NMC
Committed to Nuclear Excellence

Kewaunee Nuclear Power Plant
Operated by Nuclear Management Company, LLC

NRC-03-072

10 CFR 50.90

July 7, 2003

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

KEWAUNEE NUCLEAR POWER PLANT
DOCKET 50-305
LICENSE No. DPR-43
LICENSE AMENDMENT REQUEST 197 TO THE KEWAUNEE NUCLEAR POWER PLANT TECHNICAL SPECIFICATIONS, 3.3.E, SERVICE WATER SYSTEM.

The Nuclear Management Company (NMC) in accordance with 10 CFR 50.90 is submitting this Licensing Amendment Request (LAR) to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS) to revise section 3.3.e "Service Water System".

This amendment will add section 3.3.e.3 to the TS as required by 10 CFR 50.36. It is in 10 CFR 50.36(c)(2)(ii)(C) which indicates those structures, systems, or components which functions or actuates to mitigate a design basis accident be required in Technical Specifications. Section 3.3.e.3 provides requirements for the turbine building service water (SW) header isolation logic. The turbine building service water (SW) header isolation logic automatically closes valves SW-4A and SW-4B on a Safety Injection (SI) signal coincident with a service water low-pressure signal. Failure to isolate the turbine building from the service water header during a design basis accident may result in decreased pressure in the containment fan coil units or decreased heat removal capability in other safety-related components. The isolation logic is only required to function for the SW train aligned to the turbine building header during a design basis accident.

Attachment 1 to this letter contains a description, a safety evaluation, a significant hazards determination, and environmental considerations for the proposed changes. Attachment 2 contains the strikeout Technical Specification pages: TS 3.3-7, TS 3.3-8, and Table TS 4.1-1 page 7 of 7. Attachment 3 contains the affected Technical Specification pages as revised: TS 3.3-7, TS 3.3-8, and Table TS 4.1-1 page 7 of 7. Attachment 4 contains the strikeout Technical Specification Bases pages: TS B3.3-4 and TS B3.3-5. Attachment 5 contains the affected Technical Specification Bases pages as revised: TS B3.3-4 and TS B3.3-5.

A001

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The health and safety of the public will not be adversely affected by the proposed change. This submittal is risk informed. This license amendment request is not needed for continued plant operation and does not contain proprietary information. Nothing in this response represents a commitment not previously made in a separate correspondence.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on July 7, 2003.

Thomas Coutu
Site Vice-President, Kewaunee Plant

TLM

Attachment

cc- US NRC, Region III
US NRC Senior Resident Inspector
Electric Division, PSCW

ATTACHMENT 1

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

July 7, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 197

Description of the Proposed Change

Safety Evaluation

Significant Hazards Determination

Environmental Considerations

Introduction

Nuclear Management Company (NMC) analysis has shown that Service Water (SW) flow to the non-safety related turbine building SW header may be exceeded under postulated accident conditions. The increased turbine building SW flow, and subsequent decreased safety related SW flow, could have impacted the ability of the safety related SW flow to remove the design basis heat loads from safety related components. NMC installed a design change to the turbine building SW header isolation valves to automatically isolate on a Safety Injection sequence signal concurrent with low SW header pressure. Also, NMC implemented administrative controls to require appropriate plant configuration in the event an affected component becomes inoperable. This submittal will add those administrative controls as well as appropriate surveillance requirements to the Technical Specifications (TS).

Description of Proposed Changes to TS 3.3.e, "Service Water System"

NMC is adding a section to our current technical specifications as required by 10 CFR 50.36. This addition of TS 3.3.e.3 will prescribe train alignments when one or both trains of Service Water Isolation Logic (SWIL) are inoperable. Included with these requirements are appropriate Limiting Conditions for Operations (LCO) times. This new TS section also includes requirements when one or both SW valves (SW-4A/B) are found inoperable as well as surveillance requirements to ensure that design capabilities are maintained.

Safety Evaluation for Proposed Change to TS 3.3.e, "Service Water System"

The addition of TS 3.3.e.3 will ensure the SW system is capable of supplying required safety-related components, under all conditions, by isolating flow to the turbine building. The operators always had the ability to isolate the turbine building Service Water supply through remote actuation of the Service Water valves SW-4A(B). This change to the TS will allow circuitry to automatically close the turbine building supply valves upon receipt of a Safety Injection (SI) signal coincident with a low-pressure signal in the respective SW header. NMC has evaluated the risk of not having the automated actuation logic on these SW valves and assessed it as having an incremental core damage frequency of 1.1×10^{-7}, which corresponds to a very low risk significant event. A surveillance requirement will be added to table TS 4.1-1 as item number 45 to ensure that design capabilities are maintained and tested. The calibration and testing is consistent with other safety significant systems such as AFW Pump Low Discharge Pressure Trip.

