when a fission product inventory is present only under circumstances that preclude both criticality and release of stored energy.

When the reactor vessel head is removed with the CONTAINMENT SYSTEM INTEGRITY violated, the reactor must not only be in the COLD SHUTDOWN condition, but also in the REFUELING shutdown condition. A 5% shutdown margin is specified for REFUELING conditions to prevent the occurrence of criticality under any circumstances, even when fuel is being moved during REFUELING operations. The requirement of a 40°F minimum containment ambient temperature is to assure that the minimum containment vessel metal temperature is well above NDTT + 30° criterion for the shell material.

This specification also prevents positive insertion of reactivity whenever Containment System integrity is not maintained if such addition would violate the respective shutdown margins. Effectively, the boron concentration must be maintained at a predicted concentration of 2,100 ppm[2] or more if the Containment System is to be disabled with the reactor pressure vessel open.

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[1]USAR TABLE 14.3-8, "Major Assumptions for Design Basis LOCA Analysis"

[2]USAR Table 3.2-1

The 2 psi limit on internal pressure provides adequate margin between the maximum internal pressure of 46 psig and the peak accident pressure resulting from the postulated Design Basis Accident as discussed in Sections 14.2 and 14.3 of the USAR.[3]

The reactor containment vessel is designed for 0.8 psi internal vacuum, the occurrence of which will be prevented by redundant vacuum breaker systems.

[3]USAR Section 5

5. When there is fuel in the reactor, a minimum boron concentration of 2200 ppm and a shutdown margin of $\geq 5\%$ $\Delta k/k$ shall be maintained in the Reactor Coolant System during reactor vessel head removal or while loading and unloading fuel from the reactor. The required boron concentration shall be verified by chemical analysis daily.

6. Direct communication between the control room and the operating floor of the containment shall be available whenever changes in core geometry are taking place.

7. Heavy loads, greater than the weight of a fuel assembly, will not be transported over or placed in either spent fuel pool when spent fuel is stored in that pool. Placement of additional fuel storage racks is permitted, however, these racks may not traverse directly above spent fuel stored in the pools.

8. The containment ventilation and purge system, including the capability to initiate automatic containment ventilation isolation, shall be tested and verified to be operable immediately prior to and daily during REFUELING OPERATIONS.

9. a. The spent fuel pool sweep system, including the charcoal adsorbers, shall be operating during fuel handling and when any load is carried over the pool if irradiated fuel in the pool has decayed less than 30 days. If the spent fuel pool sweep system, including the charcoal adsorber, is not operating when required, fuel movement shall not be started (any fuel assembly movement in progress may be completed).

   b. Performance Requirements

      1. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show $\geq 99\%$ DOP removal and $\geq 99\%$ halogenated hydrocarbon removal.

      2. The results of laboratory carbon sample analysis from spent fuel pool sweep system carbon shall show $\geq 95\%$ radioactive methyl iodide removal when tested in accordance with ASTM D3803-89 at conditions of 30°C and 95% RH.

      3. Fans shall operate within $\pm 10\%$ of design flow when tested.

10. The minimum water level above the vessel flange shall be maintained at 23 feet.

11. A dead-load test shall be successfully performed on both the fuel handling and manipulator cranes before fuel movement begins. The load assumed by the cranes for this test must be equal to or greater than the maximum load to be assumed by the cranes during the REFUELING OPERATIONS. A thorough visual inspection of the cranes shall be made after the dead-load test and prior to fuel handling.

12. A licensed senior reactor operator will be on-site and designated in charge of the REFUELING OPERATIONS.

b. If any of the specified limiting conditions for REFUELING OPERATIONS are not met, refueling of the reactor shall cease. Work shall be initiated to correct the violated conditions so that the specified limits are met, and no operations which may increase the reactivity of the core shall be performed.

Accident analysis assumes a charcoal adsorber efficiency of 90%.[4] To ensure the charcoal adsorbers maintain that efficiency throughout the operating cycle, a safety factor of 2 is used. Therefore, if accident analysis assumes a charcoal adsorber efficiency of 90%, this equates to a methyl iodide penetration of 10%. If a safety factor of 2 is assumed, the methyl iodide penetration is reduced to 5%. Thus, the acceptance criteria of 95% efficient will be used for the charcoal adsorbers.

