January 3, 1996

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Mr. M. L. Marchi
Manager - Nuclear Business Group
Wisconsin Public Service Corporation
Post Office Box 19002
Green Bay, WI 54307-9002

SUBJECT: AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NO. DPR-43 - KEWAUNEE NUCLEAR POWER PLANT (TAC NO. M93977)

Dear Mr. Marchi:

The Commission has issued the enclosed Amendment No. 123 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant (KNPP). This amendment revises the Technical Specifications (TS) in response to your application dated October 18, 1995, which superseded your previous submittal dated May 20, 1994.

The amendment revises KNPP TS 3.4, "Steam and Power Conversion System," by modifying and clarifying the operability requirements for the main steam safety valves (MSSVs), the auxiliary feedwater (AFW) system, and the condensate storage tank system. The amendment also eliminates inconsistencies within TS Section 3.4 and provides the basis for acceptable operation of the auxiliary feedwater system below 15% reactor power.

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,

Original Signed By:

Richard J. Laufer, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket No. 50-305

Enclosures: 1. Amendment No. 123 to License No. DPR-43
2. Safety Evaluation

cc w/encls: See next page

DOCUMENT NAME:G\KEWAUNEE\KEW93977.AMD

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

January 3, 1996

Mr. M. L. Marchi
Manager - Nuclear Business Group
Wisconsin Public Service
Corporation
Post Office Box 19002
Green Bay, WI 54307-9002

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cc w/encls: See next page

cc:

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Mr. Harold Reckelberg, Chairman
Kewaunee County Board
Kewaunee County Courthouse
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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. 123
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 October 18, 1995, 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. 123 , 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

Richard J. Laufer, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of issuance: January 3, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE	INSERT
TS 3.4-1	TS 3.4-1
TS 3.4-2	TS 3.4-2
---------	TS 3.4-3
---------	TS 3.4-4
---------	TS 3.4-5
TS B3.4-1	TS B3.4-1
TS B3.4-2	TS B3.4-2
---------	TS B3.4-3
---------	TS B3.4-4
---------	TS B3.4-5

3.4 STEAM AND POWER CONVERSION SYSTEM

APPLICABILITY

Applies to the OPERATING status of the Steam and Power Conversion System.

OBJECTIVE

To assure minimum conditions of steam-relieving capacity and auxiliary feedwater supply necessary to assure the capability of removing decay heat from the reactor, and to limit the concentrations of water activity that might be released by steam relief to the atmosphere.

SPECIFICATION

a. Main Steam Safety Valves (MSSVs)

1. The Reactor Coolant System shall not be heated > 350°F unless a minimum of two MSSVs per steam generator are OPERABLE.

2. The reactor shall not be made critical unless five MSSVs per steam generator are OPERABLE.

3. If the conditions of TS 3.4.a.1 or TS 3.4.a.2 cannot be met within 48 hours, then within 1 hour initiate action to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours
   - Achieve and maintain the Reactor Coolant System temperature < 350°F within an additional 12 hours.

b. Auxiliary Feedwater System

1. The Reactor Coolant System shall not be heated > 350°F unless the following conditions are met:

   A. Auxiliary feedwater train "A" and auxiliary feedwater train "B" are OPERABLE and capable of taking suction from the Service Water System and delivering flow to the associated steam generator.

   B. The turbine-driven auxiliary feedwater train is OPERABLE and capable of taking suction from the Service Water System and delivering flow to both steam generators, OR

      The turbine-driven auxiliary feedwater train is declared inoperable.

   C. The auxiliary feedwater pump low discharge pressure trip channels are OPERABLE.

2. When the Reactor Coolant System temperature is > 350°F, any of the following conditions of inoperability may exist during the time interval specified:

   A. One auxiliary feedwater train may be inoperable for 72 hours.

   B. Two auxiliary feedwater trains may be inoperable for 4 hours.

   C. One steam supply to the turbine-driven auxiliary feedwater pump may be inoperable for 7 days.

3. When the Reactor Coolant System temperature is > 350°F, an auxiliary feedwater pump low discharge pressure trip channel may be inoperable for a period not to exceed 4 hours. If this time period is exceeded, the associated auxiliary feedwater train shall be declared inoperable and the OPERABILITY requirements of TS 3.4.b.2 applied.

