DISTRIBUTION
Docket
ORB#1 Reading
NRC PDR
Local PDR
VStello
KRGoller/TJCarter
SMSheppard
DNeighbors
OELD
OI&E(5)
BJones(4)
BScharf(15)
JMcGough
DEisenhut
BKGrimes
ACRS(16)
OPA(CMiles)
DRoss

Docket No. 50-305

January 18, 1977

Wisconsin Public Service Corporation
ATTN: Mr. E. W. James
Senior Vice President
Post Office Box 1200
Green Bay, Wisconsin 54305

Gentlemen:

The Commission has issued the enclosed Amendment No. 12 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment consists of changes to the Technical Specifications and is in response to your letter dated August 25, 1976, as supplemented October 12, 1976.

The amendment revises the Technical Specifications to provide additional limiting conditions for operation and surveillance requirements for the installed filter systems at Kewaunee.

Copies of the Safety Evaluation and Federal Register Notice are also enclosed.

Sincerely,

Original
Signed by

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:
1. Amendment No. 12 to DPR-43
2. Safety Evaluation
3. Federal Register Notice

cc w/enclosures:
See next page

OFFICE	ORB#1	EEB:OT	OELD	ORB#1		
SURNAME	DNeighbors	BKGrimes		ASchwencer		
DATE	12/~~13~~/76	12/14/76	12/17/76	12/18/76		

x27433:tsb

Form AEC-318 (Rev. 9-53) AECM 0240

☆ U. S. GOVERNMENT PRINTING OFFICE: 1974-526-166

cc: Steven E. Keane, Esquire
Foley, Sammond & Lardner
735 North Water Street
Milwaukee, Wisconsin 53202

Bruce W. Churchill, Esquire
Shaw, Pittman, Potts & Trowbridge
1800 M Street
Washington, D. C. 20036

Kewaunee Public Library
314 Milwaukee Street
Kewaunee, Wisconsin 54216

Mr. Donald L. Quistorff
Chairman Kewaunee County Board
Kewaunee County Courthouse
Kewaunee, Wisconsin 54216

Mr. Lester Huber
Chairman, Town of Carlton
Route 1
Kewaunee, Wisconsin 54216

Mr. Norman M. Clapp, Chairman
Public Service Commission of
Wisconsin
Hill Farms State Office Building
Madison, Wisconsin 53702

Chief, Energy Systems
Analyses Branch (AW-459)
Office of Radiation Programs
U.S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S.W.
Washington, D.C. 20460

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

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

WISCONSIN PUBLIC SERVICE CORPORATION

WISCONSIN POWER AND LIGHT COMPANY

MADISON GAS AND ELECTRIC COMPANY

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 12
License No. DPR-43

1. The 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 August 25, 1976, as supplemented October 12, 1976, 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.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 18, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 12

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Revise Appendix A as follows:

Remove Pages	Insert Pages	Add Pages
3.6-1	3.6-1	3.6-4
3.6-2	3.6-2	3.6-5
3.6-3	3.6-3	3.8-2A
3.8-2	3.8-2	3.8-4
3.8-3	3.8-3	3.805
4.4-5	4.4-5	4.4-7A
4.4-6	4.4-6	4.4-11
4.4-7	4.4-7	4.12-1
4.4-8	4.4-8	4.12-2
4.4-9	4.4-9	4.12-3
4.4-10	4.4-10	4.12-4
Table TS 4.1-3	Table TS 4.1-3	

3.6 CONTAINMENT SYSTEM

Applicability

Applies to the integrity of the Containment System.

Objective

To define the operating status of the Containment System.

Specification

a. Containment System integrity shall not be violated if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:

   1. The reactor is in the cold shutdown condition with the reactor vessel head installed, or

   2. The reactor is in the refueling shutdown condition.

b. All of the following conditions shall be satisfied whenever Containment System integrity as defined by Specification 1.0g 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 seven days provided that the other train is demonstrated to be operable within 2 hours and daily thereafter.

   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 seven days provided that the other train

is demonstrated to be operable within 2 hours and daily thereafter.

