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NMC
Committed to Nuclear Excellence

Kewaunee / Point Beach Nuclear
Operated by Nuclear Management Company, LLC

NRC-02-061

July 12, 2002

10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
License Amendment Request 186 To The Kewaunee Nuclear Power Plant Technical Specifications

The Nuclear Management Company (NMC) is submitting this license amendment request (LAR) to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS) to revise section 3.1.a.3, "Pressurizer Safety Valves". The LAR is submitted using Microsoft Word and reformats TS 3.1.a.3 to more closely resemble the format of Improved Standard Technical Specification (ISTS) to improve clarity.

This amendment will allow both pressurizer safety valves to be inoperable or removed while the reactor vessel head is on. This would only be applicable when the temperature and pressure are low enough such that the Low Temperature Overpressure Protection (LTOP) System can safely protect the Reactor Coolant System (RCS). The technical specifications currently requires the LTOP System to protect the RCS when the RCS temperature is less than LTOP enabling temperature. This LAR is consistent with Improved Standard Technical Specifications (ISTS) 3.4.10 "Pressurizer Safety Valves" operability requirements.

The health and safety of the public will not be adversely affected by the proposed change. The LTOP System provides overpressure protection to the RCS by aligning a relief valve on the suction of the Residual Heat Removal (RHR) System. The LTOP System protects the RCS from non-ductile failure during low temperature overpressure transients. During low temperature conditions, the pressurizer safeties are not credited with protecting the RCS pressure boundary.

A001

This LAR is not needed for continued plant operation and does not contain proprietary information. Approval of this LAR is needed before the next refueling outage scheduled in April 2003. This change is consistent with currently approved staff positions and therefore not risk informed. 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. Note that the text which has been removed is struck out while the added text is double underlined. Attachment 3 contains the affected Technical Specification pages as revised for this section. Attachment 4 contains the strikeout TS Bases pages. Finally, attachment 5 contains the affected TS Bases pages.

To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respects, these statements are not based entirely on my personal knowledge, but on information furnished by cognizant NMC employees and consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on July 12, 2002.

A. F. Louis for Mark Warner

Mark E. Warner
Site Vice President

TLM

Attach.

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

ATTACHMENT 1

Letter from M. E. Warner (NMC)

To

Document Control Desk (NRC)

Dated

July 12, 2002

License Amendment Request 186

Description of the Proposed Change

Safety Evaluation

Significant Hazards Determination

Environmental Considerations

Description of Proposed Changes

A limiting conditions for operation (LCO) is being added to allow both pressurizer safety valves to be inoperable or removed provided that the Low Temperature Overpressure Protection (LTOP) System is enabled. In addition to the LCO, the Technical Specification (TS) has been reformatted to resemble the Improved Standard Technical Specification (ISTS) format to improve clarity.

Background

The pressurizer maintains the required reactor coolant pressure during steady-state operation, limits the pressure changes caused by coolant thermal expansion and contraction during normal load transients, and prevents the pressure in the Reactor Coolant System (RCS) from exceeding the design pressure.

Under normal operating conditions TS 3.1.a.3.B requires both pressurizer safety valves to be operable whenever the reactor is critical. TS 3.1.a.3.A requires at least one pressurizer safety shall be operable whenever the reactor head is on the reactor pressure vessel except if a RCS hydro test is needed. During a hydro test, the pressurizer safeties are blanked off and the power operated relief valve (PORV) & safety valve on the discharge of the charging pump provide the overpressure protection for the system.

TS 3.1.b.4 describes the LTOP System which is placed in service when at least one of the RCS cold legs is below the reference temperature, currently < 200 °F, and the reactor pressure vessel head is on.

This proposed change will allow the Kewaunee Nuclear Power Plant (KNPP) to remove both pressurizer safeties or otherwise have the pressurizer safeties inoperable while the reactor head is on the reactor and the LTOP System relief is in service.

Differences from Improved Standard Technical Specification (ISTS) (NUREG 1431, Rev 2)

Safety Valve Testing

NMC compared this LAR against ISTS looking for any differences. The differences noted include;

1) The pressurizer lift setting tolerances are not included in the specification,
2) The action note allowing preliminary cold settings was not included,
3) The required action of being in Mode 3 within six hours for one inoperable safety is 12 hours to Hot Shutdown.

