June 20, 2005

Mr. Michael G. Gaffney
Site Vice President
Kewaunee Nuclear Power Plant
Nuclear Management Company, LLC
N490 Highway 42
Kewaunee, WI 54216-9511

SUBJECT: KEWAUNEE NUCLEAR POWER PLANT - ISSUANCE OF AMENDMENT RE: AUXILIARY FEEDWATER SYSTEM (TAC NO. MC6916)

Dear Mr. Gaffney:

The U.S. Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 183 to Facility Operating License No. DPR-43 for the Kewaunee Nuclear Power Plant. This amendment revises the Facility Operating License and Technical Specifications (TSs) in response to your application dated May 5, 2005, as supplemented June 9, 2005.

The amendment revises the Facility Operating License and TSs to modify the auxiliary feedwater (AFW) pump suction protection requirements and change the design-basis as described in the Updated Safety Analysis Report to revise the functionality of the discharge pressure switches to provide pump runout protection, which requires operator actions to restore the AFW pumps for specific post-accident recovery activities.

In addition, TSs Table of Contents page TS ii was inadvertently omitted from Amendment No. 181, dated March 24, 2005. Page TS ii merely reflects the change in page numbers of TS sections due to Amendment No. 181, as requested in the licensee's May 25, 2004, application. The revised page TS ii is being provided to correct the inadvertent omission.

NRC staff review of your request was delayed due to the lack of clarity and supporting information in your May 5, 2005, application, which resulted in the need for extensive additional information and discussion with your staff. Please take appropriate action to ensure improvement in future submittals. Also, for your information, although you did not request an exigent review under the provisions of 10 CFR 50.91, the staff determined that such a request would likely have been denied due to the prior opportunities that existed for you to identify and resolve this issue.

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

Sincerely,

/RA/

Carl F. Lyon, 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. 183 to
License No. DPR-43
2. Safety Evaluation

cc w/encls: See next page

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

Sincerely,

/RA/

Carl F. Lyon, 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. 183 to
License No. DPR-43
2. Safety Evaluation

cc w/encls: See next page

Distribution w/encls:

GHill (2)	FLyon	HLi	AHowe	SJones	JTatum
PUBLIC	TBoyce	DTrimble	GArmstrong	LRaghavan	THarris
PD 3-1 r/f	ACRS	OGC	TKozak, RIII	HNieh	DLPMDPR

ADAMS ACCESSION NUMBERS:
ML051600091 ML05 (TS) ML051600093 (Package) *Previously concurred

OFFICE	PD3-1/PM	PD3-1/LA	EEIB/SC	IOHS/SC(A)	SPLB/ SC
NAME	FLyon	THarris*	AHowe*	DDesaulniers*	SJones*
DATE	06/16/05	6/14/05	6/14/05	6/16/05	6/13/05

OFFICE	IROB/SC	OGC	PD3-1/SC
NAME	TBoyce*	APH	LRaghavan
DATE	6/14/05	06/17/05	06/20/05

OFFICIAL RECORD COPY

Kewaunee Nuclear Power Plant

cc:

John Paul Cowan
Executive Vice President &
Chief Nuclear Officer
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Plant Manager
Kewaunee Nuclear Power Plant
N490 Highway 42
Kewaunee, WI 54216-9511

Manager, Regulatory Affairs
Kewaunee Nuclear Power Plant
N490 Highway 42
Kewaunee, WI 54216-9511

David Molzahn
Nuclear Asset Manager
Wisconsin Public Service Corporation
600 N. Adams Street
Green Bay, WI 54307-9002

Resident Inspectors Office
U. S. Nuclear Regulatory Commission
N490 Hwy 42
Kewaunee, WI 54216-9511

Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

Jonathan Rogoff
Vice President, Counsel & Secretary
Nuclear Management Company, LLC
700 First Street
Hudson, WI 54016

Larry L. Weyers
Chairman, President and CEO
Wisconsin Public Service Corporation
600 North Adams Street
Green Bay, WI 54307-9002

David Zellner
Chairman - Town of Carlton
N2164 County B
Kewaunee, WI 54216

Mr. Jeffery Kitsembel
Electric Division
Public Service Commission of Wisconsin
PO Box 7854
Madison, WI 53707-7854

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-305

KEWAUNEE NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.183
License No. DPR-43

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

   A. The application for amendment by Nuclear Management Company, LLC (NMC), dated May 5, 2005, as supplemented June 9, 2005, 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 Facility Operating License and 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. 183, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance. In addition, the licensee shall include the revised information as described in the licensee's application dated May 5, 2005, as supplemented June 9, 2005, and evaluated in the staff's safety evaluation dated June 20, 2005, in the next scheduled update of the Updated Safety Analysis Report submitted to the NRC pursuant to 10 CFR 50.71(e).

FOR THE NUCLEAR REGULATORY COMMISSION

L. Raghavan, 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: June 20, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 183

FACILITY OPERATING LICENSE NO. DPR-43

DOCKET NO. 50-305

Replace the following pages of the Facility Operating License and 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
License page 4	License page 4
TS ii	TS ii
TS 3.4-1	TS 3.4-1
TS 3.4-2	TS 3.4-2
Table TS 4.1-1, Page 7 of 7	Table TS 4.1-1, Page 7 of 7

The following TS Bases pages are provided for information only:

TS B3.4-1
TS B3.4-2
TS B3.4-3
TS B3.4-4
TS B3.4-5

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO AMENDMENT NO. 183 TO FACILITY OPERATING LICENSE NO. DPR-43

NUCLEAR MANAGEMENT COMPANY, LLC

KEWAUNEE NUCLEAR POWER PLANT

DOCKET NO. 50-305

1.0 INTRODUCTION

By application to the Nuclear Regulatory Commission (NRC, the Commission) dated May 5, 2005 (ML051260407), as supplemented June 9, 2005 (ML051610249), the Nuclear Management Company, LLC (NMC, or the licensee), proposed amendments to the Facility Operating License and Technical Specifications (TSs) for Kewaunee Nuclear Power Plant (KNPP). The proposed changes would revise the Facility Operating License and TSs to modify the auxiliary feedwater (AFW) pump suction protection requirements and change the design basis as described in the Updated Safety Analysis Report (USAR) to revise the functionality of the discharge pressure switches to provide pump runout protection, which requires operator actions to restore the AFW pumps for specific post-accident recovery activities.