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 $\geq$ 99% DOP removal and $\geq$ 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 $\geq$ 90% radioactive methyl iodide removal at conditions of 130°C, 95% RH for the Shield Building Ventilation System and 66°C, 95% RH for the Auxiliary Building Special Ventilation System.

   C. Fans shall operate within $\pm$ 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 eight 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 greater than 40°F.

Basis

Proper functioning of the Shield Building Ventilation System is essential to the performance of the Containment System. Therefore, except for reasonable periods of maintenance outage for one redundant train of equipment, the complete system should be in readiness whenever Containment System integrity is required. Proper functioning of the Auxiliary Building Special Ventilation System is similarly necessary to preclude possible unfiltered leakage through

penetrations that enter the Special Ventilation Zone (Zone SV).

Both the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System are designed to automatically start following a safety injection signal. Each of the two trains of both systems has 100% capacity. If one train of either system is found to be inoperable, there is not an immediate threat to the containment system performance and reactor operation may continue while repairs are being made. If both trains of either system are inoperable, the plant will be brought to a condition where the air purification system would not be required.

High efficiency particulate air (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential radioiodine release to the atmosphere. Bypass leakage for the charcoal adsorbers and particulate removal efficiency for HEPA filters are determined by halogenated hydrocarbon and DOP respectively. The laboratory carbon sample test results indicate a radioactive methyl iodide removal efficiency under test conditions which are more severe than accident conditions.

Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers. The performance criteria for the safeguard ventilation fans are stated in Section 5.5 and 9.6 of the FSAR. If the performances are as specified, the calculated doses would be less than the guidelines stated in 10 CFR Part 100 for the accidents analyzed.

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

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 Specification 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. This 10% shutdown margin prevents the occurrence of criticality under any circumstances, even when fuel is being moved during refueling operations. The requirement of a 40^{o}F minimum containment ambient temperature is to assure that the minimum vessel metal temperature is well above NDTT + 30^{o} 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 2000 ppm[(1)] or more if the Containment System is to be disabled with the reactor pressure vessel open.

The 2 psi limit on internal pressure provides adequate margin between the maximum internal pressure of 46 psig and the peak accident pressure of 42.2 psig resulting from the postulated Design Basis Accident. (2)

The Reactor Containment Vessel is designed for 0.8 psi internal vacuum, the occurrence of which will be prevented by redundant vacuum breaker systems.

References:
(1) FSAR Table 3.2-1
(2) FSAR Section 5

12. A licensed senior reactor operator will be on site and designated in charge of the refueling operation.

b. If any of the specified limiting conditions for refueling 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.

Basis

The equipment and general procedures to be utilized during refueling are discussed in the FSAR. Detailed instructions, the above specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident occurs during the refueling operations that would result in a hazard to public health and safety.(1) Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels (2 above) and neutron flux provides immediate indication of an unsafe condition. The residual heat removal pump is used to maintain a uniform boron concentration.

The shutdown margin indicated in Part 5 will keep the core subcritical, even if all control rods were withdrawn from the core. During refueling, the reactor refueling cavity is filled with approximately 275,000 gallons of borated water. The boron concentration of this water is sufficient to maintain the reactor subcritical by approximately 10% Δ k/k in the cold condition with all rods inserted, and will also maintain the core subcritical even if no control rods were inserted into the reactor.(2) Periodic checks of refueling water boron concentration insure that proper shutdown margin is maintained. Part 6 allows the control room operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

Interlocks are utilized during refueling to ensure safe handling. Only one assembly at a time can be handled. The fuel handling hoist is dead weight

tested prior to use to assure proper crane operation. It will not be possible to lift or carry heavy objects over the spent fuel pool when fuel is stored therein through interlocks and administrative procedures.