Although committing to ASTM D3803-89, it was recognized that ASTM D3803-89 Standard references Military Standards MIL-F-51068D, Filter, Particulate High Efficiency, Fire Resistant, and MIL-F-51079A, Filter, Medium Fire Resistant, High Efficiency. These specifications have been revised and the latest revisions are, MIL-F-51068F and MIL-F-51079D. These revisions have been canceled and superseded by ASME AG-1, Code on Nuclear Air and Gas Treatment. ASME AG-1 is an acceptable substitution. Consequently, other referenced standards can be substituted if the new standard or methodology is shown to provide equivalent or superior performance to those referenced in ASTM D3803-89.

[4]USAR TABLE 14.3-8, "Major Assumptions for Design Basis LOCA Analysis"

3.12 CONTROL ROOM POST-ACCIDENT RECIRCULATION SYSTEM

APPLICABILITY

Applies to the OPERABILITY of the Control Room Post-Accident Recirculation System.

OBJECTIVE

To specify OPERABILITY requirements for the Control Room Post-Accident Recirculation System.

SPECIFICATION

a. The reactor shall not be made critical unless both trains of the Control Room Post-Accident Recirculation System are OPERABLE.

b. Both trains of the Control Room Post-Accident Recirculation System, including filters, shall be OPERABLE or the reactor shall be shut down within 12 hours, except that when one of the two trains of the Control Room Post-Accident Recirculation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

c. During testing the system shall meet the following performance requirements:

   1. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filter and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal.

   2. The results of the laboratory carbon sample analysis from the Control Room Post-Accident Recirculation System carbon shall show ≥95% radioactive methyl iodide removal when tested in accordance with ASTM D3803-89 at conditions of 30°C, and 95% RH.

   3. Fans shall operate within ±10% of design flow when tested.

BASIS - Control Room Post-Accident Recirculation System (TS 3.12)

The Control Room Post-Accident Recirculation System is designed to filter the Control Room atmosphere during Control Room isolation conditions. The Control Room Post-Accident Recirculation System is designed to automatically start upon SIS or high radiation signal.

If the system is found to be inoperable, there is no immediate threat to the Control Room and reactor operation may continue for a limited period of time while repairs are being made. If the system cannot be repaired within 7 days, the reactor is placed in HOT STANDBY until the repairs are made.

Accident analysis assumes a charcoal adsorber efficiency of 90%.[1] To ensure the charcoal adsorbers maintain that efficiency throughout the operating cycle, a safety factor of 2 is used. Therefore, if accident analysis assumes a charcoal adsorber efficiency of 90%, this equates to a methyl iodide penetration of 10%. If a safety factor of 2 is assumed, the methyl iodide penetration is reduced to 5%. Thus, the acceptance criteria of 95% efficient will be used for the charcoal adsorbers.

Although committing to ASTM D3803-89, it was recognized that ASTM D3803-89 Standard references Military Standards MIL-F-51068D, Filter, Particulate High Efficiency, Fire Resistant, and MIL-F-51079A, Filter, Medium Fire Resistant, High Efficiency. These specifications have been revised and the latest revisions are, MIL-F-51068F and MIL-F-51079D. These revisions have been canceled and superseded by ASME AG-1, Code on Nuclear Air and Gas Treatment. ASME AG-1 is an acceptable substitution. Consequently, other referenced standards can be substituted if the new standard or methodology is shown to provide equivalent or superior performance to those referenced in ASTM D3803-89.

[1]USAR TABLE 14.3-8, "Major Assumptions for Design Basis LOCA Analysis"

Maintaining CONTAINMENT SYSTEM INTEGRITY in an OPERABLE state requires, among other conditions, that all the requirements of TS 4.4.a and b, leakage rate testing (Containment Leakage Rate Testing Program), are satisfied. The testing process will include: (1) an overall containment leak rate evaluation (Type A); (2) a determination of the leakage through pressure containing or leakage limiting boundaries (Type B); and (3) an evaluation of the leak rate through containment isolation valves (Type C).[4] These tests are intended to check all possible paths for containment atmosphere to reach the outside atmosphere.