4. When the Reactor Coolant System temperature is > 350°F, if three auxiliary feedwater trains are discovered to be inoperable, initiate immediate action to restore one auxiliary feedwater train to OPERABLE status and suspend all LIMITING CONDITIONS FOR OPERATION requiring MODE changes until one auxiliary feedwater train is restored to OPERABLE status.

5. If the OPERABILITY requirements of TS 3.4.b.2 above are not met within the times specified, then within 1 hour action shall be initiated to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours
   - Achieve and maintain the Reactor Coolant System temperature < 350°F within an additional 12 hours.

6. When reactor power is < 15% of RATED POWER, any of the following conditions may exist without declaring the corresponding auxiliary feedwater train inoperable:

   A. The auxiliary feedwater pump control switches located in the control room may be placed in the "pull out" position.

   B. Valves AFW-2A and AFW-2B may be in a throttled or closed position.

   C. Valves AFW-10A and AFW-10B may be in the closed position.

c. Condensate Storage Tank

1. The Reactor Coolant System shall not be heated > 350°F unless a minimum of 39,000 gallons of water is available in the condensate storage tanks.

2. If the Reactor Coolant System temperature is > 350°F and a minimum of 39,000 gallons of water is not available in the condensate storage tanks, reactor operation may continue for up to 48 hours.

3. If the time limit of TS 3.4.c.2 above cannot be met, within 1 hour initiate action to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours
   - Achieve and maintain the Reactor Coolant System temperature < 350°F within an additional 12 hours.

d. Secondary Activity Limits

1. The Reactor Coolant System shall not be heated > 350°F unless the DOSE EQUIVALENT Iodine-131 activity on the secondary side of the steam generators is ≤ 0.1 μCi/cc.

2. When the Reactor Coolant System temperature is > 350°F, the DOSE EQUIVALENT Iodine-131 activity on the secondary side of the steam generators may exceed 0.1 μCi/cc for up to 48 hours.

3. If the requirement of TS 3.4.d.2 cannot be met, then within 1 hour action shall be initiated to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours
   - Achieve and maintain the Reactor Coolant System temperature < 350°F within an additional 12 hours.

BASIS

Main Steam Safety Valves (MSSVs)(TS 3.4.a)

The ten main steam safety valves (five per steam generator) have a total combined rated capability of 7,660,380 lbs./hr. at 1181 lbs./in.^{2} pressure. The maximum full-power steam flow at 1721 MWt is 7,449,000 lbs./hr.; therefore, the main steam safety valves will be able to relieve the total maximum steam flow if necessary.

While the plant is in the HOT SHUTDOWN condition, at least two main steam safety valves per steam generator are required to be available to provide sufficient relief capacity to protect the system.

The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Plan.

Auxiliary Feedwater System (AFW)(TS 3.4.b)

The Auxiliary Feedwater (AFW) System is designed to remove decay heat during plant startups, plant shutdowns, and under accident conditions. During plant startups and shutdowns the system is used in the transition between Residual Heat Removal (RHR) System decay heat removal and Main Feedwater System operation.

The AFW System is considered OPERABLE when the components and flow paths required to provide redundant AFW flow from the AFW pumps to the steam generators are OPERABLE. This requires that the two motor-driven AFW pumps be OPERABLE, each capable of taking suction from the Service Water System and supplying AFW to separate steam generators. The turbine-driven AFW pump is required to be OPERABLE with redundant steam supplies from each of two main steam lines upstream of the main steam isolation valves and shall be capable of taking suction from the Service Water System and supplying AFW to both of the steam generators. With no AFW trains OPERABLE, immediate action shall be taken to restore a train.

Auxiliary feedwater trains are defined as follows:

"A" train -	"A" motor-driven auxiliary feedwater pump and associated AFW valves and piping to "A" steam generator, not including AFW-10A or AFW-10B
"B" train -	"B" motor-driven auxiliary feedwater pump and associated AFW valves and piping to "B" steam generator, not including AFW-10A or AFW-10B
Turbine-driven train -	Turbine-driven AFW pump and associated AFW valves and piping to both "A" steam generator and "B" steam generator, including AFW-10A and AFW-10B

In the unlikely event of a loss of off-site electrical power to the plant, continued capability of decay heat removal would be assured by the availability of either the steam-driven AFW pump or one of the two motor-driven AFW pumps, and by steam discharge to the atmosphere through the main steam safety valves. Each motor-driven pump and turbine-driven AFW pump is normally aligned to both steam generators; valves AFW-10A and AFW-10B are normally open. However, as discussed in the following paragraphs, the position of valves AFW-10A and AFW-10B does not affect the OPERABILITY of the turbine-driven AFW pump or train. Any single AFW pump can supply sufficient feedwater for removal of decay heat from the reactor.

As the plant is cooled down, heated up, or operated in a low power condition, AFW flow will have to be adjusted to maintain an adequate water inventory in the steam generators. This can be accomplished by:

1. Throttling the discharge valves on the motor-driven AFW pumps, or

2. Closing one or both of the cross-connect flow valves, or

3. Stopping the pumps.

If the main feedwater pumps are not in operation at the time, valves AFW-2A and AFW-2B must be throttled or the control switches for the AFW pumps located in the control room will have to be placed in the "pull out" position to prevent their continued operation and overfill of the steam generators. Manual action to re-initiate flow after it has been isolated is considered acceptable based on analyses performed by WPSC and the Westinghouse Electric Corporation. These analyses conservatively assumed the plant was at 100% initial power and demonstrated that operators have at least 10 minutes to manually initiate AFW during any design basis accident with no steam generator dryout or core damage. The placing of the AFW control switches in the "pull out" position and the closing or throttling of valves AFW-2A and AFW-2B are limited to situations when reactor power is < 15% of RATED POWER to provide further margin in the analysis.

During accident conditions, the AFW System provides three functions:

1. Prevents thermal cycling of the steam generator tubesheet upon loss of the main feedwater pump;

2. Removes residual heat from the Reactor Coolant System until the temperature drops below 300-350°F and the RHR System is capable of providing the necessary heat sink;

3. Maintains a head of water in the steam generator following a loss-of-coolant accident.

The feedwater flow rate required to prevent thermal cycling of the tubesheet, and for removing residual heat is the same, about 160 gpm for the reactor (or 80 gpm per steam generator). A 200-gpm flow to the steam generators is therefore sufficient to fulfill the above functions. Since the AFW System is a safety features system, an additional 200 gpm from the backup pump is provided. This redundant motor-driven capability is also supplemented by the turbine-driven pump capacity of 200 gpm.

The pumps are capable of automatic starting and can deliver full AFW flow within one minute after the signal for pump actuation. However, analyses from full power demonstrate that initiation of flow can be delayed for at least 10 minutes with no steam generator dryout or core damage. The head generated by the AFW pumps is sufficient to ensure that feedwater can be pumped into the steam generators when the safety valves are discharging and the supply source is at its lowest head.

Analyses by WPSC and the Westinghouse Electric Corporation show that AFW-2A and AFW-2B may be in the throttled or closed position, or the AFW pump control switches located in the control room may be in the "pull out" position without a compromise to safety. This does not constitute a condition of inoperability as listed in TS 3.4.b.1 or TS 3.4.b.2. The analysis shows that diverse automatic reactor trips insure a plant trip before any core damage or system overpressure occurs and that at least 10 minutes are available for the operators to manually initiate auxiliary feedwater flow (start AFW pumps or fully open AFW-2A and AFW-2B) for any credible accident from an initial power of 100%. Furthermore, as described below, the OPERABILITY of the turbine-driven auxiliary feedwater train is independent of the position of valves AFW-10A and AFW-10B. However, the OPERABILITY of this train is dependent on the ability of these valves to reposition.

The OPERABILITY of the AFW System following a main steam line break (MSLB) was reviewed in our response to IE Bulletin 80-04. As a result of this review, requirements for the turbine-driven AFW pump were added to the Technical Specifications.

For all other design basis accidents, the two motor-driven AFW pumps supply sufficient redundancy to meet single failure criteria. In a secondary line break, it is assumed that the pump discharging to the intact steam generator fails and that the flow from the redundant motor-driven AFW pump is discharging out the break. Therefore, to meet single failure criteria the turbine-driven AFW pump was added to Technical Specifications.

The cross-connect valves (AFW-10A and AFW-10B) are normally maintained in the open position. This provides an added degree of redundancy above what is required for all accidents except for a MSLB. During a MSLB, one of the cross-connect valves will have to be repositioned regardless if the valves are normally opened or closed. Therefore, the position of the cross-connect valves does not affect the OPERABILITY of the turbine-driven AFW train. However, OPERABILITY of the train is dependent on the ability of the valves to reposition.

An AFW train is defined as the AFW system piping, valves and pumps directly associated with providing AFW from the AFW pumps to the steam generators. The action with three trains inoperable is to maintain the plant in an operating condition in which the AFW System is not needed for heat removal. When one train is restored, then the LIMITING CONDITIONS FOR OPERATION specified in TS 3.4.b.2 are applied. Should the plant shutdown be initiated with no AFW trains available, there would be no feedwater to the steam generators to cool the plant to 350°F when the RHR System could be placed into operation.

It is acceptable to exceed 350°F with an inoperable turbine-driven AFW train. However, OPERABILITY of the train must be demonstrated within 72 hours after exceeding 350°F or a plant shutdown must be initiated.

Condensate Storage Tank (CST)(TS 3.4.c)

The specified minimum water supply in the condensate storage tanks (CST) is sufficient for 4 hours of decay heat removal. The 4 hours are based on the Kewaunee site specific station blackout (loss of all AC power) coping duration requirement.

The shutdown sequence of TS 3.4.c.3 allows for a safe and orderly shutdown of the reactor plant if the specified limits cannot be met.

Secondary Activity Limits (TS 3.4.d)

An evaluation was performed to determine the maximum permissible steam generator primary-to-secondary leak rate during a steam line break event. The evaluation considered both a preaccident and accident initiated iodine spike. The results of the evaluation show that the accident initiated spike yields the limiting leak rate. This evaluation was based on a 30 REM thyroid dose at the site boundary and initial primary and secondary coolant iodine activity levels of 1.0 μCi/gm and 0.1 μCi/gm DOSE EQUIVALENT I-131 respectively. A leak rate of 34.0 gpm was determined to be the upper limit for allowable primary-to-secondary leakage in the steam generator faulted loop. The steam generator in the intact loop was assumed to leak at a rate of 0.1 gpm, the standard operating leakage limit applied for the tube support plate voltage-based plugging criteria specified in TS 4.2.b.5.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO AMENDMENT NO. 123 TO FACILITY OPERATING 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

1.0 INTRODUCTION

By letter dated October 18, 1995, Wisconsin Public Service Corporation (WPSC, the licensee), requested a revision to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS). The proposed amendment would revise KNPP TS 3.4, "Steam and Power Conversion System," by modifying and clarifying the operability requirements for the main steam safety valves (MSSVs), the auxiliary feedwater (AFW) System, and the condensate storage tank system.

Currently TS 3.4 consists of two parts, 3.4.a "Steam Generators," and 3.4.b "Auxiliary Feedwater Pumps." The proposed changes would split TS 3.4.a and 3.4.b into four distinct new specifications, one for each of the components/systems affecting steam generator operability, as follows:

1. TS 3.4.a "Main Steam Safety Valves"
2. TS 3.4.b "Auxiliary Feedwater System"
3. TS 3.4.c "Condensate Storage Tank"
4. TS 3.4.d "Secondary Activity Limits"

The changes have been proposed mainly to eliminate inconsistencies within TS 3.4, allow plant heatup with only two operable MSSVs when the reactor is subcritical, and to provide a basis for manual operation of the AFW system below 15% reactor power. The proposed TSs 3.4.c and 3.4.d restructure and clarify the TS requirements for the condensate storage tank and secondary activity limits but do not propose any changes to the technical content. The only proposed technical changes associated with this revision are related to the MSSVs and the AFW system.

The current TS 3.4 requires five MSSVs to be operable whenever reactor coolant temperature is above 350 degrees Fahrenheit (°F) regardless of whether the plant is critical or subcritical. Revised TS 3.4.a would allow operation above 350°F with two or more operable MSSVs per operable steam generator prior to reactor criticality. It would also require five operable MSSVs per operable steam generator in order to take the reactor critical.

The current TS 3.4 also splits the AFW system into two parts, one for the pumps and one for the piping and valves. Because of this split there are some conditions or failures that could occur within the system which could result in conflicting allowed outage times (AOTs). Also, due in part to some unique design features or limitations, the licensee must, by operating procedure, defeat the automatic actuation logic for the motor-driven AFW pumps during non-power operation such as during startup and shutdown. This logic defeat is necessary to prevent unwanted automatic starts of the motor-driven AFW pumps during these non-power conditions. However, when the automatic initiation system is defeated, the AFW pumps could be considered inoperable by the current TSs. Additionally, the motor-driven pump flow-control discharge valves (AFW-2A and AFW-2B) are normally throttled or closed during manual AFW control (startups and shutdowns) but could be construed by the current TS as required to be full open to consider the respective train operable. The proposed changes are intended to correct these inconsistencies and allow the automatic initiation function to be defeated and for the discharge valves to be throttled or closed when reactor power is less than 15%.

Also, in support of their low power operating procedures, the licensee proposed a similar TS change for the turbine-driven AFW pump which would consider the turbine-driven pump/train operable (when below 15% power) even with the turbine-driven pump's discharge valves (AFW-10A and AFW-10B) closed. These valves are also the motor-driven train cross-connect valves, and closure of these valves effectively disables the automatic initiation of flow to the steam generators from the turbine-driven pump. To aid in steam generator inventory control, it is normal operating procedure to sometimes fully close the turbine-driven AFW pump discharge valves (AFW-10A and AFW-10B) during low power operation when the AFW motor-driven pumps are being used to control steam generator levels (e.g., during startups and shutdowns). With valves AFW-10A and AFW-10B fully closed, the motor-driven pump trains are separated such that each pump/train feeds only its respective steam generator. However, under these conditions the turbine-driven pump/train is not available for automatic initiation since the turbine-driven pump discharge paths to both steam generators are also isolated. During normal power operation AFW-10A and AFW-10B are normally full open and the turbine-driven pump will automatically supply flow to both steam generators on a low-low level in both steam generators or a loss of power on the 4-KV bus (reactor coolant pump and main feedwater (MFW) pump supply bus). The turbine-driven pumps do not receive a start signal on a loss of both MFW pumps or a safety injection signal as do the motor-driven pumps.

In addition to the above changes, a number of other minor changes have been proposed to make TS 3.4 more consistent with the Westinghouse Standard Technical Specifications, NUREG-1431.

2.0 EVALUATION

2.1 Proposed Technical Specification 3.4.a

Currently, TS 3.4.a.1.A.2 requires five MSSVs per steam generator to be operable prior to heating the reactor > 350°F. The proposed TS 3.4.a would allow reactor coolant system heatup > 350°F with a minimum of two MSSVs per

steam generator operable, and specify that the reactor shall not be made critical unless five MSSVs per steam generator are operable. If these conditions cannot be met within 48 hours, within 1 hour action shall be initiated to achieve hot standby within 6 hours, achieve hot shutdown within the following 6 hours, and achieve and maintain the reactor coolant system temperature < 350°F within an additional 12 hours. These required actions, if the conditions cannot be met, are essentially the same as required by the current specification.

WPSC stated that the MSSVs are relied upon to function in each of the following Updated Safety Analysis Report (USAR) analyzed accidents: Reactor Coolant Pump Locked Rotor, Loss of External Electrical Load, Loss of Normal Feedwater, Uncontrolled Rod Cluster Control Assembly Withdrawal at Power, Uncontrolled Rod Cluster Control Assembly Withdrawal From a Subcritical Condition, Steam Generator Tube Rupture, and Anticipated Transients without Scram.