The one hundred hour decay time following plant shutdown is consistent with the assumption used in the dose calculation for the fuel handling accident. The requirement for the Auxiliary Building Special Ventilation System to be operable and spent fuel pool sweep system, including charcoal adsorbers, to be operating when spent fuel movement is being made provides added assurance that the offsite doses will be within acceptable limits in the event of a fuel handling accident. The spent fuel pool sweep system is designed to sweep the atmosphere above the refueling pool and release to the Auxiliary Building vent during fuel handling operations. Normally, the charcoal adsorbers are bypassed but for purification operation, the bypass dampers are closed routing the air flow through the charcoal adsorbers. If the dampers do not close tightly, bypass leakage could exist to negate the usefulness of the charcoal adsorber. If the spent fuel pool sweep system is found not to be operating fuel handling within the Auxiliary Building will be terminated until the system can be restored to the operating condition.

The bypass dampers are integral to the filter housing. The test of the bypass leakage around the charcoal adsorbers will include the leakage through these dampers.

High efficiency particulate absolute (HEPA) filters are installed before the charcoal adsorbers to prevent clogging of the iodine adsorbers. The charcoal adsorbers are installed to reduce the potential radioiodine releases to the atmosphere. Bypass leakage for the charcoal adsorbers and particulate removal efficiency for HEPA filters are determined by halogenated hydrocarbon

to this value.

c. Residual Heat Removal System

1. Those portions of the Residual Heat Removal System external to the isolation valves at the containment shall be hydrostatically tested at 350 psig at each major refueling outage, or they shall be tested during their use in normal operation at least once between successive major refueling outages.

2. The total leakage from either train shall not exceed two gallons per hour. Visible leakage that cannot be stopped at test conditions shall be suitably measured to demonstrate compliance with this Specification.

3. Any repairs necessary to meet the specified leak rate shall be accomplished within seven days of resumption of power operation.

d. 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 less than 10 inches of water and the pressure drop across any HEPA filter bank is less than 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 inspection.

2. A. The tests and analysis of Specification 3.6.b.3 shall be performed at least once per operating cycle or once every 18 months, whichever occurs first, or after every 720 hours of system operation or following painting, fire, or chemical release (during system operation) in any ventilation zone serviced by the ventilation system. Tests and analysis of Specification 3.6.b.3 shall also be performed

following painting, fire or chemical release if an internal inspection indicates the presence of contaminants.

B. Cold DOP testing shall be performed 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.

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 every month.

3. Perform an air distribution test on the HEPA filter bank after any maintenance or testing that could affect the air distribution within the systems. The test shall be performed at rated flow rate ($\pm$10%). The results of the test shall show the air distribution is uniform within $\pm$20%.

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 two minutes after initiation of a simulated safety injection signal and obtains equilibrium discharge conditions that demonstrate the Shield Building leakage is within acceptable limits.

e. 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 Specifications 4.4.d.1 through 4.4.d.3 except for Specification 4.4.d.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.

f. 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 psi 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 specification 4.4.b during each refueling.

Basis

The Containment System consists of a steel Reactor Containment Vessel within a concrete Shield Building and a Shield Building Ventilation System which, in the event of a loss-of-coolant accident, will produce a vacuum in the Shield Building annulus and will cause all leakage from the Reactor Containment Vessel to be mixed in the annulus volume and recirculated through a filter system before its deferred release to the environment through the exhaust fan that maintains vacuum in the annulus. Potential leakage from the PHRS or from the majority of lines that span the Shield Building annulus is collected in a special ventilation zone of the Auxiliary Building and filtered before its release.

The free-standing Reactor Containment Vessel is designed to accomodate the maximum internal pressure that would result from the Design Basis Accident. (1) For initial conditions typical of normal operation, 120°F and 15 psia, an instantaneous double-ended break with minimum safety features results in a peak pressure of 42.2 psig at 268°F.

The containment has been successfully strength-tested at 51.8 psig and leak-tested at 46.0 psig to meet acceptance specifications prior to installation of penetrations.