Shield Building Ventilation System (TS 4.4.c)

Pressure drop across the combined HEPA filters and charcoal adsorbers of <10 inches of water and an individual HEPA bank pressure drop of <4 inches of water at the system design flow rate (±10%) will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. A test frequency of once per operating cycle establishes system performance capability. This pressure drop is approximately 6 inches of water when the filters are clean.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52 (Rev. 1) dated July 1976, except that ASTM D3803-89 standard will be used to fulfill the guidelines of Table 2, item 5, "Radioiodine removal efficiency." The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly, and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The use of multi-sample assemblies for test samples is an acceptable alternate to mixing one bed for a sample. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52 (Rev. 1) dated July 1976.

If painting, fire, or chemical release occurs, the charcoal adsorber will be laboratory tested to determine whether it was contaminated from the fumes, chemicals, or foreign materials. Replacement of the charcoal adsorber can then be evaluated.

Operation of the systems every month will demonstrate operability of the filters and adsorber system. Operation of the Shield Building Ventilation System will result in a discharge to the environment. This discharge is made after at least three samples of the building atmosphere have been analyzed to determine the concentration of activity in the atmosphere.

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[4] 10 CFR Part 50, Appendix J, Option B

Auxiliary Building Special Ventilation System (TS 4.4.d)

Demonstration of the automatic initiation capability is necessary to assure system performance capability.[5]

Pressure drop across the combined HEPA filters and charcoal adsorbers of <10 inches of water and an individual HEPA bank pressure drop of <4 inches of water at the system design flow rate (±10%) will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. A test frequency of once per operating cycle establishes system performance capability. This pressure drop is approximately 6 inches of water when the filters are clean.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52 (Rev. 1) dated July 1976, except that ASTM D3803-89 standard will be used to fulfill the guidelines of Table 2, item 5, "Radioiodine removal efficiency." The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly, and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The use of multi-sample assemblies for test samples is an acceptable alternate to mixing one bed for a sample. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52 (Rev. 1) dated July 1976.

If painting, fire, or chemical release occurs, the charcoal adsorber will be laboratory tested to determine whether it was contaminated from the fumes, chemicals, or foreign materials. Replacement of the charcoal adsorber can then be evaluated.

Periodic checking of the inlet heaters and associated controls for each train will provide assurance that the system has the capability of reducing inlet air humidity so that charcoal adsorber efficiency is enhanced.

In-place testing procedures will be established utilizing applicable sections of ANSI N510-1975 standard as a procedural guideline.

Vacuum Breaker Valves (TS 4.4.e)

The vacuum breaker valves are 18 inch butterfly valves with air to open, spring to close operators. The valve discs are center pivot and rotate when closing to an EPT base material seat. When closed, the disc is positioned fully on the seat regardless of flow or pressure direction. Testing these valves in a direction opposite to that which would occur post-LOCA verifies leakage rates of both the vacuum breaker valves and the check valves downstream.

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[5]USAR Section 9.6

BASIS

Pressure drop across the combined HEPA filters and charcoal adsorbers of <10 inches of water and 4 inches across any HEPA filter bank at the system design flow rate (±10%) will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. A test frequency of once per operating cycle establishes system performance capability. This pressure drop is approximately 6 inches of water when filters are clean.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52 (Rev. 1) dated July 1976, except that ASTM D3803-89 standard will be used to fulfill the guidelines of Table 2, item 5, "Radioiodine removal efficiency." The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly, and obtaining at least two samples. Each sample should be at least 2 inches in diameter and a length equal to the thickness of the bed. The use of multi-sample assemblies for test samples is an acceptable alternate to mixing one bed for a sample. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced. Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52 (Rev. 1) dated July 1976.

If painting, fire, or chemical release occurs such that the charcoal adsorbers become contaminated from the fumes, chemicals, or foreign materials, the same tests and sample analysis should be performed as required for operational use.

Degradation of the HEPA filters due to painting, fire or chemical release in a communicating ventilation zone would be detected by an increased pressure drop across the filters. Should the filters become contaminated, engineering judgment would be used to determine if further leakage and/or efficiency testing was required.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

In-place testing procedures will be established utilizing applicable sections of ANSI N510 - 1975 standard as a procedural guideline only.