WPSC further stated that in a subcritical condition, two operable MSSVs are capable of relieving the maximum steam generated during these design basis events. In all cases, the relieving capacity of the MSSVs is sufficient to maintain steam pressures within safety analysis acceptable criteria, and reactor criticality is not permitted unless all MSSVs are operable. Because this proposed TS requires all MSSVs to be operable prior to reactor criticality, there will be no adverse effect on the health and safety of the public.

This change results in no steam generator overpressure event or increase in the radiological dose. The proposed changes are also more conservative than the NUREG-1431 requirements which allow plant operation up to 40% power with only two MSSVs operable per steam generator. Therefore, the staff finds the proposed changes acceptable.

2.2 Proposed Technical Specification 3.4.b

The proposed TS 3.4.b combines two parts of the existing specification to more clearly define operability of the AFW system based on an entire AFW train, not just an AFW pump. In addition to formatting and restructuring changes, the following technical changes have been proposed for inclusion in TS 3.4.b:

1. An action statement has been added to allow one steam supply to the turbine driven AFW pump to be inoperable for up to seven days.

2. A current TS 3.4 LCO which allows all system piping and valves directly associated with providing AFW flow to the steam generators to be inoperable for up to 48 hours has been deleted, and

3. A condition (TS 3.4.b.6) is being added to permit the motor-driven AFW pump control switches to be placed in the "pull out" position, valves AFW-2A and AFW-2B to be in a throttled or closed position, and valves AFW 10A and AFW 10B to be closed without declaring the corresponding AFW train inoperable when reactor power is less than 15%.

The added action statement for an inoperable steam supply to the turbine-driven pump is necessary to address a condition which is presently not addressed by the existing TS 3.4. Given a failure of one of the steam supplies, operation could potentially continue indefinitely under the current specifications. As described in NRC Information Notice 89-58, "Disablement of Turbine-Driven Auxiliary Feedwater Pump Due to Closure of One of Two Parallel Steam Supply Valves," operation under these conditions could result in failure to meet the system design basis under certain pipe break (which affects the operable steam supply) and single failure scenarios. The AOT of seven days is acceptable based on the probability of the specific pipe break scenario involved and the fact that the turbine-driven AFW pump is still available for all other scenarios. The proposed LCO and AOT are also consistent with NUREG-1431. Because the proposed change is more conservative than the existing TS, and is necessary to adequately interpret the TS, the staff finds this change acceptable.

The proposed change to delete the 48 hour allowed outage time for the piping and valves in the AFW system flow path is also acceptable since there is no basis for allowing operation under these conditions. The current TS could have allowed operation with the entire AFW system inoperable, which conflicted with the AOTs for the AFW system pumps. Thus, the proposed change is conservative and consistent with NUREG-1431.

The proposed change to allow continued operation below 15% reactor power with the motor-driven AFW pump switches in the "pull out" position is the major technical change to TS 3.4. At Kewaunee, the design of the automatic actuation logic is such that automatic initiation of the motor-driven AFW pumps on loss of main feedwater (main feedwater [MFW] breakers open) does not have a bypass capability. At most plants this signal is bypassed during startup to prevent automatic AFW initiation when the MFW pumps are not running. Therefore, to prevent auto initiation at Kewaunee under these circumstances, the motor-driven AFW pump control switches are, by procedure, placed in the pull-out position. However, this position defeats all of the automatic start features for these pumps thereby allowing only manual initiation capability. Technical analysis to justify this procedure, however, was not provided in the Updated Safety Analysis Report (USAR) nor was the procedure in accordance with the plant TS. Therefore, to justify this TS change allowing this procedure (including throttling or closing the discharge valves and cross-connect valves), the licensee reanalyzed all accidents which rely on AFW flow for mitigation assuming no AFW flow for 10 minutes (allowing 10 minutes for operator action).

WPSC stated that all accidents which rely on AFW flow for mitigation were reanalyzed to support this change. These analyses were completed assuming an initial reactor power level of 100%. However, a 15% reactor power restriction has been imposed on placing the AFW pump control switches located in the control room in the "pull out" position, throttling or closing valves AFW-2A and AFW-2B, and closing valves AFW-10A and AFW-10B. This restriction, in effect, limits use of TS 3.4.b.6 to plant startups, shutdowns and other low power operating conditions.