The safety analysis [2] is based on a conservatively chosen reference set of assumptions regarding the sequence of events relating to activity release and attainment of vacuum in the Shield Building annulus, the effectiveness of filtering, and the leak rate of the Reactor Containment Vessel as a function of time. The effects of variation in these assumptions, including

that for a leak rate, have been investigated thoroughly. A summary of the items of conservatism involved in the reference calculation and the magnitude of their effect upon off-site dose demonstrates the collective effect of conservatism in these assumptions. (Refer to Appendix H, FSAR)

The reference initial leak rate in this analysis is 0.5 weight percent of air per 24 hours at the peak pressure of the Design Basis Accident. The resulting two-hour doses at the nearest site boundary are significantly less than the guidelines presented in 10 CFR 100.

The pre-operational integrated leak rate tests are specified at both full design pressure and at reduced pressure, with later periodic tests performed only at reduced pressure, as suggested in the relevant AEC guide [3], and at the frequency indicated in the guide for the design and leak rate test pressures. The operational limit on leak rate $L_{tm} = 0.75\ L_t$, provides a 25 percent allowance for possible leakage deterioration between integrated leak rate tests. The six-month allowance on test schedule provides flexibility necessary to permit tests to be performed at times of scheduled or unscheduled plant outage.

The frequent leak-testing of isolation valves and other penetrations, (areas which may reasonably be expected to be responsible for any excess leakage, rather than the containment shell itself) will provide reassurance, approximately annually, that the allowable leak rate limit is met. These tests will also indicate specific areas of deterioration that may warrant repair before their leakage is excessive.

The Residual Heat Removal System functionally becomes a part of the containment volume during the post-accident period when its operation is changed over from the injection phase to the recirculation phase. Redundancy and independence during this period, and the possible consequences of leakage are relatively minor relative to those of the Design Basis Accident [1]; however, the partial

role of the PIP System in containment warrants surveillance of its leak-tightness.

The Shield Building Ventilation System consists of two independent systems that have only a discharge point in common, the Containment System Vent. Both systems are normally activated and one alone must be capable of accomplishing the design function of the system. The periodic tests will demonstrate the capability of both the separate and combined systems.

Reliable simulation of the transient effects of accident-related heat flow from the Reactor Containment Vessel to the annulus appears to be difficult as well as inconvenient, and the necessary differences between any test conditions and predicted accident conditions would still require supporting analysis. Only the heat input to the annulus could be test-simulated, and not the heat transfer which determines the heat input. However, analysis supported by the results of actual tests without heat addition will provide reliable means of determining system performance with heat addition. The major uncertainties in system performance relate to such "as-built" considerations as Shield Building in-leakage, actual system losses, and overall transient response. These areas can be directly refined in the analysis model from the results of the tests specified. The effects of heat addition are readily incorporated, in a conservative manner where necessary, by considering extreme variations of heat transfer coefficients and transient containment temperature conditions. Such analysis performed during final design has demonstrated, for example, that a slight increase in the capacity of the fans was sufficient to accomodate more severe assumptions regarding heat transfer through the shell. It is expected that nearly any deviation in system behavior discovered during initial testing can be similarly offset by increases in the capacity of these fans, which have minimal power requirements (12 hp and 1 hp for the recirculation and discharge fans, respectively).

4.12 SPENT FUEL POOL SWEEP SYSTEM

Applicability

Applies to testing and surveillance requirements for the spent fuel pool sweep system in Specifications 3.8.a.9.

Objective

To verify the performance capability of the spent fuel pool sweep system.

Specification

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

1. Pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 10 inches of water and the pressure drop across any HEPA bank is less than 4 inches of water at the system design flow rate (±10%).
2. Automatic initiation of each train.

b. 1. The tests and analysis of Specification 3.8.a.9.B shall be performed at least once per operating cycle or once every 18 months, whichever occurs first, or after every 720 hours of system operation or following painting, fire, or chemical release (during system operation) in any ventilation zone serviced by the ventilation system. Tests and analysis of Specification 3.8.a.9.B shall also be performed following painting, fire or chemical release if an internal inspection indicates the presence of contaminants.

2. Cold DOP testing shall be performed 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.

Basis

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 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 dated June 1973. 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 June 1976.

If painting, fire, or chemical release occurs such that the HEPA filter or 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.