BASIS

Control Room Post-Accident Recirculation System

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 6 inches of water and 4 inches across any HEPA filter bank at the system design flow rate (±10%) will indicate that the filters and adsorbers are not clogged by excessive amounts of foreign matter. A filter test frequency of once per operating cycle establishes system performance capability.

The frequency of tests and sample analysis are necessary to show that the HEPA filters and charcoal adsorbers can perform as evaluated. Replacement adsorbent should be qualified according to the guidelines of Regulatory Guide 1.52 (Rev. 1) dated July 1976, except that ASTM D3803-89 standard will be used to fulfill the guidelines of Table 2, item 5, "Radioiodine removal efficiency." The charcoal adsorber efficiency test procedures should allow for the removal of one adsorber tray, emptying of one bed from the tray, mixing the adsorbent thoroughly, and obtaining at least two samples. Each sample should be at least two inches in diameter and a length equal to the thickness of the bed. The use of multi-sample assemblies for test samples is an acceptable alternate to mixing one bed for a sample. If the iodine removal efficiency test results are unacceptable, all adsorbent in the system should be replaced.

Any HEPA filters found defective should be replaced with filters qualified pursuant to Regulatory Position C.3.d of Regulatory Guide 1.52 (Rev. 1) dated July 1976. If painting, fire, or chemical release occurs such that the charcoal adsorber could become contaminated from the fumes, chemicals, or foreign materials, the same tests and sample analysis should be performed as required for operational use.

Demonstration of the automatic initiation capability is necessary to assure system performance capability.

In-place testing procedures will be established utilizing applicable sections of ANSI N510-1975 standard as a procedural guideline only.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO AMENDMENT NO. 152 TO FACILITY OPERATING LICENSE NO. DPR-43

NUCLEAR MANAGEMENT COMPANY, LLC

KEWAUNEE NUCLEAR POWER PLANT

DOCKET NO. 50-305

1.0 INTRODUCTION

Wisconsin Public Service Corporation (WPSC) submitted a letter dated November 29, 1999, and Nuclear Management Company, LLC (NMC) submitted letters dated November 10 and December 15, 2000, requesting a license amendment. WPSC was succeeded by NMC as the licensed operator of the Kewaunee Nuclear Power Plant (KNPP). By letter dated October 5, 2000, NMC (the licensee) requested the Nuclear Regulatory Commission (NRC) staff continue to process and disposition licensing actions previously docketed and requested by WPSC.

By a letter dated November 29, 1999, the licensee submitted a proposed amendment to KNPP Technical Specifications (TSs) to incorporate the recommendations delineated in Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999. Also, the licensee proposed changes to clarify the testing requirements per TS Section 4, "Surveillance Requirements."

The December 15, 2000, letter provided clarifying information that was within the scope of the original application, did not change the NRC staff's initial proposed no significant hazards consideration determination, and did not expand the amendment beyond the scope of the original notice (65 FR 77921).

2.0 BACKGROUND

Safety-related air-cleaning units used in the Engineered Safety Feature (ESF) ventilation systems of nuclear power plants reduce the potential onsite and offsite consequences of a radiological accident by filtering radioiodine. Analyses of design-basis accidents assume particular safety-related charcoal adsorption efficiencies when calculating offsite and control room operator doses. To ensure that the charcoal filters used in these systems will perform in a manner that is consistent with the licensing basis of a facility, licensees have requirements in their TSs to periodically perform a laboratory test to determine charcoal adsorption efficiency (in accordance with a test standard) of charcoal samples taken from these ventilation systems.

In GL 99-02, the NRC staff alerted licensees that testing nuclear-grade activated charcoal to standards other than American Society for Testing and Materials (ASTM) D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon," does not provide assurance for complying with their current licensing basis with respect to the dose limits of General Design Criterion 19 of Appendix A to Part 50 of *Title 10 of the Code of Federal Regulations* (10 CFR Part 50) and Subpart A of 10 CFR Part 100.

In GL 99-02, the staff requested that all licensees determine whether their TSs reference ASTM D3803-1989 for charcoal filter laboratory testing. Licensees whose TSs do not reference ASTM D3803-1989 were requested to either amend their TSs to reference ASTM D3803-1989 or propose an alternative test protocol.