The setpoints for the Pressurizer Safety Valves are controlled by KNPP TS 4.2, "ASME Code Class In-Service Inspection and Testing." TS 4.2.a.2 states:

> In-service testing of ASME Code Class 1, Class 2 and Class 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50.55a(f), except where relief has been granted by the Commission pursuant to 10 CFR 50.55a(f)(6)(i).

Included in this requirement is the testing of the Pressurizer Safety Valves. These valves are tested in accordance with ASME OM Code requirements which call for 20% of the two valves to be tested every 24 months. As there are only two valves and the plant conditions only allow testing during outages, one valve is tested every refueling outage that currently occurs at 18-month intervals. Per ASME OM Code, the tolerance for expansion of scope for failures for these valves is ± 3% of 110% of design pressure. However, the valves are designed to ASME Section III requirements and thus the acceptance criteria of ASME Section III applied. This is 1% of the 110% or between 2460 psig and 2509 psig. Thus, the requirements for the lift setting of the valves are similar.

ISTS 54 Hour LCO

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The [54] hour exception is based on 18 hour outage time for each of the [three] valves. The 18 hour period is derived from operating experience that hot testing can be performed in this timeframe.

Kewaunee ships their relief valves offsite to be set at a hot setting. The valves are placed in an environment equivalent to that which they are required to operate and then set for an operating pressure of 2485 ± 1%. Therefore when the RCS is heated to the NOP/NOT the valves are at their set pressure and no further testing is required. Therefore, this note is not required for KNPP operation.

48 Hour LCO When Both Pressurizer Safety Valves Are INOPERABLE

This LAR is consistent with KNPP's current license. TS 3.1.a.3.A requires one pressurizer safety to be operable when the reactor head is installed (ISTS Modes 1, 2, 3, 4,& 5), except for hydro testing. TS 3.1.a.3.B require two pressurizer safeties to be operable when the reactor is critical (ISTS Modes 1 & 2). ISTS requires that all pressurizer safeties be operable in Modes 1, 2, 3 and 4 with RCS temperature > LTOP arming temp.

The change in the ISTS completion time is also due to our current licensing basis. If we are outside the TS guidance for a shutdown sequence, we use the standard shutdown sequence as described in our current technical specifications 3.0.c. This sequence is:

> When a LIMITING CONDITION FOR OPERATION is not met, and a plant shutdown is required except as provided in the associated ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the Specification does not apply by placing it, as applicable, in:
>
> a At least HOT STANDBY within the next 6 hours,
>
> b At least HOT SHUTDOWN within the following 6 hours, and
>
> c At least COLD SHUTDOWN within the subsequent 36 hours.

Since the reactor is subcritical when the plant is in HOT SHUTDOWN, 12 hours was the appropriate completion time if one pressurizer safety is inoperable. In addition, as COLD SHUTDOWN is the required end-state for two pressurizer safeties inoperable, 48 hours is the current completion time for the pressurizer safeties being out of service. This is because the enabling temperature for the LTOP is an RCS temperature of <200 °F. To place the plant in COLD SHUTDOWN, the RCS must also be < 200 °F. Therefore, the prescribed time of 48 hours to allow use of normal operating procedures is applicable.

Design Basis Accidents Which Use The Pressurizer Safety Valves To Mitigate The Accident

KNPP safety analysis takes credit for the pressurizer safety valves in the following accidents.

- Uncontrolled RCCA Withdrawal From Sub-Critical
- Uncontrolled RCCA Withdrawal at Power
- Chemical and Volume Control System Malfunction
- Partial Loss of Reactor Coolant Flow
- Loss of External Load

TMI-2 Pressurizer Safety Related Compliance Issues

NUREG 0737 requirements 0737 II.D.1 and 0737 II.D.3 also are associated with the pressurizer safeties. Both of these issues are considered closed based on NRC letters dated 9-15-86 and 4-25-85 respectively.

NUREG 0737, Item II.D.1, concerns testing of the pressurizer safery valves to qualify them under expected operating conditions for design-basis transients and accidents. Wisconsin Public Service Corporation (WPSC) reported that a design change, adding rupture disc's to the discharge piping of the safety valves due to a potential overstressing of the discharge piping, was complete. WPSC also stated that operating procedures had been modified accordingly. In a letter dated September 15, 1986, the NRC stated that WPSC had provided an acceptable response for item II.D.1 and described their review as complete.

NUREG 0737, Item II.D.3, concerns providing a positive indication, in the control room, of safety and relief valve position, either from a reliable valve position device or reliable indication of flow. Kewaunee has limit switch valve position indicators on the power operated relief valves. Additionally an acoustic flowmeter system was installed for the pressurizer safety valves which provides reliable indication of flow. By letter dated April 25, 1985, the NRC transmitted an inspection report. This report stated that item II.D.3, is considered closed for TMI-2 tracking purposes.

Safety Evaluation for Proposed Change

The proposed change is described in two parts. The first is the administrative format change to the new ISTS format using Microsoft Word software, which has no safety significance. The second part is to request permission to have both pressurizer safety valves inoperable or removed with the reactor vessel head on. This would only be allowed when the RCS temperature and pressure are low enough so the LTOP System can safely protect the RCS from a pressure transient. The Technical Specifications currently require the LTOP System to protect the RCS when RCS temperature is less than LTOP enabling temperature. The pressurizer safeties are not credited for protecting the RCS when the RCS temperature is below the LTOP enabling temperature. The Improved Standard Technical Specifications (ISTS) 3.4.10 require this same type of alignment.

This change also clarifies completion times. The completion times for required actions A.1 and B.1 are from ISTS 3.4.10, which allows 15 minutes to return an inoperable safety valve to an operable status before entering a shutdown sequence. Completion times for required actions A.2 and B.2 are those used by our current TS standard shutdown sequence 3.0.c. KNPP TS 3.1.a.3 does not contain its own completion times for the required actions. As such, TS 3.0.c would be the governing requirement for the required action completion times. These completion times were chosen to allow the operators to perform an orderly plant shutdown using normal operating procedures.

NMC concludes that neither the format changes to this TS nor the ability to operate with both pressurizer safeties inoperable or removed and the LTOP System enabled, as having an adverse impact on plant or public safety.

Significant Hazards Determination for Proposed Change

A limiting conditions for operation (LCO) is being added to allow both pressurizer safety valves to be inoperable or removed provided the Low Temperature Overpressure Protection (LTOP) System is in service.

The pressurizer maintains the required reactor coolant pressure during steady-state operation, limits the pressure changes caused by coolant thermal expansion and contraction during normal load changes, and prevents the pressure in the Reactor Coolant System (RCS) from exceeding the design pressure.

The pressurizer safeties protect the RCS and pressurizer from system overpressure conditions during accidents and or excessive thermal transients.

Following a plant shutdown and while cooling down the RCS, the LTOP System is aligned. This system provides overpressure protection to the RCS using a relief valve in the Residual Heat Removal (RHR) System. At temperatures and pressures when the LTOP System is required, the pressurizer safeties no longer provide RCS overpressure protection. The LTOP System protects the RCS from non-ductile failure during low temperature overpressure transients. During low temperature conditions, the pressurizer safeties are not credited with protecting the RCS pressure boundary.

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 format changes are administrative in nature and therefore have no effect on the probability or consequences of an accident. The situation where the plant has two inoperable or removed pressurizer safeties while the LTOP System is enabled is not considered an accident initiator. Therefore, any change to the system would not affect the probability of an accident previously evaluated. The risk of core damage/release of radioactivity would not increase with all of the other plant safety features still in place.

   The proposed changes add clarity to the technical specifications by describing a specific situation when the RCS is at low temperature & pressure while overpressure protection is provided by the LTOP System. Since this TS change is not an accident initiator and existing TS will ensure the LTOP System will continue to protect the RCS pressure boundary, this proposed amendment does not involve an increase in 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.**

   The situation where the plant has two inoperable pressurizer safeties while the LTOP System is enabled is not considered an accident initiator. A failure of this system will not result in an accident. The format changes are administrative in nature and therefore have no effect on the probability or consequences of a new or different kind of accident from any accident previously evaluated.

The proposed changes do not involve a change to the physical plant or operations. As the RCS temperature is lowered to less than 200 °F, the LTOP System provides the RCS overpressure protection required. Since the LTOP System is currently approved for use by Technical Specification 3.1.b.4, it would not create the possibility of a new or different kind of accident from any accident 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.

The format changes are administrative in nature and therefore are not involved in a significant reduction in the margin of safety. Margin of safety relates to overpressure protection when the RCS is less than 200 °F. This margin is controlled by the LTOP System completely and does not rely on the pressurizer safeties. This proposed amendment allows KNPP to have both pressurizer safeties to be inoperable as long as the RCS is below the LTOP System enabling temperature. 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

Letter from M. E. Warner (NMC)

To

Document Control Desk (NRC)

Dated

July 12, 2002

License Amendment Request 186

Strike Out TS Pages:

Table of Contents, TS i
TS 3.1-2
TS 3.1-3

TABLE OF CONTENTS
TECHNICAL SPECIFICATIONS
APPENDIX A

B. TWO residual heat removal trains shall be operable whenever the average reactor coolant temperature is ≤ 200°F and irradiated fuel is in the reactor, except when in the REFUELING mode with the minimum water level above the top of the vessel flange ≥ 23 feet, one train may be inoperable for maintenance.

1. Each residual heat removal train shall be comprised of:

a) ONE operable residual heat removal pump

b) ONE operable residual heat removal heat exchanger

c) An operable flow path consisting of all valves and piping associated with the above train of components and required to remove decay heat from the core during normal shutdown situations. This flow path shall be capable of taking suction from the appropriate Reactor Coolant System hot leg and returning to the Reactor Coolant System.

2. If one residual heat removal train is inoperable, corrective action shall be taken immediately to return it to the operable status.

~~3. Pressurizer Safety Valves~~

~~A. At least one pressurizer safety valve shall be operable whenever the reactor head is on the reactor pressure vessel, except for a hydro test of the RCS the pressurizer safety valves may be blanked provided the power operated relief valves and the safety valve on the discharge of the charging pump are set for test pressure plus 35 psi to protect the system.~~

~~B. Both pressurizer safety valves shall be operable whenever the reactor is critical.~~

3.1.a.3 Pressurizer Safety Valves

LCO 3.1.a.3 Two pressurizer safety valves shall be OPERABLE

APPLICABILITY: Reactor Coolant System Temperature Greater than the Low Temperature Overpressure Protection (LTOP) Enabling Temperature (200°F)

ACTIONS

- NOTE -

During a hydro test of the RCS, the pressurizer safety valves may be blanked provided the power-operated relief valves and the safety valve on the discharge of the charging pump are set for the test pressure plus 35 psi to protect the system.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable	A.1 Restore to OPERABLE status OR A.2 Be in HOT SHUTDOWN	15 Minutes 12 Hours
B. Both pressurizer safety valves are inoperable	B.1 Restore one pressurizer safety valve to an OPERABLE status OR B.2 Be in a condition with the LTOP system OPERABLE or reactor vessel head removed	15 Minutes 48 Hours

ATTACHMENT 3

Letter from M. E. Warner (NMC)

To

Document Control Desk (NRC)

Dated

July 12, 2002

License Amendment Request 186

TS Affected Pages:

Table of Contents, TS i
TS 3.1-2 through TS 3.1-10

TABLE OF CONTENTS
TECHNICAL SPECIFICATIONS
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1. Each residual heat removal train shall be comprised of:

   a) ONE operable residual heat removal pump

   b) ONE operable residual heat removal heat exchanger

   c) An operable flow path consisting of all valves and piping associated with the above train of components and required to remove decay heat from the core during normal shutdown situations. This flow path shall be capable of taking suction from the appropriate Reactor Coolant System hot leg and returning to the Reactor Coolant System.

2. If one residual heat removal train is inoperable, corrective action shall be taken immediately to return it to the operable status.

3.1.a.3 Pressurizer Safety Valves

LCO 3.1.a.3 Two pressurizer safety valves shall be OPERABLE

APPLICABILITY: Reactor Coolant System Temperature Greater than the Low Temperature Overpressure Protection (LTOP) Enabling Temperature (200°F)

ACTIONS

- NOTE -

During a hydro test of the RCS, the pressurizer safety valves may be blanked provided the power-operated relief valves and the safety valve on the discharge of the charging pump are set for the test pressure plus 35 psi to protect the system.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One pressurizer safety valve inoperable	A.1 Restore to OPERABLE status OR A.2 Be in HOT SHUTDOWN	15 Minutes 12 Hours
B. Both pressurizer safety valves are inoperable	B.1 Restore one pressurizer safety valve to an OPERABLE status OR B.2 Be in a condition with the LTOP system OPERABLE or reactor vessel head removed	15 Minutes 48 Hours

4. Pressure Isolation Valves

   A. All pressure isolation valves listed in Table TS 3.1-2 shall be functional as a pressure isolation device during OPERATING and HOT STANDBY modes, except as specified in 3.1.a.4.B. Valve leakage shall not exceed the amounts indicated.

   B. In the event that integrity of any pressure isolation valve as specified in Table TS 3.1-2 cannot be demonstrated, reactor operation may continue, provided that at least two valves in each high pressure line having a non-functional valve are in, and remain in, the mode corresponding to the isolated condition.[1]

   C. If TS 3.1.a.4.A and TS 3.1.a.4.B cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the HOT SHUTDOWN condition within the next 4 hours, the INTERMEDIATE SHUTDOWN condition in the next 6 hours and the COLD SHUTDOWN condition within the next 24 hours.

5. Pressurizer Power-Operated Relief Valves (PORV) and PORV Block Valves

   A. Two PORVs and their associated block valves shall be operable during HOT STANDBY and OPERATING modes.

      1. With one or both PORVs inoperable because of excessive seat leakage, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s) with power maintained to the block valve(s); otherwise, action shall be initiated to:

         - Achieve HOT STANDBY within 6 hours
         - Achieve HOT SHUTDOWN within the following 6 hours

      2. With one PORV inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORV to OPERABLE status or close its associated block valve and remove power from the block valve; restore the PORV to OPERABLE status within the following 72 hours or action shall be initiated to:

         - Achieve HOT STANDBY within 6 hours
         - Achieve HOT SHUTDOWN within the following 6 hours

      3. With both PORVs inoperable due to causes other than excessive seat leakage, within 1 hour either restore at least one PORV to OPERABLE status or close its associated block valve and remove power from the block valve and

         - Achieve HOT STANDBY within 6 hours
         - Achieve HOT SHUTDOWN within the following 6 hours

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[1] Manual valves shall be locked in the closed position. Motor operated valves shall be placed in the closed position with their power breakers locked out.

4. With one block valve inoperable, within 1 hour restore the block valve to OPERABLE status or place its associated PORV in manual control. Restore the block valve to OPERABLE status within 72 hours; otherwise action shall be initiated to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours

5. With both block valves INOPERABLE, within 1 hour restore the block valves to OPERABLE status or place their associated PORVs in manual control. Restore at least one block valve to OPERABLE status within the next hour; otherwise, action shall be initiated to:

   - Achieve HOT STANDBY within 6 hours
   - Achieve HOT SHUTDOWN within the following 6 hours

6. Pressurizer Heaters

   A. At least one group of pressurizer heaters shall have an emergency power supply available when the average RCS temperature is > 350°F.

7. Reactor Coolant Vent System

   A. A reactor coolant vent path from both the reactor vessel head and pressurizer steam space shall be operable and closed prior to the average RCS temperature being heated > 200°F except as specified in TS 3.1.a.7.B and TS 3.1.a.7.C below.

   B. When the average RCS temperature is > 200°F, any one of the following conditions of inoperability may exist:

      1. Both of the parallel vent valves in the reactor vessel vent path are inoperable.

      2. Both of the parallel vent valves in the pressurizer vent path are inoperable.

      If operability is not restored within 30 days, then within one hour action shall be initiated to:

      - Achieve HOT STANDBY within 6 hours
      - Achieve HOT SHUTDOWN within the following 6 hours
      - Achieve COLD SHUTDOWN within an additional 36 hours

   C. If no Reactor Coolant System vent paths are operable, restore at least one vent path to operable status within 72 hours. If operability is not restored within 72 hours, then within 1 hour action shall be initiated to:

      - Achieve HOT STANDBY within 6 hours
      - Achieve HOT SHUTDOWN within the following 6 hours
      - Achieve COLD SHUTDOWN within an additional 36 hours

b. Heatup and Cooldown Limit Curves for Normal Operation

1. The reactor coolant temperature and pressure and system heatup and cooldown rates (with the exception of the pressurizer) shall be limited in accordance with Figures TS 3.1-1 and TS 3.1-2. Figures TS 3.1-1 and TS 3.1-2 are applicable for the service period of up to 33[(1)] effective full-power years.

   A. Allowable combinations of pressure and temperature for specific temperature change rates are below and to the right of the limit lines shown. Limit lines for cooldown rates between those presented may be obtained by interpolation.

   B. Figures TS 3.1-1 and TS 3.1-2 define limits to assure prevention of non-ductile failure only. For normal operation other inherent plant characteristics, e.g., pump heat addition and pressurizer heater capacity may limit the heatup and cooldown rates that can be achieved over certain pressure-temperature ranges.

   C. The isothermal curve in Figure TS 3.1-2 defines limits to assure prevention of non-ductile failure applicable to low temperature overpressurization events only. Application of this curve is limited to evaluation of LTOP events whenever one or more of the RCS cold leg temperatures are less than or equal to the LTOP enabling temperature of 200°F.

2. The secondary side of the steam generator must not be pressurized > 200 psig if the temperature of the steam generator is < 70°F.

3. The pressurizer cooldown and heatup rates shall not exceed 200°F/hr and 100°F/hr, respectively. The spray shall not be used if the temperature difference between the pressurizer and the spray fluid is > 320°F.

4. The overpressure protection system for low temperature operation shall be operable whenever one or more of the RCS cold leg temperatures are ≤ 200°F, and the reactor vessel head is installed. The system shall be considered operable when at least one of the following conditions is satisfied:

   A. The overpressure relief valve on the Residual Heat Removal System (RHR 33-1) shall have a set pressure of ≤ 500 psig and shall be aligned to the RCS by maintaining valves RHR 1A, 1B, 2A, and 2B open.

      1. With one flow path inoperable, the valves in the parallel flow path shall be verified open with the associated motor breakers for the valves locked in the off position. Restore the inoperable flow path within 5 days or complete depressurization and venting of the RCS through a ≥ 6.4 square inch vent within an additional 8 hours.

      2. With both flow paths or RHR 33-1 inoperable, complete depressurization and venting of the RCS through at least a 6.4 square inch vent pathway within 8 hours.

[(1)] Although the curves were developed for 33 EFPY, they are limited to 28 EFPY (corresponding to the end of cycle 28) by WPSC Letter NRC-99-017.

B. A vent pathway shall be provided with an effective flow cross section ≥ 6.4 square inches.

1. When low temperature overpressure protection is provided via a vent pathway, verify the vent pathway at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position. If the vent path is provided by any other means, verify the vent pathway every 12 hours.

c. Maximum Coolant Activity

1. The specific activity of the reactor coolant shall be limited to:

A. ≤ 20 µCi/gram DOSE EQUIVALENT I-131, and

B. $\leq \frac{91}{\overline{E}} \frac{\mu Ci}{cc}$ gross radioactivity due to nuclides with half-lives > 30 minutes excluding tritium ($\overline{E}$ is the average sum of the beta and gamma energies in Mev per disintegration) whenever the reactor is critical or the average coolant temperature is > 500°F.

2. If the reactor is critical or the average temperature is > 500°F:

A. With the specific activity of the reactor coolant > 0.20 µCi/gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval, or exceeding the limit shown on Figure TS 3.1-3, be in at least INTERMEDIATE SHUTDOWN with an average coolant temperature of < 500°F within 6 hours.

B. With the specific activity of the reactor coolant $> \frac{91}{\overline{E}} \frac{\mu Ci}{cc}$ of gross radioactivity, be in at least INTERMEDIATE SHUTDOWN with an average coolant temperature < 500°F within 6 hours.

C. With the specific activity of the reactor coolant > 0.20 µCi/gram DOSE EQUIVALENT I-131 $or > \frac{91}{\overline{E}} \frac{\mu Ci}{cc}$ perform the sample and analysis requirements of Table TS 4.1-2, item 1.f, once every 4 hours until restored to within its limits.

3. Annual reporting requirements are identified in TS 6.9.a.2.D.

d. Leakage of Reactor Coolant

1. Any Reactor Coolant System leakage indication in excess of 1 gpm shall be the subject of an investigation and evaluation initiated within 4 hours of the indication. Any indicated leak shall be considered to be a real leak until it is determined that no unsafe condition exists. If the Reactor Coolant System leakage exceeds 1 gpm and the source of leakage is not identified within 12 hours, the reactor shall be placed in the HOT SHUTDOWN condition utilizing normal operating procedures. If the source of leakage exceeds 1 gpm and is not identified within 48 hours, the reactor shall be placed in the COLD SHUTDOWN condition utilizing normal operating procedures.

2. Reactor coolant-to-secondary leakage through the steam generator tubes shall be limited to 150 gallons per day through any one steam generator. With tube leakage greater than the above limit, reduce the leakage rate within 4 hours or be in COLD SHUTDOWN within the next 36 hours.

3. If the sources of leakage other than that in 3.1.d.2 have been identified and it is evaluated that continued operation is safe, operation of the reactor with a total Reactor Coolant System leakage rate not exceeding 10 gpm shall be permitted. If leakage exceeds 10 gpm, the reactor shall be placed in the HOT SHUTDOWN condition within 12 hours utilizing normal operating procedures. If the leakage exceeds 10 gpm for 24 hours, the reactor shall be placed in the COLD SHUTDOWN condition utilizing normal operating procedures.

4. If any reactor coolant leakage exists through a non-isolable fault in a Reactor Coolant System component (exterior wall of the reactor vessel, piping, valve body, relief valve leaks, pressurizer, steam generator head, or pump seal leakoff), the reactor shall be shut down; and cooldown to the COLD SHUTDOWN condition shall be initiated within 24 hours of detection.

5. When the reactor is critical and above 2% power, two reactor coolant leak detection systems of different operating principles shall be in operation with one of the two systems sensitive to radioactivity. Either system may be out of operation for up to 12 hours provided at least one system is operable.

e. Maximum Reactor Coolant Oxygen, Chloride and Fluoride Concentration

1. Concentrations of contaminants in the reactor coolant shall not exceed the following limits when the reactor coolant temperature is > 250°F.

CONTAMINANT	NORMAL STEADY-STATE OPERATION (ppm)	TRANSIENT LIMITS (ppm)
A. Oxygen	0.10	1.00
B. Chloride	0.15	1.50
C. Fluoride	0.15	1.50

2. If any of the normal steady-state operating limits as specified in TS 3.1.e.1 above are exceeded, or if it is anticipated that they may be exceeded, corrective action shall be taken immediately.

3. If the concentrations of any of the contaminants cannot be controlled within the transient limits of TS 3.1.e.1 above or returned to the normal steady-state limit within 24 hours, the reactor shall be brought to the COLD SHUTDOWN condition, utilizing normal operating procedures, and the cause shall be ascertained and corrected. The reactor may be restarted and operation resumed if the maximum concentration of any of the contaminants did not exceed the permitted transient values; otherwise a safety review by the Plant Operations Review Committee shall be made before starting.

4. Concentrations of contaminants in the reactor coolant shall not exceed the following maximum limits when the reactor coolant temperature is ≤ 250°F.

CONTAMINANT	NORMAL CONCENTRATION (ppm)	TRANSIENT LIMITS (ppm)
A. Oxygen	Saturated	Saturated
B. Chloride	0.15	1.50
C. Fluoride	0.15	1.50

5. If the transient limits of TS 3.1.e.4 are exceeded or the concentrations cannot be returned to normal values within 48 hours, the reactor shall be brought to the COLD SHUTDOWN condition and the cause shall be ascertained and corrected.

6. To meet TS 3.1.e.1 and TS 3.1.e.4 above, reactor coolant pump operation shall be permitted for short periods, provided the coolant temperature does not exceed 250°F.

f. Minimum Conditions for Criticality

1. The reactor shall not be brought to a critical condition until the pressure-temperature state is to the right of the criticality limit line shown in Figure TS 3.1-1.

2. The reactor shall be maintained subcritical by at least 1% $\Delta k/k$ until normal water level is established in the pressurizer.

3. When the reactor is critical and $\leq$ 60% RATED POWER, the moderator temperature coefficient shall be $\leq$ 5.0 pcm/°F, except during LOW POWER PHYSICS TESTING. When the reactor is > 60% RATED POWER, the moderator temperature coefficient shall be zero or negative.

4. The reactor will have a moderator temperature coefficient no less negative than -8 pcm/°F for 95% of the cycle time at full power.

5. If the limits of 3.1.f.3 cannot be met, power operation may continue provided the following actions are taken:

   A. Within 24 hours, develop and maintain administrative control rod withdrawal limits sufficient to restore the moderator temperature coefficient to within the limits specified in TS 3.1.f.3. These withdrawal limits shall be in addition to the insertion limits specified in TS 3.10.d.

   B. If the actions specified in TS 3.1.f.5.A are not satisfied, be in HOT STANDBY within the next 6 hours.

ATTACHMENT 4

Letter from M. E. Warner (NMC)

To

Document Control Desk (NRC)

Dated

July 12, 2002

License Amendment Request 186

Strikeout TS Basis Page

TS B3.1-2

The requirement for at least one train of residual heat removal when in the REFUELING MODE is to ensure sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel < 140°F. The requirement to have two trains of residual heat removal operable when there is < 23 feet of water above the reactor vessel flange ensures that a single failure will not result in complete loss-of-heat removal capabilities. With the reactor vessel head removed and at least 23 feet of water above the vessel flange, a large heat sink is available. In the event of a failure of the OPERABLE~~operable~~ train, additional time is available to initiate alternate core cooling procedures.

Pressurizer Safety Valves (TS 3.1.a.3)

Each of the pressurizer safety valves is designed to relieve 325,000 lbs. per hour of saturated steam at its setpoint. Below 350°F and 350 psig, the Residual Heat Removal System can remove decay heat and thereby control system temperature and pressure. If no residual heat were removed by any of the means available, the amount of steam which could be generated at safety valve relief pressure would be less than half the valves' capacity. One valve therefore provides adequate protection against overpressurization.

At temperatures and pressures when the LTOP S~~s~~ystem is required, the pressurizer safeties no longer provide RCS system pressure protection. T~~h~~erefore, one or both pressurizer safeties can be removed or be inoperable while LTOP S~~s~~ystem is OPERABLE with the reactor head on.

Pressure Isolation Valves (TS 3.1.a.4)

The Basis for the Pressure Isolation Valves is discussed in the Reactor Safety Study (RSS), WASH-1400, and identifies an intersystem loss-of-coolant accident in a PWR which is a significant contributor to risk from core melt accidents (EVENT V). The design examined in the RSS contained two in-series check valves isolating the high pressure Primary Coolant System from the Low Pressure Injection System (LPIS) piping. The scenario which leads to the EVENT V accident is initiated by the failure of these check valves to function as a pressure isolation barrier. This causes an overpressurization and rupture of the LPIS low pressure piping which results in a LOCA that bypasses containment.[2]

PORVs and PORV Block Valves (TS 3.1.a.5)

The pressurizer power-operated relief valves (PORVs) operate as part of the Pressurizer Pressure Control System. They are intended to relieve RCS pressure below the setting of the code safety valves. These relief valves have remotely operated block valves to provide a positive shutoff capability should a PORV become inoperable.

The pressurizer PORVs and associated block valves must be OPERABLE to provide an alternate means of mitigating a design basis steam generator tube rupture. Thus, an inoperable PORV (for reasons other than seat leakage) or block valve is not permitted in the HOT STANDBY and OPERATING MODES for periods of more than 72 hours.

[2] Order for Modification of License dated 4/20/81

ATTACHMENT 5

Letter from M. E. Warner (NMC)

To

Document Control Desk (NRC)

Dated

July 12, 2002

License Amendment Request 186

Affected TS Basis Page

TS B3.1-2

The requirement for at least one train of residual heat removal when in the REFUELING MODE is to ensure sufficient cooling capacity is available to remove decay heat and maintain the water in the reactor vessel < 140°F. The requirement to have two trains of residual heat removal operable when there is < 23 feet of water above the reactor vessel flange ensures that a single failure will not result in complete loss-of-heat removal capabilities. With the reactor vessel head removed and at least 23 feet of water above the vessel flange, a large heat sink is available. In the event of a failure of the OPERABLE train, additional time is available to initiate alternate core cooling procedures.

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At temperatures and pressures when the LTOP System is required, the pressurizer safeties no longer provide RCS system pressure protection. Therefore, one or both pressurizer safeties can be removed or be inoperable while LTOP System is OPERABLE with the reactor head on.

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