TABLE 4.1-3

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

	Equipment Tests***	Test	Frequency	Maximum Time Between Tests (Days)
1.	Control Rods	Rod drop times of all full length rods	Each refueling outage	N.A.
		Partial movement of all rods	Every 2 weeks	17
1a.	Reactor Trip Breakers	Open trip	Monthly	37
1b.	Reactor Coolant Pump Breakers-Open-Reactor Trip	Operability	Each refueling outage	N.A.
2.	Pressurizer Safety Valves	Set point	One each refueling outage	N.A.
3.	Main Steam Safety Valves	Set point	Two each refueling outage	N.A.
4.	Containment Isolation Trip	Operability	Each refueling outage	N.A.
5.	Refueling System Interlocks	Operability	Prior to each refueling outage	N.A.
6.	Ventilation System a. Shield Building b. Auxiliary Building SV Zone c. Spent Fuel Pool	Halide, DOP and Methyl Iodide Pressure Drop Test Visual Inspection	During each refueling outage except as specified in Note**	N.A.
7.	Fire Protection Pump and Power Supply	*Operability	Monthly	37
8.	Containment Leak Detect	Operability	Weekly	8
9.	Diesel Fuel Supply	*Fuel inventory	Weekly	8
10.	Turbine Stop and Governor Valves	Operability	Monthly (1)	37(1)
11.	Fuel Assemblies	Visual Inspection	Each refueling outage	N.A.
12.	Guard Pipes	Visual Inspection	Each refueling outage	N.A.

Notes

* See Specification 4.1.d

** Tests and frequency shall be in accordance with Specifications 4.4.d and 4.12.

*** Following maintenance on the above equipment that could affect the operation of the equipment tests should be performed to verify operability.

(1) Temporary extension granted from February 1, 1975 to April 1, 1975 (59 days).

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. No heavy loads, greater than the weight of a fuel assembly, will be transported over or placed in either part of the spent fuel pool when spent fuel is stored in that part.

8. The containment ventilation and purge system, including the radiation monitors which initiate containment ventilation isolation, shall be tested and verified to be operable immediately prior to a refueling operation.

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 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 $\geq$ 90% radioactive methyl iodide removal at conditions of 66°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, except during initial core loading.

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 operation. A thorough visual inspection of the cranes shall be made after the dead-load test and prior to fuel handling.

and DOP, respectively. The laboratory carbon sample test results indicate a radioactive methyl iodide removal efficiency under test conditions which are more severe than accident conditions.

Operation of the fans significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers. If the performances are as specified, the calculated doses would be less than the guidelines stated in 10 CFR Part 100 for the accidents analyzed.

The spent fuel pool sweep system will be operated for the first month after reactor is shutdown for refueling during fuel handling and crane operations with loads over the pool. The potential consequences of a postulated fuel handling accident without the system are a very small fraction of the guidelines of 10 CFR Part 100 after one month decay of the spent fuel. Heavy loads greater than one fuel assembly are not allowed over the spent fuel.

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

The presence of a licensed senior reactor operator at the site and designated in charge provides qualified supervision of the refueling operation during changes in core geometry. (3)

References:
(1) FSAR Section 9.5.2
(2) FSAR Table 3.2-1
(3) FSAR Section 13.2.1

Several penetrations of the Reactor Containment Vessel and the Shield Building could, in the event of leakage past their isolation valves, result in leakage being conveyed across the annulus by the penetrations themselves thus bypassing the function of the Shield Building Ventilation System. (4) Such leakage is estimated not to exceed eleven percent at most of the Containment Vessel leakage; however, an entire area of the Auxiliary Building has medium leakage construction and controlled access, and is designated as the Special Ventilation Zone where such leakage would be collected by either of two redundant trains of the Auxiliary Building Special Ventilation System. This system, when activated, will replace the normal ventilation and draw a vacuum throughout the zone such that all out-leakage will be through particulate and charcoal filters which exhaust to the Auxiliary Building Vent.