3.0 EVALUATION

The NRC received a letter from ASTM in response to a March 8, 2000, Federal Register notice (65 FR 12286) related to revising testing standards in accordance with ASTM D3803-1989 for laboratory testing of activated charcoal in response to GL 99-02. ASTM notified the NRC that the 1989 standard is out of date and should be replaced by D3803-1991(1998). The NRC staff acknowledges that the most current version of ASTM D3803 is ASTM D3803-1991 (reaffirmed in 1998). However, it was decided, for consistency purposes, to have all of the nuclear reactors test to the same standard (ASTM D3803-1989) because, prior to GL 99-02 being issued, approximately one third of nuclear reactors had TSs that referenced ASTM D3803-1989 and there are no substantive changes between the 1989 and 1998 versions.

The current and proposed laboratory charcoal sample testing TS surveillance requirements for the Shield Building Ventilation System (SBVS), the Auxiliary Building Special Ventilation System (ABSVS), the Spent Fuel Pool Sweep Ventilation System (SFPSVS), and the Control Room Post-Accident Recirculation System (CRPARS) are shown in Table 1 and Table 2, respectively.

The proposed use of ASTM D3803-1989 is acceptable because it provides accurate and reproducible test results. The proposed test temperature of 30 degrees Celsius and 95 percent relative humidity (RH) for all four systems are acceptable, because they are consistent with ASTM D3803-1989. This is consistent with the actions requested in GL 99-02.

By letter dated November 10, 2000, the licensee stated that the credited removal efficiency for radioactive organic iodine for each of the four systems is 90 percent. The proposed test penetration for radioactive methyl iodide for each system is less than 5 percent. The proposed test penetration was obtained by applying a safety factor of 2 to the credited efficiency. The proposed safety factor of 2 for all systems is acceptable, because it ensures that the efficiency credited in the accident analysis is still valid at the end of the surveillance interval. This is consistent with the minimum safety factor of 2 specified in GL 99-02.

The August 23, 1999, errata to GL 99-02 clarified that if the maximum actual face velocity is greater than 110 percent of 40 feet per minute (fpm), then the test face velocity should be specified in the TS. By letter dated November 10, 2000, the licensee stated that the face velocity for all four systems is less than 40 fpm. The proposed testing of the charcoal adsorbers will be performed in accordance with ASTM D3803-1989 which specifies a test face velocity of 40 fpm with appropriate margins. This is acceptable because it ensures that the

testing will be consistent with the operation of the ventilation system during accident conditions. Therefore, it is not necessary to specify the face velocity in the proposed TS change. This is consistent with the errata to GL 99-02 dated August 23, 1999.

In addition, the NRC staff has reviewed the attached BNL Technical Evaluation Report (TER) regarding the proposed TSs changes for KNPP. Based on its review, the NRC staff adopts the TER. In view of the above, and because the NRC staff considers ASTM D3803-1989 to be the most accurate and most realistic protocol for testing charcoal in safety-related ventilation systems, the NRC staff finds that the proposed TSs changes satisfy the actions requested in GL 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999, and are acceptable. Based on the NRC staff's review of the submittal, its supplements, and the Brookhaven National Laboratory (BNL) evaluation, the NRC staff finds the proposed TS changes to be acceptable.

4.0 STATE CONSULTATION

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

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. The 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 finding (65 FR 77921). 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 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.