This change alters the assumptions of the safety analysis for the Small-Break Loss of Coolant Accident, the Steam Generator Tube Rupture and the Loss of Normal Feedwater due to their dependence on the AFW system to start and supply AFW for heat removal. To support this change, the Westinghouse Electric Corporation performed an analysis of the Small-Break Loss-of-Coolant Accident using the NOTRUMP code assuming a ten minute delay in AFW system operation for operator action to initiate auxiliary feedwater. WPSC reported that this analysis resulted in a Peak Cladding Temperature (PCT) of 1053°F from an initial power level of 100% and that all other acceptance criteria of 10 CFR 50.46 were met. This large margin to the 2200°F PCT limit supports ten minutes for operator action to initiate auxiliary feedwater.

WPSC also analyzed the Loss of Normal Feedwater and the Steam Generator Tube Rupture Accident assuming delays in the initiation of auxiliary feedwater. The Loss of Normal Feedwater Accident with a ten minute delay in the initiation of Auxiliary Feedwater does not result in any adverse condition in the core. It does not result in water relief from the pressurizer safety valves, nor does it result in uncovering the tube sheets of the steam generators. At all times the Departure from Nucleate Boiling Ratio (DNBR) remained greater than 1.30. The Steam Generator Tube Rupture Accident with no auxiliary feedwater flow was also analyzed. The results of this analysis indicate that neither steam generator empties of liquid and at least 20°F of reactor coolant system subcooling is maintained throughout the transient. Also, there is no increase in the radiological dose to the public.

WPSC provided additional supporting reasons for the acceptability of the ten minutes for operator action. There are four independent alarms in the control room to initiate operator action to place the AFW pump control switches to the "auto" position and initiate AFW flow to the steam generators when necessary. In addition to these alarms, control room operators have twelve other indications of insufficient, or no, AFW flow to the steam generators. These indications include three AFW pump low discharge pressure alarms, two AFW flow meters, two AFW pump motor amp meters, two "ESF in Pullout" alarms, and three pump running lights. Scenarios have been completed on the KNPP simulator to support ten minutes for operator initiation of AFW flow. In all cases, operators manually initiated AFW flow within the allowed ten minutes. Ten minutes for operator action is further supported by Branch Technical Position EICSB-18.

The proposed change to allow operation up to 15% power with the motor driven pump control switches in the pull-out position is consistent with the AFW system design (no bypass capability for the loss of MFW initiation logic) and with the past and current plant operating procedures. It has also been supported by reanalyses of all the accidents which rely on the AFW system for mitigation. The revision to allow operation below 15% power with valves AFW-2A and AFW-2B throttled or closed and valves AFW-10A and AFW-10B closed is also consistent with the plant's past and present operating procedures and supported by the reanalyses of the related design basis accidents. Therefore, the staff finds these changes acceptable.

2.3 Proposed Technical Specifications 3.4.c and 3.4.d

The proposed changes TS 3.4.c and TS 3.4.d are restructuring and formatting changes only and contain no changes to the technical content of the current specifications. The staff has reviewed these proposed changes and determined that the limiting conditions for operation (LCOs), allowed outage times (AOTs), and action requirements are the same as contained in the current specifications. The staff has also concluded that the proposed changes are clearer than the existing specifications making them less susceptible to misinterpretation. Because there are no changes to the technical requirements and the proposed changes are clearer and more user friendly than the existing TS, the staff finds these changes acceptable.

3.0 SUMMARY

Based on the above evaluation, the staff concludes that the proposed changes to TS 3.4 are consistent with or more conservative than the corresponding TS requirements in NUREG-1431, provide a higher degree of flexibility in plant operations, more accurately reflect the design and operation of the AFW system at Kewaunee, and are supported by existing or revised accident analyses. Therefore, the staff finds the proposed changes acceptable. The staff also reviewed the revised TS bases associated with the proposed changes and concluded that they are consistent with the TS changes and are, therefore, 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 involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The 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 (60 FR 58407). 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 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.

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