The testing requirements for the filter units of the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System will ensure removal of radioactivity consistent with the assumptions made in the analysis of the Design Basis Accident. (2)

Pressure drop across the combined HEPA filters and charcoal adsorbers of less than 10 inches of water and an individual HEPA bank pressure drop of less than 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 June 1976. 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 June 1976.

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 3 samples of the building atmosphere have been analyzed to determine the concentration of activity in the atmosphere.

If painting, fire or chemical release occurs such that the HEPA filter or 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.

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 only.

References:

(1) FSAR Section 5
(2) FSAR Section 14.3.3
(3) Proposed 10 CFR Part 50, Appendix J (Revised)
(4) FSAR Section 5.5

3. 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.

c. Perform an air distribution test on the HEPA filter bank after any maintenance or testing that could affect the air distribution within the system. The test shall be performed at rated flow rate (±10%). The results of the test shall show the air distribution is uniform within ±20%.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 12 TO FACILITY LICENSE NO. DPR-43

WISCONSIN PUBLIC SERVICE CORPORATION

WISCONSIN POWER AND LIGHT COMPANY

MADISON GAS AND ELECTRIC COMPANY

KEWAUNEE NUCLEAR POWER PLANT

DOCKET NO. 50-305

Introduction

By letter dated August 25, 1976, and supplemented October 12, 1976, Wisconsin Public Service Corporation (licensee) requested an amendment to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant which would change the Technical Specifications for safety related filter systems. This request was in response to our letter dated December 29, 1975.

Discussion

Our letter of December 29, 1975, indicated the need and provided the bases for additional limiting conditions for operation and surveillance requirements which would assure high confidence that the engineered safety feature ventilation filter systems would function reliably, when needed, at a degree of efficiency equal to or better than that assumed in the accident analysis. Our letter also provided proposed Technical Specifications with bases and a supporting safety evaluation. The licensee, by letter dated February 4, 1976 indicated that, following the Spring 1976 refueling and after further discussions with us, Technical Specifications would be proposed and submitted. The licensee's letter of August 25, 1976, provided these proposed Technical Specifications.

This Safety Evaluation supplements our December 29, 1975 Safety Evaluation and discusses only those provisions which are changed or added. Those provisions are:

1. Requiring an air distribution test after maintenance or testing that could affect the air distribution within the filter system.

2. Operating the Auxiliary Building Special Ventilation for 15 minutes instead of 10 hours.

3. Requiring operation of the Spent Fuel Pool Sweep System during spent fuel handling and when loads are carried over the pool, if irradiated fuel in the pool has decayed for less than 30 days, and defining heavy loads which cannot be carried over spent fuel as loads greater than the weight of a fuel assembly.

Evaluation

1. Uniform Air Distribution

Our Safety Evaluation of December 29, 1975, stated that an air distribution test across the face of the filter banks would be performed on a periodic basis. In a meeting on June 15, 1976, the licensee proposed to perform an air uniform distribution test once and stated that there was no reason to perform the test again because nothing should change the flow pattern. In the letter of August 24, 1976, the licensee provided data which showed the air distribution to be within $\pm$ 20%. We agreed with the intent of this proposal provided that an air distribution test be performed after any maintenance or testing that could affect the air distribution within the ventilation filter housing. The air distribution would be required to be within $\pm$ 20 of the average flow. The licensee has agreed to this change. We conclude that this change is acceptable.

2. Auxiliary Building Special Ventilation System (ABSVS) Monthly Testing

Model ESF Ventilation Filter System Technical Specifications require operation of each system every month for 10 hours if it has a heater and for 15 minutes if it does not. This requirement is to demonstrate operability of each system and, if it has a heater to reduce any moisture buildup on the charcoal adsorbent.