Attachment: Technical Evaluation Report

Principal Contributor: J. Segala

Date: February 28, 2001

KEWAUNEE NUCLEAR POWER PLANT

TABLE 1 - CURRENT TS REQUIREMENTS

System Description						Current TS Requirements					
TS Section	System	Bed Thickness (inches) *	Actual Charcoal: Res. Time (sec) ***	Actual Charcoal: Face Velocity (fpm) **	Credited Efficiency (% methyl iodine) **	Test Penetration (% methyl iodide)	Safety Factor	Test Standard **	Test Temp (° C)	Test RH (%)	Test Face Velocity (fpm)
3.6.b.3.B	Shield Building Ventilation System (SBVS)	2	0.315	31.713	90	<10	1	Reg. Guide 1.52-1976 RDT M 16-1T, Oct. 1973	130	95	Not stated
3.6.b.3.B	Aux. Bldg. Special Ventilation System (ABSVS)	2	0.263	38.056	90	<10	1	Reg. Guide 1.52-1976 RDT M 16-1T, Oct. 1973	66	95	Not stated
3.8.a.9.b.2	Spent Fuel Pool Sweep Ventilation System (SFPSVS)	2	0.263	38.056	90	<10	1	Reg. Guide 1.52-1973 RDT M 16-1T, Oct. 1973	66	95	Not stated
3.12.c.2	Control Room Post-Accident Recirculation System (CRPARS)	2	0.42	23.785	90	<10	1	Reg. Guide 1.52-1973 RDT M 16-1T, Oct. 1973	66	95	Not stated

* Per letter dated November 29, 1999.

** Per letter dated November 10, 2000.

*** Residence time is calculated based on the bed thickness and face velocity given in letter dated November 10, 2000.

KEWAUNEE NUCLEAR POWER PLANT

TABLE 2 - PROPOSED TS REQUIREMENTS

System Description						Proposed TS Requirements					
TS Section	System	Bed Thickness (inches) *	Actual Charcoal		Credited Efficiency (% methyl iodide) **	Test Penetration (% methyl iodide)	Safety Factor	Test Standard *****	Test Temp (° C)	Test RH (%)	Test Face Velocity (fpm) ****
			Res. Time (sec) ***	Face Velocity (fpm) **							
3.6.b.3.B	Shield Building Ventilation System (SBVS)	2	0.315	31.713	90	<5	2	ASTM D3803-1989	30	95	Not stated (40)
3.6.b.3.B	Aux. Bldg. Special Ventilation System (ABSVS)	2	0.263	38.056	90	<5	2	ASTM D3803-1989	30	95	Not stated (40)
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* Per letter dated November 29, 1999.

** Per letter dated November 10, 2000.

*** Residence time is calculated based on the bed thickness and face velocity given in letter dated November 10, 2000.

**** Test face velocity is in accordance with ASTM D3803-89 requirements.

***** Per letter dated December 15, 2000.

ATTACHMENT

TECHNICAL EVALUATION REPORT
BROOKHAVEN NATIONAL LABORATORY
FOR THE OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF SYSTEMS SAFETY AND ANALYSIS
PLANT SYSTEMS BRANCH
RELATED TO AMENDMENT TO FACILITY OPERATING LICENSE NO. DPR- 43
WISCONSIN PUBLIC SERVICE CORPORATION
KEWAUNEE NUCLEAR POWER PLANT
DOCKET NO. 50 - 305

1.0 INTRODUCTION

By letter dated November 29, 1999 (NRC-99-084), Wisconsin Public Service Corporation (WPSC) submitted its response to the actions requested in Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999, for the Kewaunee Nuclear Power Plant (KNPP). By the same letter dated November 29, 1999, WPSC requested changes to the Technical Specifications (TS) Section 3.6.b.3.B for the Shield Building Ventilation System(SBVS) and Auxiliary Building Special Ventilation System (ABSVS), TS Section 3.8.a.9.b.2 for the Spent Fuel Pool Sweep Ventilation System (SFPSVS), and TS Section 3.12.c.2 for the Control Room Post-Accident Recirculation System (CRPARS) for the Kewaunee Nuclear Power Plant. By letter dated November 10, 2000 (NRC-00-087), WPSC resubmitted TS changes modifying the TS surveillance requirements and the TS bases to incorporate several additional action items requested in the GL, provided additional information on face velocities and safety factors, and withdrew the proposed revision in the TS basis sections with regard to testing requirements in case of painting, fire, or chemical release. By letter dated December 15, 2000 (NRC-00-099), WPSC resubmitted again the TS change sections after inserting qualifying statements in the TS bases and including the reference of ASTM D3803-89 in the TS surveillance requirements. The proposed changes would revise the TS surveillance testing of the safety related ventilation system charcoal to meet the requested actions of GL 99-02.

2.0 BACKGROUND

Safety-related air-cleaning units used in the engineered safety features (ESF) ventilation systems of nuclear power plants reduce the potential onsite and offsite consequences of a radiological accident by filtering radioiodine. Analyses of design basis accidents assume particular safety related charcoal adsorption efficiencies when calculating offsite and control room operator doses. To ensure that the charcoal filters used in these systems will perform in a manner that is consistent with the licensing basis of a facility, licensees have requirements in their TS to periodically perform a laboratory test (in accordance with a test standard) of charcoal samples taken from these ventilation systems.

In GL 99-02, the staff alerted licensees that testing nuclear-grade activated charcoal to standards other than American Society for Testing and Materials (ASTM) D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon," does not provide assurance for complying with their current licensing bases with respect to the dose limits of General Design Criterion (GDC) 19 of Appendix A to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR) and Subpart A of

10 CFR Part 100.

GL 99-02 requested that all licensees determine whether their TS reference ASTM D3803-1989 for charcoal filter laboratory testing. Licensees whose TS do not reference ASTM D3803-1989 were requested to either amend their TS to reference ASTM D3803-1989 or propose an alternative test protocol.

3.0 EVALUATION

3.1 Laboratory Charcoal Sample Testing Surveillance Requirements

The current and proposed laboratory charcoal sample testing TS surveillance requirements for the Shield Building Ventilation System (SBVS), the Auxiliary Building Special Ventilation System (ABSVS), the Spent Fuel Pool Sweep Ventilation System (SFPSVS), and the Control Room Post-Accident Recirculation System (CRPARS) are shown in Table 1 and Table 2, respectively.

The proposed use of ASTM D3803-1989 is acceptable because it provides accurate and reproducible test results. The proposed test temperature of 30°C and 95% relative humidity (RH) for all four systems are acceptable because it is consistent with ASTM D3803-1989. This is consistent with the actions requested in GL 99-02.

By letter dated November 10, 2000, the credited removal efficiency for radioactive organic iodine for each of the four systems is 90%. The proposed test penetration for radioactive methyl iodide for each system is less than 5%. The proposed test penetration was obtained by applying a safety factor of 2 to the credited efficiency. The proposed safety factor of 2 for all systems is acceptable because it ensures that the efficiency credited in the accident analysis is still valid at the end of the surveillance interval. This is consistent with the minimum safety factor of 2 specified in GL 99-02.

The August 23, 1999 errata to GL 99-02 clarified that if the maximum actual face velocity is greater than 110% of 40 fpm, then the test face velocity should be specified in the TS. By letter dated November 10, 2000, the face velocity for all four systems is less than 40 fpm. The proposed testing of the charcoal adsorbers will be performed in accordance with ASTM D3803-1989 which specifies a test face velocity of 40 fpm with appropriate margins. This is acceptable because it ensures that the testing will be consistent with the operation of the ventilation system during accident conditions. Therefore, it is not necessary to specify the face velocity in the proposed TS change. This is consistent with the errata to GL 99-02 dated August 23, 1999.

4.0 CONCLUSION

On the basis of its evaluation, BNL recommends that the NRC staff consider the proposed TS changes to be acceptable.

Principal Contributors: Richard E. Deem, Anthony Fresco and Mano Subudhi
Date: January 12, 2000

KEWAUNEE NUCLEAR POWER PLANT

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			Res. Time (sec) ***	Face Velocity (fpm) **							
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* Per letter dated November 29, 1999.
** Per letter dated November 10, 2000.
*** Residence time is calculated based on the bed thickness and face velocity given in letter dated November 10, 2000.

KEWAUNEE NUCLEAR POWER PLANT

TABLE 2 - PROPOSED TS REQUIREMENTS											
System Description						Proposed TS Requirements					
TS Section	System	Bed Thickness (inches) *	Actual Charcoal		Credited Efficiency (% methyl iodide) **	Test Penetration (% methyl iodide)	Safety Factor	Test Standard *****	Test Temp (° C)	Test RH (%)	Test Face Velocity (fpm) ****
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* Per letter dated November 29, 1999.
** Per letter dated November 10, 2000.
*** Residence time is calculated based on the bed thickness and face velocity given in letter dated November 10, 2000.
**** Test face velocity is in accordance with ASTM D3803-89 requirements.
***** Per letter dated December 15, 2000.