The supplement dated June 9, 2005, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on May 13, 2005 (70 FR 25619).

Specifically, the licensee proposes to add TS 3.4.b.1.D as follows:

> D. The auxiliary feedwater pump low suction pressure trip channels are OPERABLE.

The licensee proposes to revise TS 3.4.b.5 to read:

> 5. When the Reactor Coolant System temperature is >350EF, one auxiliary feedwater pump's low discharge pressure trip channel and/or low suction pressure trip channel may be inoperable for a period not to exceed 4 hours. If this time period is exceeded or more than one pump's trip channel(s) are inoperable then the associated auxiliary feedwater train(s) shall be declared inoperable and the OPERABILITY requirements of TS 3.4.b.3 and TS 3.4.b.4 applied.

The licensee proposes to revise Table TS 4.1-1, "Minimum Frequencies for Checks, Calibrations and Test of Instrument Channels," Item 43, "AFW Pump Low Discharge Pressure Trip" to require a test frequency of quarterly instead of each refueling cycle and to add a remark that verification of relay setpoints is not required for the quarterly test.

The licensee proposes to revise Table TS 4.1-1 to add Item 46, "AFW Pump Low Suction Pressure Trip." Item 46 will require a calibration each refueling cycle and a test frequency of quarterly, with a remark that verification of relay setpoints is not required for the quarterly test.

The licensee proposes to add a new License Condition to Section 2.C of the KNPP Facility Operating License, DPR-43, as follows:

> The auxiliary feedwater system local manual operator actions as described in the License Amendment Request submitted May 5, 2005, and supplemented on June 9, 2005, shall be eliminated no later than completion of Kewaunee refueling outage R-29.

2.0 REGULATORY EVALUATION

The AFW system is automatically initiated to supply water to the steam generators (SGs) to remove decay heat from the reactor coolant system following postulated accidents and anticipated operational occurrences. The AFW system consists of one steam turbine-driven pump and two electric motor-driven pumps, along with the necessary piping, valves, and controls for delivering makeup water to the steam generators. The AFW system is described in the KNPP USAR, Section 6.6.

The purpose of the low AFW pump discharge pressure trip has been to protect the pumps from damage as a result of inadequate net positive suction head (NPSH) that could result from a loss of the non-safety related normal suction source. The licensee determined that the low AFW pump discharge pressure trip setpoint would not perform the intended protection function, and the licensee also determined that the AFW pumps are not adequately protected from runout conditions. The purpose of the proposed changes to the TS requirements and design basis is to resolve these deficiencies and assure that the AFW system is capable of performing its safety function.

The AFW system is an engineered safety feature (ESF) system at KNPP. ESF systems are designed to mitigate anticipated operational occurrences and design-basis accidents (DBAs). Adequate protection for ESF systems must be provided against dynamic effects, missiles, or other conditions that may result from anticipated operational occurrences or DBAs the ESFs are designed to mitigate.

The licensing basis for the KNPP AFW system was established primarily in response to NRC recommendations that were made following the 1979 accident that occurred at Three Mile Island Unit 2 (TMI). The recommendations were focused on assuring the capability of the AFW system to automatically start upon demand and perform its safety function, relying primarily upon safety-related equipment and limited operator actions from inside the control room. The staff's acceptance of the proposed changes is based, in part, upon continued compliance with the existing plant licensing basis as reflected primarily in the USAR, except as otherwise justified by the licensee and accepted by the NRC staff in the safety evaluation that follows.

The staff evaluation of the AFW pump suction protection requirements and the operability of the proposed AFW pump suction low pressure trip is based on Institute of Electrical and Electronic Engineers (IEEE) Standard 279, “Criteria for Protection Systems for Nuclear Power Generating Stations,” as referenced in 10 CFR 50.55a(h)(2), and Regulatory Guide (RG) 1.62, “Manual Initiation of Protection Action.” The staff also used the criteria of 10 CFR 50.36, “Technical specifications,” regarding the requirements for limiting conditions for operation and surveillance requirements and the requirements of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” regarding provisions for confirming the adequacy of design through the performance of confirmatory testing. The staff used RG 1.105, Revision 3, “Setpoints for Safety-Related Instrumentation,” for its review of the trip setpoints.

The staff reviewed the operator manual actions using guidance contained in NRC Information Notice 97-78, “Crediting of Operator Actions in Place of Automatic Actions and Modifications of Operator Actions, Including Response Times,” American National Standards Institute (ANSI)/ American Nuclear Society (ANS) 58.8, “Time Response Design Criteria for Safety-Related Operator Actions,” and NUREG-0800, “Standard Review Plan," Chapter 18.0, Revision 1, "Human Factors Engineering.”

3.0 TECHNICAL EVALUATION

3.1 Background

Following the TMI accident in 1979, the NRC required that licensees with unprotected normal AFW system water supplies evaluate the design of their AFW systems to determine if automatic protection of the pumps was necessary following a seismic event or a tornado (reference letter from D. Eisenhut (NRC) to E. Mathews (licensee) dated September 21, 1979). The NRC concern was that the AFW pumps be protected during an event until they could be shifted to the safety-related emergency water supply. In 1983, the licensee committed to provide a safety-related AFW pump trip on low suction pressure to protect the pumps against loss of suction head (reference letter from S. Varga (NRC) to C. Giesler (licensee) dated August 10, 1983). In 1993, KNPP informed the NRC that a discharge pressure trip would be installed in lieu of a suction pressure trip, in part to alleviate concerns regarding the need for a sub-atmospheric trip setpoint (reference letter from A. Hansen (NRC) to C. Schrock (licensee) dated June 8, 1993). The licensee determined that a low discharge pressure trip would best provide the desired NPSH protection, and subsequently installed pump discharge pressure switches for pump protection.

However, in February 2005, while the licensee was researching the basis for the AFW pump low discharge pressure switch setpoint, questions arose regarding the sufficiency of these switches to protect the AFW pumps in the case of a loss of suction caused by a seismic event or tornado. The licensee found that the low discharge pressure trips would not perform the intended protection function. During subsequent review of the AFW system, using hydraulic models, the licensee also determined that the AFW pumps were not adequately protected from a runout condition.

To provide adequate pump protection from a loss of normal suction supply, the licensee implemented modifications pursuant to 10 CFR 50.59 to add (1) a protected volume in the suction line from the non-safety-related condensate storage tanks (CSTs) to the AFW pumps and (2) pump suction low pressure trips. The new suction piping is qualified to withstand a

seismic event and is adequately protected from tornado effects and high-energy line break interactions, due to its location in the auxiliary building. Suction pressure switches were added on the upstream side of the new protected AFW suction piping. The suction pressure switches will sense a loss of suction pressure in the AFW suction line and will trip the associated AFW pump before it can be damaged. The available water volume from the protected AFW suction piping allows more margin for the affected AFW pump to coast to a stop before the reserve inventory of water in the safety-related piping is lost. Following manual transfer to the emergency suction supply, the service water system, the AFW pumps can be restarted.

The licensee performed analyses to verify the adequacy of the proposed design modifications to ensure that the AFW pumps continue to perform their intended safety function.

3.2 Instrumentation and Controls Evaluation

3.2.a Operability Determination

In order to verify operability, periodic testing or calibration must demonstrate that the performance of an instrument is within its expected range, accounting for uncertainties associated with the instrument test or calibration. The licensee stated in its submittal that initial operability of the AFW suction trip system will be determined by the successful completion of post modification testing including in-field calibrations, circuit functional testing, and AFW pump operating tests. The calibration procedures will verify that the pressure switches and time delays operate within their specified setpoints and tolerances. The functional tests will verify that the circuits operate as designed to trip the associated equipment. Each individual pump will be tested, along with a simultaneous start of the two motor-driven AFW pumps at cold shutdown, and a start of all three AFW pumps at hot shutdown conditions. This ensures that the suction pressure trip circuits allow the pumps to start and operate through any suction pressure transient due to a simultaneous pump start.

In TS Table 4.1-1, “Minimum Frequencies for Check, Calibrations and Test of Instrument Channels,” item 46, the licensee proposed as surveillance requirements for the AFW pump low suction pressure trip channel that it be tested quarterly and calibrated each refueling cycle. This is consistent with the current AFW discharge pressure trip channel TS requirements. The staff finds that the proposed testing and surveillance requirements are acceptable to verify the operability of the AFW pump low suction pressure trip channels.

3.2.b Limiting Safety System Setting

The standard TSs bases define a limiting safety system setting (LSSS) as an allowable value (AV). During reviews of proposed license amendments that contain changes to LSSS setpoints, the NRC staff identified concerns regarding the method used by some licensees to determine the AVs. AVs are identified in the TSs as LSSSs to provide acceptance criteria for determination of instrument channel operability during periodic surveillance testing. The NRC staff’s concern relates to one of the three methods for determining the AV as described in the Instrument Society of America (ISA) recommended practice ISA-RP67.04-1994, Part II, “Methodologies for Determination of Setpoints for Nuclear Safety-Related Instrumentation.” The staff questioned whether the proposed AFW suction pressure trip was an LSSS.
In its submittal dated June 9, 2005, the licensee stated that the KNPP TSs define LSSSs as setpoints for automatic protective devices responsive to the variables on which safety limits

have been placed. These setpoints are chosen so that automatic protective actions will correct the most severe, anticipated abnormal situation before a safety limit is exceeded. KNPP TSs also define safety limits as the necessary quantitative restrictions placed upon those process variables that must be controlled in order to reasonably protect the integrity of certain of the physical barriers that guard against the uncontrolled release of radioactivity. However, the AFW suction low pressure trip circuits are not designed to correct a severe anticipated abnormal situation to protect a safety limit. Instead, they provide AFW pump protection on a loss of suction. Therefore, the AFW low suction pressure trip does not meet the KNPP TS criteria for an LSSS. The staff finds this explanation acceptable.

3.2.c Manual Actuation

The normal water supply to the AFW pumps is from two 75,000-gallon CSTs. The Class 1 service water (SW) system provides a backup safety-related water supply to the pumps. An individual trip for each AFW pump is initiated on low pump discharge pressure. Following a pump trip, the pumps can be restarted following manual transfer to the SW system. Two manual methods of aligning the circuit to allow starting the pump are provided. There is no provision for automatic transfer to the SW system.

The licensee proposes to revise the function of the low discharge pressure switches on the AFW pumps to be to protect the AFW pumps from damage due to a pump runout condition. If necessary, the licensee states that an operator will be dispatched to the AFW pump room to locally throttle manual valves in the discharge of the AFW pumps. This action would establish adequate AFW pump discharge back pressure on pump restart to prevent runout. Discharge pressure indication is available locally to the operator, providing immediate monitoring capability.

With regard to compliance with IEEE Standard 279, Section 4.17, “Manual Actuation,” and RG 1.62, the licensee stated that, since each protective circuit is designed and installed as an independent and separate circuit, as a whole they meet the single-failure criterion in that there is no single-failure within the manual, automatic, or common portions of the protection system that could prevent initiation of protective action by manual or automatic means. Based on its review, the staff finds this design meets the requirements of IEEE Standard 279 and RG 1.62.

If an AFW pump tripped on low suction pressure and was required to be restarted, operators could manually align the safety-related water supply to the AFW pump from the control room to allow starting the associated pump. When the SW valve is fully open, the low suction pressure trip circuit is disabled. Control room indication is provided when the AFW pump SW supply valve is open. After the SW valve is fully open and the pump trip circuit is disabled, the trip relay must be reset from the associated control room AFW pump control switch. The AFW pump can then be started by any automatic start signal or manually.

Manual action to re-initiate AFW flow after it has been isolated is acceptable based on analyses performed by the licensee. These analyses conservatively assumed the plant was at 100 percent initial power and demonstrated that operators have at least 10 minutes to manually initiate AFW, which would result in no steam generator dryout or core damage during any DBA.

3.2.d AFW Flowrate Indication

NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.E.1.2, Part 2, “Auxiliary Feedwater System Flowrate Indication,” initially required the following to be implemented:

1. Safety-grade indication of auxiliary feedwater flow to each steam generator shall be provided in the control room.

2. The auxiliary feedwater flow instrument channels shall be powered from the emergency buses consistent with satisfying the emergency power diversity requirements of the AFW system set forth in Standard Review Plan, Section 10.4.9.

The requirements were subsequently relaxed for pressurized-water reactors with U-tube steam generators to require flow indication to be highly reliable. In a letter from E. Mathews (licensee) to D. Eisenhut (NRC) dated June 15, 1981, the licensee committed to upgrade the flow indication on the AFW system to safety grade. The commitment was revised to provide flow indication that would be highly reliable by letter from E. Mathews (licensee) to D. Eisenhut (NRC) dated December 18, 1981. The NRC acknowledged in a letter from S. Varga (NRC) to C. Giesler (licensee) dated March 14, 1983, that the licensee had completed its commitment regarding Item II.E.1.2, Part 2. In its letter dated June 9, 2005, the licensee stated that the AFW flow indication meets the requirements of NUREG-0737, Item II.E.1.2, Part 2, as described in the March 14, 1983, letter. The staff finds this acceptable.

3.2.e Setpoint Review

The staff performed a setpoint review of the AFW suction low pressure trip function. The setpoint for the suction pressure trip should account for the piping pressure drop between the suction pressure switch location and the pump. The setpoint should also account for sub-atmospheric conditions that may exist at the AFW pump suction. The concern with performance of the suction pressure trip under sub-atmospheric conditions was identified by the licensee during the original design work for this protective feature, and was a reason that the licensee originally decided to install a discharge pressure trip on the AFW pumps in 1993 instead of a suction pressure trip.

The licensee stated that the instrument piping taps for the AFW pump suction switches are located more than 100 feet upstream of the suction check valves for the AFW pumps and more than 6 feet above the suction piping where the check valves are located. Therefore, the location of the suction pressure trip switch will eliminate any effects of pressure changes caused by the suction check valves. The licensee also stated that the setpoint calculation accounts for the difference in elevation between the tap and the switch.

The licensee stated that, due to the physical location of the suction pressure trip switches well upstream of the pump’s suction, sub-atmospheric conditions that existed at the AFW pump’s suction in the past, which might impact the performance of the suction pressure switches, no longer pose a problem. The licensee also stated that the AFW pumps are capable of operating with their suction pressure sub-atmospheric.

In its letter dated June 9, 2005, the licensee provided a summary of the setpoint methodology used for the setpoint calculation for the AFW pump low suction pressure trip and low discharge pressure trip. Based on its review of the summary of the setpoint methodology provided by the

licensee, the NRC staff finds that the KNPP setpoint methodology is in conformance with RG 1.105 and, therefore, is acceptable.

3.2.f Evaluation of Proposed TS Changes

Discussion of the proposed changes to add TS 3.4.b.1.D and to revise TS 3.4.b.5 are discussed in section 3.3 below. The proposed changes to Table TS 4.1-1 to revise item 43 and to add item 46 are discussed in this section.

(1) The licensee proposes to revise Table TS 4.1-1, "Minimum Frequencies for Checks, Calibrations and Test of Instrument Channels," Item 43, "AFW Pump Low Discharge Pressure Trip" to require a test frequency of quarterly instead of each refueling cycle and to add a remark that verification of relay setpoints is not required for the quarterly test.

The change to the test frequency from each refueling cycle to quarterly is conservative and, therefore, is acceptable.

(2) The licensee proposes to revise Table TS 4.1-1 to add Item 46, "AFW Pump Low Suction Pressure Trip." Item 46 will require a calibration each refueling cycle and a test frequency of quarterly, with a remark that verification of relay setpoints is not required for the quarterly test.

This TS requirement is consistent with that for the AFW pump low discharge pressure trip channel and, therefore, is acceptable.

3.3 Plant Systems Evaluation

3.3.1 TS 3.4.b.1.D Requirement and Basis Considerations

The licensee proposes to add TS 3.4.b.1.D as follows:

D. The auxiliary feedwater pump low suction pressure trip channels are OPERABLE.

The proposed TS establishes a requirement for the AFW low suction pressure trip channels to be operable. The AFW pump low suction pressure trip is necessary in order to prevent damage to the AFW pumps if the non-safety-related water supply is lost following a tornado or seismic event. The operability of the AFW pumps must be assured consistent with the plant licensing basis, which credits operator action from inside the control room to align the safety-related water source to the suctions of the AFW pumps for steam generator makeup. The staff agrees that the proposed TS is necessary in accordance with 10 CFR 50.36(c)(2)(ii), Criterion 3, and it is consistent with the existing KNPP TS requirements for the AFW pump low discharge pressure trip in TS 3.4.b.1.C.

The current KNPP TSs require that each AFW pump low discharge pressure trip be operable. The purpose of the discharge pressure trip as stated in the USAR is to provide automatic protection for the pumps in the event the condensate supply to the pumps is lost following a seismic event or tornado. In its application, the licensee stated that following a seismic or

tornado event resulting in a rupture of the CST or CST supply piping to the AFW pumps, the AFW pump discharge pressure trip would not adequately protect the pump. The licensee proposed that the loss of suction protection issue be resolved through the addition of a low suction pressure trip combined with an additional water volume in the AFW pump normal suction line. The additional suction water volume provides sufficient reserve water volume to allow the AFW pump to coast down to a stop following the trip signal, thus preventing AFW pump damage. The AFW discharge pressure trip will no longer be used for loss of suction protection.

In its June 9, 2005, letter, the licensee provided information to explain the basis for how the low suction pressure trip setpoints for the AFW pumps were determined in order to assure adequate protection of the AFW pumps following a loss of the normal (non-safety related) water supply without causing inadvertent, unnecessary pump trips. Considerations such as AFW pump coast-down water volume, the protected water inventory that is available during pump coast-down, and design and operating considerations were assessed. The licensee also outlined testing that will be credited for demonstrating that analytical assumptions are correct and that the AFW pumps will be adequately protected following a loss of the normal water source while at the same time preventing undesirable pump trips. Based on a review of the information that was provided, the NRC staff is satisfied that (1) the licensee's analysis is adequate for establishing the low suction pressure trip setpoints consistent with the AFW system design basis and (2) the confirmatory testing is sufficient to demonstrate that actual performance is consistent with the analytical results, commensurate with the design control requirements of 10 CFR Part 50, Appendix B, Criterion III. Because some of the confirmatory testing requires steam pressure to be available, the licensee established a regulatory commitment to complete this testing and confirm acceptable performance during plant heatup and prior to exceeding 15 percent reactor power. The staff considers this to be acceptable.

The licensee's submittal dated June 9, 2005, indicated that the physical changes being made to the plant will satisfy the applicable design criteria as reflected in the USAR, and no exceptions were proposed in this regard. Consequently, it is the NRC staff's understanding that the physical modifications that are being made to the plant that are related to the proposed TS and licensing basis changes are being completed in accordance with 10 CFR 50.59 requirements and are not being reviewed by the staff, except for informational purposes. The setpoint methodology used to establish the actual low discharge pressure trip setpoints is discussed in Section 3.2 above.

The licensee stated that plant analyses have demonstrated that the suction pressure trip, combined with an additional suction water volume, protect the AFW pumps by sensing the loss of suction, tripping the associated AFW pump, and providing sufficient reserve water volume to allow the AFW pump to coast to a stop, thus preventing AFW pump damage. Given the considerations discussed above, the staff has determined that the proposed addition of TS 3.4.b.1.D is appropriate and acceptable. The licensee's analysis for establishing the AFW pump low suction pressure trip setpoints, in conjunction with the confirmatory testing that was described for demonstrating acceptable performance and the regulatory commitment to satisfactorily complete any tests that remain, is considered to be acceptable.

3.3.2 TS 3.4.b.5

The licensee proposes to revise TS 3.4.b.5 to read:

5. When the Reactor Coolant System temperature is >350EF, one auxiliary feedwater pump's low discharge pressure trip channel and/or low suction pressure trip channel may be inoperable for a period not to exceed 4 hours. If this time period is exceeded or more than one pump's trip channel(s) are inoperable then the associated auxiliary feedwater train(s) shall be declared inoperable and the OPERABILITY requirements of TS 3.4.b.3 and TS 3.4.b.4 applied.

The licensee proposes to revise KNPP TS 3.4.b.5, which currently specifies the required actions and completion times for inoperable AFW pump low discharge pressure trip channels, to (1) be applicable to the newly established AFW pump low suction pressure trip channels, and (2) specify required actions if the trip channels for more than one pump are inoperable. As discussed in Section 3.3.1 above, the licensee has established a new TS operability requirement for the low suction pressure trip channels for the AFW pumps. Consequently, required actions and completion times must also be specified. The proposed required actions and completion times are the same as those that already exist for an inoperable AFW pump low discharge pressure trip channel, both trip functions are similar, and they both assure the operability of the AFW pumps that they serve. Therefore, the staff agrees that the proposed TS is necessary in accordance with 10 CFR 50.36(c)(2)(ii), Criterion 3. Since the proposed requirements are consistent with the existing TS requirements that have been established for the AFW pump low discharge pressure trip channels in TS 3.4.b.5, the staff considers the proposed change referred to in (1) to be acceptable.

The proposed TS change referred to in (2) is a clarification of the existing requirements, specifying actions that are required if more than one AFW pump’s trip channel(s) are inoperable. The existing specification does not explicitly state required actions for when multiple AFW pump’s trip channel(s) are inoperable and the existing requirement could be interpreted to allow this condition to exist on multiple AFW pumps for up to 4 hours before declaring the affected pumps inoperable and entering the actions specified by TS 3.4.b.3 and TS 3.4.b.4. The staff agrees that the proposed change is necessary to clearly reflect the correct interpretation of the existing TS requirement and, therefore, the proposed change referred to in (2) is considered to be acceptable.

3.3.3 AFW Pump Runout Protection

The AFW pump low discharge pressure trip function was originally credited for protecting the AFW pumps from a loss of suction due to failure of the normal (non-safety-related) suction source. As discussed in Section 3.3.1 above, the licensee proposes to credit a low suction pressure trip function to protect the AFW pumps for this event scenario, and proposes to credit the existing AFW pump low discharge pressure trip for protecting the AFW pumps from damage due to runout conditions that can occur as a consequence of SG depressurization events, such as following a main steamline break (MSLB), a feedwater line break, or steam generator tube rupture (SGTR). As discussed in Section 3.3.1, TS requirements applicable to the protective function that is served by the AFW pump low discharge pressure trip channels already exist and, consequently, additional TS requirements for the proposed protective feature are not required. However, because the AFW pump low discharge pressure trip channels will be credited for protecting the AFW pumps from a different condition than previously assumed, different trip setpoints must be established. The licensee has determined that this involves a change to the design basis as described in the USAR that requires NRC review and approval,

in accordance with 10 CFR 50.59.

In its June 9, 2005, letter, the licensee provided information to explain the basis for how the low discharge pressure trip setpoints for the AFW pumps were determined to assure adequate protection of the AFW pumps following SG depressurization events without causing inadvertent, unnecessary pump trips. Considerations such as the AFW system design basis, AFW pump performance curves and flow requirements, consequences of postulated SG depressurization events, and plant design and operating considerations were assessed. The licensee's response also outlined testing that will be credited for demonstrating that analytical assumptions are correct and that the AFW pumps will be adequately protected following those SG depressurization events that challenge the AFW pump NPSH requirements while at the same time preventing undesirable pump trips. Based on a review of the information that was provided, the NRC staff is satisfied that the licensee's analysis is acceptable for establishing the low discharge pressure trip setpoints for the AFW pumps consistent with the AFW system design and pump NPSH considerations; and that the confirmatory testing discussed in the submittal dated June 9, 2005, is sufficient to demonstrate that actual performance is consistent with the analytical results, commensurate with the design control requirements of 10 CFR Part 50, Appendix B, Criterion III. Because some of the confirmatory testing requires steam pressure to be available, the licensee established a regulatory commitment to complete this testing and confirm acceptable performance during plant heatup and prior to exceeding 15 percent reactor power. The staff considers this to be acceptable.

Because depressurization events can cause AFW flow to the SGs to be delayed, there is a possibility that SG water level may decrease to below the SGs tube sheet. If this condition should occur, directing AFW flow to the affected SG could cause the stresses in the SG tube sheet to be exceeded. The licensee indicated that following SG depressurization and loss of heat sink events, the Integrated Plant Emergency Operating Procedures (IPEOPs) require the operators to confirm that the SG water level is above its tube sheet as a condition for admitting AFW flow to the SGs; otherwise, AFW flow is restricted to less than 100 gallons per minute until the SG level criterion is satisfied. The staff is satisfied that the existing instructions given in the IPEOPs encompass the current situation and no further instruction in this regard is necessary. The setpoint methodology used to establish the actual low discharge pressure trip setpoints is discussed in Section 3.2 above.

Given the considerations discussed above, the staff has determined that the licensee's analysis for establishing the AFW pump low discharge pressure trip setpoints, in conjunction with the confirmatory testing that was described for demonstrating acceptable performance along with the regulatory commitment to satisfactorily complete any tests that remain, is acceptable. The staff has also concluded that the existing instructions given in the IPEOPs provide sufficient guidance for admitting AFW flow to SGs with reduced water levels. This condition could occur as a consequence of crediting local manual operator actions for restoring AFW makeup to the SGs following certain SG depressurization events.

3.3.4 Reliance on Operator Actions

As discussed in Section 3.3.3, the licensee has determined that the AFW pumps must be protected from potential damage that can occur while operating at runout conditions following depressurization events. In order to protect the AFW pumps from this condition, the licensee proposes to establish a low discharge pressure trip for the AFW pumps. However, because safety-related AFW pump flow control valves are not included in the system design, operator action must be credited to throttle AFW flow locally at the discharge valves for the AFW pumps in order to restore AFW flow to the SGs following certain depressurization events. The valves that will be used by the plant operators to throttle AFW flow are gate valves and are not designed for throttling purposes. The licensee confirmed that the operators are able to throttle AFW flow using the AFW pump discharge (gate) valves. Also, based on the analyses, confirmatory testing, and operator validations that are planned by the licensee, the licensee is completing action to identify any additional operator training and procedure revisions that may be necessary for implementing the proposed changes. The licensee's regulatory commitments to complete these remaining actions, as noted in Section 4.0 below, are considered to be acceptable.

The licensing basis currently does not credit operator actions from outside the control room for providing AFW flow to the steam generators. This is a significant departure from the existing licensing basis that the licensee does not intend to make permanent. The licensee proposes that a permanent solution for protecting the AFW pumps from runout conditions that does not require local manual operator actions from outside the control room to restore AFW flow to the SGs will be implemented no later than completion of KNPP Refueling Outage 29. The licensee has proposed a License Condition to assure that the proposed schedule for eliminating the need for local manual operator actions is satisfied. Recognizing the extent of additional modifications that are required to fully resolve this issue and the lead times involved for planning and implementing changes of this nature, along with the low likelihood of a SG depressurization event occurring that would present a challenge to the AFW pumps during the time period involved, and the extent of operator training and validation that will be necessary to address the current situation, the NRC staff considers the proposed License Condition and schedule for fully resolving this issue to be appropriate and acceptable.

3.4 Human Factors Evaluation

The operator manual actions require a local operator to be dispatched to the AFW pumps upon entry into either IPEOP E-2, "Faulted Steam Generator Isolation," or E-3, "Steam Generator Tube Rupture." For a MSLB, operator priorities are to verify the main steam isolation valve is closed for the affected SG and to isolate the faulted steam generator from auxiliary feed water AFW by closing the motor driven (MD) AFW pump discharge throttle valves, followed by the AFW cross-connect valves. If the AFW pump discharge throttle valves fail open, operators will stop any AFW pump feeding the faulted SG.

The isolation sequence for a SGTR is similar except that the operator is directed to verify if ruptured SG narrow range level indication is on-scale and then stop feed flow to the ruptured SG. Specific local operator actions may be required to throttle the AFW manual discharge isolation valves to maintain AFW pump discharge pressure above the revised low pressure trip setpoint.

Local actions could be necessary to supply AFW to the intact SG for either MSLB or SGTR

events with coincident failure of either the discharge valves for the AFW pump supplying the intact SG or failure of the MD AFW pump supplying the intact SG.

If an AFW pump tripped due to low discharge pressure, the discharge valve on the affected pump would be closed from the control room. If the valve could not be closed from the control room, a local operator would be dispatched to close and then open the discharge isolation valve to a preset position. The AFW pump would then be restarted. Following a pump restart, AFW flow would be established with discharge pressure controlled above the discharge pressure trip setpoint.

The licensee described its process for validating the time for these proposed operator manual actions in both the SGTR and MSLB events. In its June 9, 2005, supplemental letter, the licensee stated that operator time validations were performed in accordance with operations department instruction titled, “Emergency Operating Procedure Validation Process.” The process included the development of four limiting-case scenarios, two for the MSLB and two for the SGTR, to obtain operator response times for design basis events involving local manual operator actions. The scenarios were performed in the simulator with an operating crew, and time validated locally by Nuclear Auxiliary Operators (NAO) in the plant.

In the simulator, three-man teams participated in each scenario. The operators performed the scenarios using the proposed post-AFW modification IPEOPs. Each simulator scenario was timed starting at the initiation of the event and was stopped when the appropriate termination criteria were achieved. Significant events and procedure transitions were recorded.

The time validations for MSLB were performed for an MSLB both inside and outside containment. The limiting time for manually restoring or manipulating AFW flow was not as limiting as it was for the SGTR event since there is not an immediate need for the AFW system.

Time validation of the MSLB inside containment scenario assumed the plant was at the beginning of the cycle operating at 100 percent power. In this scenario, the AFW pumps trip on low discharge pressure to prevent pump run out. To recover from the event, the intact SG needs to be restored as a heat sink to allow safety injection (SI) to be terminated. No credit was taken for proper operation of the AFW pump discharge flow control valves from the control room. The scenario revealed that it would take 6 minutes and 30 seconds to dispatch an operator to the AFW pumps, make a decision to enter FR-H.1, "Response to Loss of Secondary Heat Sink," and throttle the AFW manual valves.

The second MSLB scenario assumed hot shutdown conditions. The MSLB occurred outside containment with a failure of an MSIV to close. The limiting break location is in the turbine building, as this creates an adverse environment and normal access to safeguards alley and the AFW pumps may not be possible. The licensee assumed no credit for proper operation of the AFW pump discharge flow control valves from the control room and did not credit the local operator actions of throttling the valves. This scenario was conducted to identify the most limiting route to the AFW pumps. Operator routes were based on the assumption that the turbine building was inaccessible. Route timing included the time necessary to transit the route, operate the valve from full open to closed to 3/4 turn open, and for the AFW system to respond from pump start to delivering flow to the SG. Time validation of the MSLB outside containment scenario revealed that it would take approximately 12 minutes to dispatch the NAO to the AFW pumps using the most limiting path and for the NAO to be able to throttle the AFW manual valves if needed. The time of 12 minutes is comprised of 8 minutes to complete the route and

an additional 4 minutes for any obstacles that the NAO could encounter.

For the SGTR, the operator is required to terminate flow through the break within 49 minutes of event initiation. The first scenario began with the plant operating at 100 percent power. A failure of the AFW pump supplying the intact SG is assumed to occur during the event, requiring local operator action to throttle the TDAFW pump discharge valve to maintain discharge pressure above the trip setpoint. SG pressures are expected to remain high enough to prevent the AFW pumps from initially tripping; however, during implementation of the procedure E-3, "Steam Generator Tube Rupture," a rapid cooldown is required. During the rapid cooldown, the potential exists to reduce SG pressure enough to cause the AFW pumps to trip on low discharge pressure. No credit was taken for proper operation of AFW pump discharge flow control valves. Therefore, local operator action prior to starting the AFW pump is required to throttle the AFW pump discharge flow to ensure the AFW pumps continue operating during cool down. Time validation of this SGTR scenario revealed that it would take approximately 17 minutes to dispatch the NAO and throttle AFW discharge flow to maintain pump discharge pressure. This time bounded the time that was used in the second MSLB scenario, in which it took 12 minutes for the local operator to be dispatched to the AFW pumps, and included an additional 5 minutes and 53 seconds that the NAO needed to throttle the manual discharge valves prior to rapid cooldown.

The second SGTR scenario assumed the plant was at hot shutdown conditions coincident with a loss of offsite power (LOOP). This scenario also assumed a failure of the MD AFW pump for the intact SG, resulting in the use of the turbine driven (TD) AFW pump to feed the intact SG. During the rapid cooldown, SG pressure may decrease sufficiently to cause the TDAFW pump to trip. Therefore, local operator action to throttle the AFW pump discharge valves prior to AFW pump restart is required. Time validation of the second SGTR scenario revealed that it would take approximately 16 minutes to maintain AFW pump discharge pressure, which includes the 12 minutes in dispatching the NAO to the AFW pumps using the limiting route. In both SGTR scenarios, SGTR break flow was terminated within the required time of 49 minutes which include the time for dispatching an operator and for local operator actions in throttling the AFW manual discharge valves.

The licensee stated that all operators will attend training on the procedure changes and simulator walkthroughs will be conducted for all licensed operators. The walkthroughs will focus on the diagnosis and required operator actions related to MSLB and SGTR activities. Particular emphasis will be placed on the additional procedure steps required to maintain or restore AFW flow. All NAOs will be trained on the use of diverse pathways that may be required to access the AFW pumps in accident situations. Walkthroughs will be conducted for all qualified NAOs of the local actions required to maintain or restore AFW flow. These walkthroughs will include use of any valve operators or other tools required to support the evolution. Support personnel, such as radiation protection technicians and security officers, will be trained on the interfaces between their groups and Operations. As stated in the licensee's commitments in the license amendment request, all training related to this modification will be completed prior to exceeding 350 degrees F in the reactor coolant system. The staff reviewed the licensee's proposed procedural changes and confirmed that the procedures sufficiently addressed the manual actions.

3.5 TS Bases

The licensee proposes changes to the TS Bases to reflect the changes to the TSs. The staff has no objection to the proposed changes to the TS Bases.

3.6 Technical Conclusion

Based on the staff's review of the licensee's application dated May 5, as supplemented June 9, 2005, the staff finds that the proposed changes to modify the AFW pump suction protection requirements and revise the functionality of the discharge pressure switches to provide pump runout protection with some operator manual actions, are in conformance with respective regulations. The staff has concluded that the proposed changes meet (1) the IEEE Standard 279 requirements regarding design of protection systems, (2) the criteria of RG 1.62, ANSI/ANS 58.8, Information Notice 97-78, and NUREG-0800, Chapter 18.0, Revision 1, for manual actuation of protection systems, (3) the TMI Action Plan Item II.E.1.2, Part 2, criteria for AFW flow measurement, and (4) the criteria of RG 1.105 for setpoint methodology. Therefore, the proposed changes are acceptable.

4.0 REGULATORY COMMITMENTS

The licensee made the following regulatory commitments in its June 9, 2005, letter:

> As an interim action, an operator will be maintained available outside of the turbine building to perform the local manual actions of throttling AFW pump discharge valves as required. This interim action will remain in place until the turbine building Main Steam Line Break - High-Energy Line Break study has been completed and demonstrates that interim action is no longer required.
>
> All operators will attend training on the procedure changes required for this license amendment. In addition, simulator walkthroughs will be conducted for all licensed personnel. All NAOs will be trained on the use of diverse pathways that may be required to access the AFW pumps in an accident situation. All qualified NAOs will also conduct walkthroughs of local actions that may be required to maintain or restore AFW flow. Support personnel will likewise be trained on the interfaces between their groups and Operations to support this task. Procedural changes and training will be completed prior to exceeding 350 degrees F in the reactor coolant system.
>
> Procedures will be revised to prescribe local manual operator actions to ensure AFW pump availability if the non-safety-related equipment is unexpectedly lost. AFW pump procedures shall be approved prior to declaring the pumps operable.
>
> Additional testing will be performed to determine the Turbine Driven Auxiliary Feedwater (TDAFW) Pump/Turbine performance capability at low SG pressures. These tests will be conducted during plant heat up. The test data will be used to verify the TDAFW pump capabilities and will be used to train the operators or change operating procedures for improved operator guidance, as necessary. The TDAFW pump testing, procedure changes, and shift briefings will be completed prior to exceeding 15 percent reactor power. Any additional training for the operators beyond that previously described will be completed within 90 days from the completion of the pump testing.

The station will complete a simultaneous start of all three AFW pumps at hot shutdown conditions. NMC will confirm that this test along with the analysis will demonstrate that the low suction pressure trip setpoints are adequate to: a) prevent damage to the AFW pumps, and b) prevent undesirable AFW pump trips from occurring.

Each individual pump will have a timed coast down test performed at bounding flow rates prior to declaring the pumps operable.

During pump operation/testing, additional system and pump performance data will be collected and compared/benchmarked against the AFW system flow model for verification of analysis. NMC will confirm that these tests along with the analysis will demonstrate that the low discharge pressure trip setpoints are adequate to: a) prevent damage to the AFW pumps, and b) prevent undesirable AFW pump trips from occurring.

For conditions requiring a plant cooldown in conjunction with the IPEOPs, the IPEOPs will contain a step to maintain AFW Pump discharge pressure greater than 1000 psig. The IPEOPs will be revised prior to exceeding 350 degrees F in the reactor coolant system.

The NRC staff has reviewed the regulatory commitments and determines that they are adequate in the context of this evaluation to assure plant safety.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulation at Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.92(c) states that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) result in a significant reduction in a margin of safety. The NRC staff has made a final determination that no significant hazards consideration is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91. In its submittal dated May 5, 2005, the licensee requested approval of this amendment to support plant restart. Since the public comment period has expired, but the opportunity to request a hearing has not expired, the NRC staff has made a final determination, as presented below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed amendment does not involve a significant increase in the probability of an accident previously evaluated. The proposed changes are associated with the AFW system, which is not an initiator of any accident previously evaluated.

   The proposed amendment does not involve a significant increase in the consequences of an accident previously evaluated. The mitigation functions assumed in the accident analyses will continue to be performed. Operator actions may be required to assure the AFW pumps are aligned for post-accident recovery operations. With these actions additional consequences are not incurred.

Therefore, operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of any accident previously evaluated.

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

   The AFW system is being modified by adding suction pressure switches to protect the AFW pumps from damage due to a loss of normal suction. The addition of the suction pressure switches and the associated circuitry does not introduce new failure modes or effects. The evaluation of the new suction pressure trip circuit design concluded the new suction pressure trip circuit is similar to the existing discharge pressure trip circuit design and therefore, no new failure modes or effects are introduced. In addition, the AFW system is being modified by altering the function of the discharge pressure trip channel to provide pump runout protection. Operator actions may be required to assure the AFW pumps are aligned for post-accident recovery operations. With these actions, the accident recovery operations can be performed and a new or different kind of accident is not created. The proposed amendment ensures that the AFW system continues to performs its intended safety function.

   Therefore, operation of the facility in accordance with the proposed amendment does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   The modifications to the AFW system and the associated TSs will ensure that the AFW system is capable of performing its intended safety function. In addition, the margin of safety in the accident analyses is not affected by the proposed changes. The manual actions that may be required to restart an AFW pump and throttle AFW flow during the cooldown/recovery phase of the event do not significantly impact the margin of safety.

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

6.0 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.

7.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The 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 (70 FR 25619). 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.

8.0 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.

Principal Contributors: H. Li
G. Armstrong
J. Tatum
F. Lyon

Date: June 20, 2005