Significant Hazards Determination for Proposed Change to TS 3.3.e, "Service Water System"

NMC analysis has shown that Service Water (SW) flow to the non-safety related turbine building SW header may be exceeded under postulated accident conditions. The increased turbine building SW flow, and subsequent decreased safety related SW flow, could have impacted the ability of the safety related SW flow to remove the design basis heat loads from safety related components. NMC installed a design change to the turbine building SW header isolation valves to automatically isolate on a Safety Injection sequence signal concurrent with low SW header pressure. Also, NMC implemented administrative controls to require appropriate plant configuration in the event an affected component becomes inoperable. This submittal will add those administrative controls to the Technical Specifications (TS) as well as appropriate surveillance requirements.

NMC is adding a section to our current technical specifications as required by law. This addition of TS 3.3.e.3 will prescribe train alignments when one or both trains of Service Water Isolation Logic (SWIL) are inoperable. Included with these requirements are appropriate Limiting Conditions for Operations (LCO) times. This new TS section also includes requirements when one or both SW valves (SW-4A/B) are found inoperable as well as surveillance requirements to ensure that design capabilities are maintained.

The proposed changes were reviewed in accordance with the provisions of 10 CFR 50.92 to determine that no significant hazards exist. The proposed changes will not:

1. **Involve a significant increase in the probability or consequences of an accident previously evaluated.**

   The service water system and specifically the supply to the turbine building, does not initiate any accidents previously evaluated. This change will provide an automatic feature to a function that was previously available to operators, to ensure Emergency Safety Features (ESF) loads will receive adequate service water flow. Flow is provided to ESF components that are cooled by service water without relying on the operator to identify and take action to provide isolation. Diesel loading and sequencing will not be adversely affected by this change. The components supplied by the service water system will continue to be supplied in a timely manner. The valve logic will be properly calibrated and tested consistent with other valves associated with safety significant structures, systems and components.

   Therefore, this proposed change will not increase the probability or consequences of an accident previously evaluated.

2. **Create the possibility of a new or different kind of accident from any accident previously evaluated.**

   This change will not affect the service water system function or any components that are accident initiators. The ability to isolate the turbine building load in the event of a system malfunction has been previously evaluated.

   Therefore, any change to the system would not affect the probability of an accident previously evaluated.

3. **Involve a significant reduction in the margin of safety.**

   This change will ensure that Engineered Safety Features (ESF) components receiving service water-cooling are not negatively impacted by turbine building load. There are no components served by the turbine building header that are safety systems, structures, or components.

   Therefore, NMC concludes that there is not a significant reduction in the margin of safety.

Environmental Considerations

The NMC has determined that the proposed amendment involves no significant hazard considerations. There are no changes in the types of any effluents that may be released off-site and that there are no increases in the individual or cumulative occupational radiation exposure. Accordingly, this proposed 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 this proposed amendment.

ATTACHMENT 2

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

July 7, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 197

Strike Out TS Pages:

TS 3.3-7
TS 3.3-8
TS Table 4.1-1 (Page 7 of 7)

e. Service Water System

1. The reactor shall not be made critical unless the following conditions are satisfied, except for LOW POWER PHYSICS TESTS and except as provided by TS 3.3.e.2.

   A. TWO service water trains are OPERABLE with each train consisting of:

      1. TWO service water pumps

      2. An OPERABLE flow path consisting of all valves and piping associated with the above train of components and required to function during accident conditions. This flow path shall be capable of taking a suction from the forebay and supplying water to the redundant safeguards headers.

   B. The Forebay Water Level Trip System is OPERABLE.

2. During power operation or recovery from an inadvertent trip, ONE service water train may be inoperable for a period of 72 hours. If OPERABILITY is not restored within 72 hours, then within 1 hour action shall be initiated to:

   - Achieve HOT STANDBY within the next 6 hours.
   - Achieve HOT SHUTDOWN within the following 6 hours.
   - Achieve and maintain Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods within an additional 36 hours.

3. Turbine Building Service Water Header Isolation Logic is only required to function for the service water train aligned to the turbine building header during a design basis accident. Therefore, the operability of the service water train not aligned to the turbine building header is independent of the operability of the isolation logic.

   A. IF one train of Isolation Logic is inoperable and the affected train of service water is **NOT** aligned to the turbine building header, the following action shall be taken:

      1. Administratively control the alignment of the service water train to prevent its alignment to the turbine building header.

   B. IF one train of Isolation Logic is inoperable and the affected train of service water is aligned to the turbine building header, the following action shall be taken immediately:

   1. Declare that train of Service Water inoperable, and

      The following actions shall be completed within 72 hours:

      1. Align the opposite train of service water to the turbine building header, or

      2. Restore the Isolation Logic train to OPERABLE status.

C. If two trains of Isolation Logic are declared inoperable, the following actions shall be taken immediately:

1. An otherwise OPERABLE train of service water shall be de-selected as the supply for the turbine building header, and

2. Declare the train of service water aligned to the turbine building header inoperable.

The following actions shall be completed within 72 hours:

1. One train of Isolation Logic shall be restored to OPERABLE status, and

2. An OPERABLE train of service water with an OPERABLE train of Isolation Logic shall be aligned to the turbine building header.

D. If Valve SW-4A or SW-4B is inoperable and open, declare the associated train of service water inoperable and complete the following within 72 hours:

1. Align the opposite train of service water to the turbine building header, or

2. Restore the inoperable valve to OPERABLE status.

E. If both SW-4A and SW-4B are inoperable, perform the following:

1. Declare the service water train with the open valve inoperable, and

2. Restore one valve to OPERABLE status and open it within 72 hours.

F. If the conditions described in A, B, C, D, and E cannot be met, commence Plant Shutdown in accordance with TS 3.3.e.2.

TABLE TS 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND TEST OF INSTRUMENT CHANNELS

CHANNEL DESCRIPTION	CHECK	CALIBRATE	TEST	REMARKS
43. AFW Pump Low Discharge Pressure Trip	Not Applicable	Each refueling cycle	Each refueling cycle	
44. Axial Flux Difference (AFD)	Weekly			Verify AFD within limits for each OPERABLE excore channel
45. Service Water Turbine Header Isolation Logic Trip (SW 4 A/B)	Not Applicable	Each refueling cycle	Each refueling cycle	

ATTACHMENT 3

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

July 7, 2003

Letter from Thomas Coutu (NMC)

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   A. TWO service water trains are OPERABLE with each train consisting of:

      1. TWO service water pumps

      2. An OPERABLE flow path consisting of all valves and piping associated with the above train of components and required to function during accident conditions. This flow path shall be capable of taking a suction from the forebay and supplying water to the redundant safeguards headers.

   B. The Forebay Water Level Trip System is OPERABLE.

2. During power operation or recovery from an inadvertent trip, ONE service water train may be inoperable for a period of 72 hours. If OPERABILITY is not restored within 72 hours, then within 1 hour action shall be initiated to:

   - Achieve HOT STANDBY within the next 6 hours.
   - Achieve HOT SHUTDOWN within the following 6 hours.
   - Achieve and maintain Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods within an additional 36 hours.

3. Turbine Building Service Water Header Isolation Logic is only required to function for the service water train aligned to the turbine building header during a design basis accident. Therefore, the operability of the service water train not aligned to the turbine building header is independent of the operability of the isolation logic.

   A. IF one train of Isolation Logic is inoperable and the affected train of service water is **NOT** aligned to the turbine building header, the following action shall be taken:

      1. Administratively control the alignment of the service water train to prevent its alignment to the turbine building header.

   B. IF one train of Isolation Logic is inoperable and the affected train of service water is aligned to the turbine building header, the following action shall be taken immediately:

   1. Declare that train of Service Water inoperable, and

      The following actions shall be completed within 72 hours:

      1. Align the opposite train of service water to the turbine building header, or

      2. Restore the Isolation Logic train to OPERABLE status.

C. If two trains of Isolation Logic are declared inoperable, the following actions shall be taken immediately:

1. An otherwise OPERABLE train of service water shall be de-selected as the supply for the turbine building header, and

2. Declare the train of service water aligned to the turbine building header inoperable.

The following actions shall be completed within 72 hours:

1. One train of Isolation Logic shall be restored to OPERABLE status, and

2. An OPERABLE train of service water with an OPERABLE train of Isolation Logic shall be aligned to the turbine building header.

D. If Valve SW-4A or SW-4B is inoperable and open, declare the associated train of service water inoperable and complete the following within 72 hours:

1. Align the opposite train of service water to the turbine building header, or

2. Restore the inoperable valve to OPERABLE status.

E. If both SW-4A and SW-4B are inoperable, perform the following:

1. Declare the service water train with the open valve inoperable, and

2. Restore one valve to OPERABLE status and open it within 72 hours.

F. If the conditions described in A, B, C, D, and E cannot be met, commence Plant Shutdown in accordance with TS 3.3.e.2.

TABLE TS 4.1-1

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ATTACHMENT 4

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

July 7, 2003

Letter from Thomas Coutu (NMC)

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License Amendment Request 197

Strike Out TS Bases Pages:

TS B3.3-4
TS B3.3-5

The spray additive system may be inoperable for up to 72 hours. The containment spray system would still be available and would remove some iodine from the containment atmosphere in the event of a Design Basis Accident. The 72-hour completion time takes into account the containment spray system capabilities and the low probability of the worst case Design Basis Accident occurring during this period.

One component cooling water pump together with one component cooling heat exchanger can accommodate the heat removal load either following a loss-of-coolant accident or during normal plant shutdown. If, during the post-accident phase, the component cooling water supply were lost, core and containment cooling could be maintained until repairs were effected.[8]

A total of four service water pumps are installed and a minimum of two are required to operate during the postulated loss-of-coolant accident. [9] The service water valves in the redundant safeguards headers have to be OPERABLE in order for the components that they supply to be considered OPERABLE.

The various trains of equipment referred to in the specifications are separated by their power supplies (i.e.: SI Pump 1A, RHR Pump 1A and Valve SI-4A, etc.). Shared piping and valves are considered to be common to both trains of the systems.

Service Water Header Isolation Logic (TS 3.3.e.3)

The turbine building service water (SW) header isolation logic automatically closes valves SW-4A and SW-4B on a Safety Injection (SI) signal coincident with a service water low pressure signal. Failure to isolate the turbine building from the service water header during a design basis accident may result in decreased pressure in the containment fan coil units or decreased heat removal capability in other safety-related components. The isolation logic is only required to function for the SW train aligned to the turbine building header during a design basis accident. Therefore, the operability of the service water not aligned to the turbine building header is independent of the operability of the isolation logic.

If either input into the isolation logic is inoperable, the isolation function can be returned to operable status by tripping the affected circuit or closing the affected valve.

The isolation logic is OPERABLE when turbine building service water header isolation valves (SW-4A and SW-4B) are capable of automatically closing from a safety injection signal coincident with a low header pressure signal from the service water header pressure switches.

Because the Isolation Logic ensures adequate service water to safety-related components, these requirements are applicable whenever Technical Specification 3.3.e for service water applies.

Considering the Allowed Outage Time (AOT) for one train of service water used in TS 3.3.e, it is consistent to apply the 72-hour AOT for one train of isolation logic. The 72-hour AOT to switch to the turbine building load to the OPERABLE train of service water is consistent with TS 3.3.e.

Valves SW-4A and SW-4B are tested in accordance with the IST program and have a required closing time of 22 seconds. If SW-4A or SW-4B is inoperable, the valve must be closed or the associated train declared inoperable.

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[8] USAR Section 9.3
[9] USAR Section 9.6

If the plant is in conditions C or E, it is not acceptable to alternate the alignment of the SW trains to extend the allowed out of service time.

In the event conditions A, B, C, D or E cannot be met, a plant shutdown as described in the TS requirements for exceeding the AOT on service water will commence.

Applying the restriction described in the TS and the requirements specified in TS 3.3.e could result in the inoperability of redundant trains of service water. In this case, the plant shall be shutdown in accordance with TS 3.3.e.2.

TS 3.3.e.3.C.1

When both trains of service water isolation logic are inoperable and one train is also inoperable due to another reason (e.g. one pump inoperable, missed surveillance), the operator should align, if needed, the trains of service water so that the train not aligned (de-selected) to the turbine building header is operable. These actions avoid creating a train of service water that is inoperable due only to the isolation logic when the other train is inoperable because of other issues already and avoids entering the 3.3.e.2 shutdown sequence.

ATTACHMENT 5

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KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

July 7, 2003

Letter from Thomas Coutu (NMC)

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