The licensee has stated in his letter of August 25, 1976, that the ABSVS can not be operated for 10 hours each month. The licensee stated that the operation of the ABSVS requires the normal auxiliary building ventilation system to be shutdown. This will result in (1) degradation of normally required operational equipment and instruments which were not designed to operate at temperatures and humidity which would be expected to occur only following an accident, and (2) actuation of the steam exclusion zones which is an engineered safety feature. Actuation of the steam exclusion zones, which results from high temperatures in the auxiliary building, anticipates a steam line break in certain areas of the plant. This actuation shuts down the auxiliary building normal ventilation system and starts up the ABSVS. Therefore, to return the plant to normal operating conditions following the operability test, the ESF steam exclusion zone system may have to

be disabled or the plant shut down to reduce temperatures in the auxiliary building.

We agree with the licensee that the benefits of running the ABSVS for 10 hours every month are outweighed by the possible damage to the plant resulting from running the test for long periods of time up to 10 hours. After discussions with the licensee, we have agreed on operating the ABSVS 15 minutes every month. This will ensure operability of the ABSVS without causing damage to the plant. We conclude that operating the ABSVS for a short period each month will ensure the health and safety of the public by providing reasonable assurance that at least one of the two systems will operate whenever needed.

3. Spent Fuel Pool Sweep System (SFPSS)

In addition to the requirement that the SFPSS be demonstrated to be operable at least once per operating cycle or once every 18 months, whichever occurs first, we have concluded that the following requirements are necessary:

(a) The system is to be operated for a period of at least 30 days after the reactor is shut down for refueling when operations are underway with loads over the spent fuel pool.

(b) Heavy loads are those loads whose weights are greater than one fuel assembly.

The SFPSS must be operated for the first month of refueling during fuel handling and crane operations with loads over the pool because the radiation monitors which would indicate a fuel handling accident are downstream of the SFPSS. A high radiation signal from the monitors will close the bypass dampers around the SFPSS charcoal adsorbers but will allow activity to be released to the environment without filtration unless, as required, the air flow is already through the charcoal adsorbers. This requirement to operate the SFPSS would be in force until spent fuel in the pool has decayed for at least 30 days. At this time the potential consequences of a postulated fuel handling accident without the SFPSS are a very small fraction of the guidelines of 10 CFR Part 100. The licensee has agreed to the specification to operate the SFPSS in the manner described above.

The present Technical Specifications on the spent fuel state that "No heavy loads will be transported over or placed in either part of the spent fuel pool when spent fuel is stored in that part." We have concluded that heavy loads should be defined as loads greater than the weight of a fuel assembly to limit a postulated accident with spent fuel to the fuel handling accident.

The licensee has agreed to this definition of heavy loads which will not be carried over spent fuel.

These changes are restrictions which will provide further assurance that the health and safety of the public will be protected.

4. Miscellaneous Changes

Several minor changes have been proposed by the licensee or made by us which are within the context of the safety analysis dated December 29, 1975. We and the licensee have agreed upon these changes.

From our review of the Limiting Conditions of Operation and Surveillance Requirements discussed here, we conclude that the specifications are consistent with our requirements for ESF ventilation filter systems. These specifications provide reasonable assurance that the systems will function, when needed, as described in the Final Safety Analysis Report, as amended.

On the basis of the above considerations, the proposed changes to the Technical Specifications relating to installed emergency air treatment systems are acceptable.

We have determined that this amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR 51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: January 18, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-305

WISCONSIN PUBLIC SERVICE CORPORATION

WISCONSIN POWER AND LIGHT COMPANY

MADISON GAS AND ELECTRIC COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 12 to Facility Operating License No. DPR-43, issued to Wisconsin Public Service Corporation, Wisconsin Power & Light Company, and Madison Gas & Electric Company (the licensees), which revised Technical Specifications for operation of the Kewaunee Nuclear Power Plant, located in Kewaunee, Wisconsin. The amendment is effective as of its date of issuance.

The amendment revises the Technical Specifications to provide additional limiting conditions for operation and surveillance requirements for the installed filter systems at Kewaunee.

The application for amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated August 25, 1976, as supplemented October 12, 1976, (2) Amendment No. 12 to License No. DPR-43, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. and at the Kewaunee Public Library, 314 Milwaukee Street, Kewaunee, Wisconsin 54216. A copy of items (2) and (3) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 18th day of January 1977.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors