Public Service

Wisconsin Public Service Corporation
(a subsidiary of WPS Resources Corporation)
Kewaunee Nuclear Power Plant
North 490, Highway 42
Kewaunee, WI 54216-9511
920-388-2560

January 13, 2000

10CFR50.90

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
Proposed Amendment 165 to the Kewaunee Nuclear Power Plant Technical Specifications, Containment Isolation

This proposed amendment (PA) to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS) is being submitted to revise section 3.6, "Containment." This PA requests a change to add Limiting Condition for Operation (LCO) and Allowed Outage Times (AOT) for containment isolation devices. It also provides additional information, clarification, and uniformity to the basis of the associated TS.

Attachment 1 to this letter contains a description of the changes, a safety evaluation, a significant hazards determination, and environmental considerations for the proposed changes. Attachment 2 contains the strike-out Technical Specification and basis pages: TS i, TS ii, TS iii TS 1.0-2, TS 3.6-1, TS 3.6-2, TS 3.6-3, TS 3.6-4, TS 3.6-5, TS B3.6-1, TS B3.6-2, TS B3.6-3, TS B3.6-4 and TS B3.6-5. Attachment 3 contains the affected Technical Specification and basis pages as revised.

In accordance with the requirements of 10 CFR 50.30(b), this submittal has been signed and notarized. A complete copy of this submittal has been transmitted to the State of Wisconsin as required by 10 CFR 50.91(b)(1).

Sincerely,

Tom Webb
for
Mark L. Marchi
Vice President-Nuclear

Subscribed and Sworn to
Before Me This 13th Day
of January, 2000

Jeanne M. Ferris
Notary Public, State of Wisconsin

My Commission Expires:
June 8, 2003

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

A001

\\GBNUC1\VOL1\GROUP\NUCLEAR\WPFILES\LIC\NRC\PA165.DOC

ATTACHMENT 1

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

January 13, 2000

<u>Proposed Amendment 165</u>

Description of Proposed Changes

Safety Evaluation

Significant Hazards Determination

Environmental Considerations

Introduction

Current Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS) lack clear guidance on Limiting Conditions for Operation (LCO) and Allowed Outage Times (AOT) concerning containment penetrations and associated isolation devices.

Section 3.6, "Containment," of the KNPP TS is being revised to add LCOs and AOTs for containment penetrations and valves when they are found or made inoperable.

TS 3.6.a.2 has been added to provide guidance for conditions when the Reactor Containment Vessel and Shield Building equipment hatches are outside of allowable TS operation.

TS 3.6.b and TS 3.6.c have been added to provide LCOs and AOTs for the containment penetrations and valves.

The information in TS 1.0.g, "Containment System Integrity" is being deleted as the modifications to section 3.6 of Kewaunee Technical Specification include all the information contained in TS 1.0.g.

These changes are consistent with NUREG-1431, Rev. 1, "WOG Standard Technical Specification" (STS) except for the proposed AOT for the containment isolation valves. WPSC is proposing a 24-hour AOT versus the STS AOT of 4 hours. Several numbering and editorial changes are also being made.

Description of Proposed Changes to Technical Specifications 1.0, "Definitions."

1) TS 1.0.g, the specification defining "Containment System Integrity," is being deleted.

Description of Proposed Changes to Technical Specification (TS) 3.6, "Containment System."

1) Various formatting changes are being made to Section 3.6 for clarity and uniformity.

2) Table of Contents pages TS i through TS iii are changed to show the deletion of the Containment System Integrity definition and addition of the Containment, Containment Air Locks, Containment Isolation Valves, and the renumbering of the Shield Building Ventilation and Auxiliary Building Special Ventilation System technical specification sections.

3) TS 3.6.a.2 is being added to incorporate the requirements from the former TS 1.0.g.2, which is being deleted, and to specify actions if those requirements cannot be met.

4) TS 3.6.b, "Containment Air Locks" is added to provide the requirements for the operability of the containment air locks. This technical specification is consistent with the requirements of the former definition section on containment integrity and is derived from the Standard Technical Specification requirements.

5) TS section 3.6.c, "Containment Isolation Valves" was added to provide delineation of the specifications for these valves. This change is consistent with the former section 1.0.g and STS with the following exceptions:

   - TS 1.0.g required all manual valves and blind flanges to be closed as required. This amendment will state that these components shall be operable and delineate their associated LCOs. This change is consistent with STS except for the AOT. The AOT requested is 24 hours for one inoperable valve versus the STS AOT of 4 hours.

   - TS 1.0.g required all automatic containment system isolation valves to be operable, or deactivated in the closed position, or at least one valve in each line having an inoperable valve closed. This proposed amendment is consistent with the existing TS 1.0.g except an AOT has now been specified. A 24-hour AOT is being proposed.

- For isolation devices inside containment, STS allows a relaxation for verifying the affected flow path is isolated prior to exceeding 200^{0}F if it was verified isolated within the previous 92 days. This proposed amendment would not allow that relaxation.

6) TS 3.6.d was added to separate and reformat the technical specifications for the Shield Building and Auxiliary Building Special Ventilation Systems. These are administrative changes and do not change any requirements for the systems.

7) TS Basis TS 3.6.b through TS 3.6.c was added to support the proposed TS changes.

8) TS Basis sections TS 3.6.d through TS 3.6.f were clarified to identify which TS the basis sections apply to.

Safety Evaluation of Proposed Change

Background

The Containment System is designed to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require. The principal function of the Containment Isolation System is to confine the fission products within the Primary Containment System boundary. Design limits for radiation doses resulting from accidental releases of radioactivity from a reactor plant are specified in 10 CFR 100. The off-site dose consequences for the loss-of-coolant accident (LOCA) are contained in the Updated Safety Analysis Report (USAR), Section 14.3.5. The containment vessel and its penetrations are designed to be essentially leak free and are demonstrated by tests to have a leakage rate not exceeding the allowable leakage rate (L_a) with margin. The proposed TS change does not affect the containment vessel design or its penetrations in any physical way.

Current Technical Specifications prevent plant startup greater than 200°F (Cold Shutdown) until containment integrity is established. This precludes any energy releases or buildup of containment pressure from flashing of reactor coolant in the event of a system break. If containment integrity is lost while above 200°F the operators are directed to restore Containment Integrity within one hour or to follow the standard shutdown sequence of TS 3.0.c. To ensure at least one valve is closed when needed, two isolation barriers are provided per containment penetration to ensure single failure criteria is met. If there were a failure of the operable containment isolation valve to close, current plant Emergency Operating Procedures (E-0, "Reactor Trip or Safety Injection") direct the operators to manually close the valve from the Control Room. This proposed amendment maintains the current defense-in-depth concept.

Verification Requirements

Although STS allows a relaxation of the verification of isolation devices inside containment if completed within the previous 92 days, Kewaunee chooses to require this verification each time intermediate shutdown is entered from cold shutdown.

Allowed Outage Time Requirements

To provide guidance concerning operability of the containment isolation valves, NUREG-1431, Rev. 1, " Westinghouse Plants Standard Technical Specifications," was used. The difference between NUREG-1431 and this amendment request is the AOT for a single inoperable containment isolation valve. Westinghouse Standard Technical Specifications allows a containment isolation valve to be inoperable for 4 hours prior to isolating the affected flow path. The proposed TS change would allow a containment isolation valve to be inoperable for 24 hours prior to affected flow path isolation.

Although no explicit guidance is now provided by Kewaunee's TS, Wisconsin Public Service Corporation (WPSC) has implemented a 1-hour AOT for a single inoperable containment isolation valve. A search was performed of the Licensing Basis for the Kewaunee Nuclear Power Plant. The only relevant information on the basis for an AOT for a containment isolation

(CI) valve was found in the basis for TS Section 3.7, "Electrical Systems." This requested 24-hour inoperable time limitation is consistent with Kewaunee TS Section 3.7 basis.

Technical Specification Section 3.7, "Electrical Systems," TS 3.7.b.6, allows an individual 4160 Volt or 480 Volt ESF bus to be out of service for up to 24 hours. Included in the 480 volt bus loads, which would lose power when the 480 Volt ESF bus is out of service, are individual train containment isolation valves. TS Section 3.7 basis states:

> *"The intent of this TS is to provide assurance that at least one external source and one standby source of electrical power is always available to accomplish safe shutdown and containment isolation and to operate required engineered safety features equipment following an accident."*

Therefore, the original licensing basis of the plant allows one 4160 or 480 Volt ESF bus to be inoperable for 24 hours, which includes the associated containment isolation valves, such as motor operated valves that will fail as is. Thus, this TS change does not alter the original licensing.

The purpose of LCOs is to permit temporary outages of redundant components and are specified for specific time intervals that are consistent with maintenance. Inoperability of a single component does not negate the ability of the system to perform its function, but it reduces the redundancy provided in the plant design and thereby limits the ability to tolerate additional equipment failures. However, the equipment AOTs specified in the LCOs are a temporary relaxation of the single failure criterion, which, consistent with overall system reliability considerations, provides a limited time to restore equipment to the operable condition. Kewaunee experience shows that 4 hours is not enough time to perform minor maintenance on containment isolation devices. Depending upon the failure mechanism the repairs may take 10 – 12 hours and the post maintenance testing may take another 6 – 10 hours. Therefore, the 24-hour AOT is consistent with previous minor maintenance philosophy.

A risk assessment of the probability of a large break loss of coolant accident (LBLOCA), medium break LOCA (MBLOCA), and a small break LOCA (SBLOCA) with a train of containment isolation (CI) failing during a 4-hour verses a 24-hour time span was conducted, See Figure 1. This change in probability is considered insignificant. This calculation includes failures associated with:

(1) the CI signal,

(2) mechanical failures,

(3) operator errors, and

(4) common cause failures.

LOCA and CI Failure Probability		
Accident	4-Hour AOT	24-Hour AOT
LBLOCA	1.48×10^{-8}	8.86×10^{-8}
MBLOCA	6.82×10^{-8}	4.09×10^{-7}
SBLOCA	1.51×10^{-7}	9.08×10^{-7}

Figure 1

Additionally, the incremental conditional large early release probability (ICLERP) was calculated using an AOT of 24-hours. As the CI function is not a contributor to the Core Damage Frequency (CDF), a change in CDF and incremental conditional core damage probability (ICCDP) was not calculated. The large early release frequency (LERF) was recalculated assuming one train of CI was out of service. This LERF was compared to the base LERF and multiplied by 24 hours to obtain the ICLERP. The ICLERP calculated equaled 1.5×10^{-10}, a factor of 300 below the 5×10^{-8} recommendation of Regulatory Guide 1.177 for consideration as having a small impact on plant risk.

Based on a containment release rate of one containment volume per hour, only penetrations of 5 inches or greater were included in the LERF calculation. This list of included penetrations was further reduced by only including a penetration if the below Criterion 1 or all of the below Criterion 2A and 2B were met.

1. The line penetrating containment is a containment sump or reactor cavity sump drain line.

2A. The line penetrating containment directly communicates with either the containment atmosphere or the reactor coolant system, and

2B. The line penetrating containment is not part of a closed system outside of containment, capable of withstanding severe accident conditions.

This left two types of penetrations: (1) those that are administratively closed during the entire cycle and, (2) those that are isolated by two check valves. For this calculation it was assumed that one of the two check valves is out of service for these two remaining penetrations.

This AOT of 24 hours has been granted previously to another licensee. NRC approved the AOT per letter, dated February 17, 1994 from the US NRC to Houston Lighting & Power Company, "Issuance of Amendment Nos. 59 and 47 to Facility Operating License Nos. NPF-76 and NPF-80 and Related Relief Requests – South Texas Project, Units 1 and 2 (TAC Nos. M76048 and M76049)." This approved amendment states the following for the LCO and AOT for containment isolation valves:

LIMITING CONDITION FOR OPERATION

3.6.3 The containment isolation valves shall be OPERABLE with isolation times less than or equal to the required isolation times.

APPLICABILITY: *MODES 1, 2, 3 and 4*

ACTION:

With one or more of the isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and:

a. *Restore the inoperable valve(s) to OPERABLE status within 24 hours, or*

b. *Isolate each affected penetration within 24 hours by use of at least one deactivated automatic valve secured in the isolation position, or*

c. *Isolate each affected penetration within 24 hours by use of at least one closed manual valve or blind flange, or*

d. *Be in at least HOT STANDBY within the next 6 hours and in cold shutdown within the following 30 hours.*

Conclusion

Based upon the consistency with KNPP's current licensing bases, the AOT philosophy for completion of maintenance, the PRA assessment of a factor of 300 below the Regulatory Guidelines for consideration as having a small impact on plant risk, and prior staff approval of this extension for another facility, KNPP believes this change does not result in a significant raise in the risk to the health and safety of the public.

Significant Hazards Determination of Proposed Change

The proposed change was reviewed in accordance with 10 CFR 50.92 to show no significant hazard exists. The proposed change will not:

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

This Technical Specification change provides definition for the AOT for a containment isolation valve and containment air lock. The original design and design basis of the plant is still maintained and the probability and consequences of previously evaluated accidents is unchanged. In our current Technical Specifications the allowed outage time for a safeguards 480-volt bus is 24 hours. The basis for this outage time states:

> *"The intent of this TS is to provide assurance that at least one external source and one standby source of electrical power is always available to accomplish safe shutdown and containment isolation and to operate required engineered safety features equipment following an accident."*

With one 480-volt safeguards bus out of service an associated motor operated containment isolation valve is also out of service. Since the 24-hour AOT is part of Kewaunee's original design basis, allowing the containment isolation valves to be out of service for 24 hours does not increase the probability or consequences of an accident previously evaluated.

A risk assessment of the probability of a -loss-of-coolant-accident with a train of containment isolation failing during a 4-hour verse a 24-hour time span was conducted. The probability of LOCA coincident with the failure of containment isolation occurring during a 4-hour period versus a 24-hour period is shown on Figure 1. This change in probability is considered insignificant.

The proposed TS changes do not involve any physical or operational changes to structures, systems or components. The current safety analysis and design basis for the accident mitigation functions of the containment, the airlocks, and the containment isolation valves are maintained. On-site and off-site dose consequences remain unaffected.

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

The function of the containment vessel is to contain the radiologically hazardous material following a LOCA. By maintaining at least one containment isolation barrier intact the vessel can perform its function. This amendment still ensures that at least one barrier is intact or the leakage is evaluated not to exceed that which is already evaluated and allowed by current technical specification.

The accidents considered are found in the Safety Analysis, Section 14 of the USAR. The proposed change does not involve a change to the plant design (structures, systems or components) or operation. No new failure mechanisms beyond those already considered in the current plant Safety Analysis are introduced. No new accident is introduced and no safety-related equipment or safety functions are altered. The proposed change does not affect any of the parameters or conditions that contribute to initiation of any accidents.

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

With one containment barrier intact during plant operation the isolation of containment is still ensured. The plant's original design basis addressed the inability of one of the two containment isolation valves to operate for a 24-hour period. As this AOT has been previously considered, there therefore is no reduction in a margin of safety.

Environmental Considerations of Proposed Change

This proposed amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or a change to an inspection or surveillance requirement. WPSC has determined that the proposed amendment involves no significant hazards consideration and no significant change in the types, or significant increase in the amounts of any effluents that may be released off-site and that there is no significant increase 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 Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

January 13, 2000

Proposed Amendment 165

Strike-Out TS Pages:

Table of Contents TS i through TS iii
TS 1.0-2
TS 3.6-1 through TS 3.6-5
TS B3.6-1 through TS B3.6-5

TABLE OF CONTENTS
TECHNICAL SPECIFICATIONS
APPENDIX A

e. <u>OPERABLE-OPERABILITY</u>

A system or component is OPERABLE or has OPERABILITY when it is capable of performing its intended function within the required range. The system or component shall be considered to have this capability when: (1) it satisfies the LIMITING CONDITIONS FOR OPERATION defined in TS 3.0; and (2) it has been tested periodically in accordance with TS 4.0 and has met its performance requirements.

Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that is required for the system or component to perform its intended function is also capable of performing their related support functions.

f. <u>OPERATING</u>

A system or component is considered to be OPERATING when it is performing the intended function in the intended manner.

g. ~~CONTAINMENT SYSTEM INTEGRITY~~

~~CONTAINMENT SYSTEM INTEGRITY is defined to exist when:~~

~~1. The nonautomatic Containment System isolation valves and blind flanges are closed as required.~~

~~2. The Reactor Containment Vessel and Shield Building equipment hatches are properly closed.~~

~~3. At least ONE door in both the personnel and the emergency airlocks is properly closed.~~

~~4. The required automatic Containment System isolation valves are OPERABLE or are deactivated in the closed position or at least one valve in each line having an inoperable valve is closed.~~

~~5. All requirements of TS 4.4 with regard to Containment System leakage and test frequency are satisfied.~~

~~6. The Shield Building Ventilation System and the Auxiliary Building Special Ventilation System satisfy the requirements of TS 3.6.b.~~

DELETED

3.6 **CONTAINMENT SYSTEM**

APPLICABILITY

Applies to the integrity of the Containment System.

OBJECTIVE

To define the operating status of the Containment System.

SPECIFICATION

a. Containment

a.1. ~~CONTAINMENT SYSTEM INTEGRITY~~Containment System Integrity shall not be violated if there is fuel in the reactor which has been used for power operation, except whenever either of the following conditions remains satisfied:

~~1.~~A. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

~~2.~~B. The reactor is in the REFUELING shutdown condition.

2. Whenever Containment System Integrity is required, the Reactor Containment Vessel and Shield Building equipment hatches are properly closed.

A. If Containment System Integrity is required and the OPERABILITY requirements of TS 3.6.a.2 are not met, then within 1 hour initiate action to:

1. Achieve HOT STANDBY within the next 6 hours,

2. Achieve HOT SHUTDOWN within the following 6 hours, and

3. Achieve COLD SHUTDOWN within the next 36 hours.

b. Containment Air Locks

1. When Containment System Integrity is required, both Containment Air Locks shall be OPERABLE, except as permitted by TS 3.6.b.2.

2. When Containment System Integrity is required, the following conditions of inoperability may exist during the time interval specified:

   A. Both air locks may have one inoperable door if:

      1. An OPERABLE door is verified closed in the affected air lock(s) within 1 hour, and

      2. The OPERABLE door(s) is administratively controlled closed within 24 hours of discovery, except that the OPERABLE door may be opened for entry or exit to repair the inoperable air lock component.

   B. Both air locks may have an inoperable interlock mechanism if:

      1. An OPERABLE door is verified closed in the affected air lock(s) within 1 hour, and

      2. The OPERABLE door(s) is administratively controlled closed within 24 hours of discovery, except that the OPERABLE door may be opened for entry or exit to repair the inoperable air lock component if the entry/exit is under the control of an individual dedicated to perform the interlock function.

   C. One or more containment air locks may be inoperable for reasons other than those in TS 3.6.b.2.A and TS 3.6.b.2.B, if:

      1. Action is initiated immediately to evaluate overall containment leakage rate is less than allowed by TS 4.4,

      2. One door is verified closed in the affected air lock within one hour, and

      3. Restore the air lock to OPERABLE status within 24 hours.

3. If Containment System Integrity is required and the OPERABILITY requirements of TS 3.6.b.2 are not met within the times specified, then within 1 hour initiate action to:

   A. Achieve HOT STANDBY within the next 6 hours,

   B. Achieve HOT SHUTDOWN within the following 6 hours, and

   C. Achieve COLD SHUTDOWN within the next 36 hours.

c. Containment Isolation Valves

1. When Containment System Integrity is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.c.2.

2. When Containment System Integrity is required, the following conditions of inoperability may exist during the time interval specified:

A. With one containment isolation valve in a penetration inoperable:

1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one: a) closed and de-activated automatic valve, b) closed manual valve, c) blind flange, or d) check valve with flow through the valve secured. Except that a check valve shall not be used for flow path isolation if the affected penetration has only one containment isolation valve.

2. Verify the affected flow path is isolated:

a) For isolation devices outside containment, at least once per 31 days, or

b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN.

B. With two containment isolation valves in a penetration inoperable:

1. Return at least one isolation valve to an OPERABLE status within 1 hour or isolate the affected flow path by use of at least one: a) closed and de-activated automatic valve, b) closed manual valve, or c) blind flange.

2. Verify the affected flow path is isolated:

a) For isolation devices outside containment, at least once per 31 days, or

b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN.

C. Containment Penetration flow paths with inoperable containment isolation valves may be unisolated if a dedicated operator is stationed at the valve controls to close the valve, if needed, with continuous communication with the control room.

3. If Containment System Integrity is required and the OPERABILITY requirements of TS 3.6.c.2 are not met within the times specified, then within 1 hour initiate action to:

A. Achieve HOT STANDBY within the next 6 hours,

B. Achieve HOT SHUTDOWN within the following 6 hours, and

C. Achieve COLD SHUTDOWN within the next 36 hours.

d. Shield Building Ventilation and Auxiliary Building Special Ventilation Systems

1. When Containment System Integrity is required, both trains of Shield Building Ventilation System and Auxiliary Building Special Ventilation System shall be OPERABLE, except as permitted by TS 3.6.d.2.

~~b All of the following conditions shall be satisfied whenever CONTAINMENT SYSTEM INTEGRITY, as defined by TS 1.0.g, is required:~~

2. When containment system integrity is required, the following conditions of inoperability may exist during the time specified or the reactor shall be shutdown within 12 hours:

~~1.~~A. ~~Both trains of the Shield Building Ventilation System, including filters and heaters shall be OPERABLE or the reactor shall be shut down within 12 hours, except that w~~When one of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

~~2.~~B. ~~Both trains of the Auxiliary Building Special Ventilation System including filters and heaters shall be OPERABLE or the reactor shall be shut down within 12 hours, except that w~~When one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

3. Performance Requirements

   A. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal.

   B. The results of laboratory carbon sample analysis from the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System carbon shall show ≥90% radioactive methyl iodide removal at conditions of 130°C, 95% RH for the Shield Building Ventilation System and 66°C, 95% RH for the Auxiliary Building Special Ventilation System.

   C. Fans shall operate within ±10% of design flow when tested.

~~c.~~e. If the internal pressure of the reactor containment vessel exceeds 2 psi, the condition shall be corrected within 8 hours or the reactor shall be placed in a subcritical condition.

~~d.~~f. The reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is >40°F.

BASIS

Containment System (TS 3.6)

TS 3.6.b

Containment entry and exit is permissible to perform repairs on an inoperable air lock. This means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

Air lock doors in high radiation areas may be verified locked closed by administrative controls or remote indications. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

With the containment air locks interlock mechanism inoperable, entry into and exit from containment is allowed if administratively controlled. To enter/exit containment, the evolution must be under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

With one or more air locks inoperable, for reasons other than those stated in TS 3.6.b.2.A and TS 3.6.b.2.B action is to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed, yet only 1 hour would be provided to verify closed one air lock door prior to requiring a plant shutdown. In addition, even with both doors failing, the overall containment leakage rate can still be within limits. This specified time period is consistent with the ACTIONS of which requires that containment be restored to OPERABLE status within 1 hour. Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

If the inoperable containment air lock cannot be restored to OPERABLE status within the required Completion Time, action must be initiated within one hour to bring the plant to HOT STANDBY within the next 6 hours, HOT SHUTDOWN within the following 6 hours, and COLD SHUTDOWN within the next 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TS 3.6.c

In the event a containment isolation valve in one or more penetration flow paths is inoperable the affected penetration flow path must be isolated within the specified time constraints. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are 1) a closed and de-activated automatic containment isolation valve, 2) a closed manual valve, 3) a blind flange, and 4) a check valve with flow through the valve secured. For a penetration flow path isolated, the device used to isolate the penetration should be the closest available one to containment. The 24-hour completion time is reasonable, considering the time required to isolate the penetration, perform maintenance, and the relative importance of supporting containment OPERABILITY.

For affected containment penetration flow paths that cannot be restored to OPERABLE status within the 24-hour completion time and that have been isolated, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure containment penetrations, requiring isolation following an accident and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment and capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period is specified as "prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN." This is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility. These isolated penetration flow paths may be unisolated under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be isolated when a need for containment isolation is indicated.

Isolation devices located in high radiation areas shall be verified closed by use of administrative means. Verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position is small.

Manual isolation components are considered OPERABLE when manual valves are closed, blind flanges are in place, and closed systems are intact.

De-activation of an automatic containment isolation valve is accomplished by removing or interrupting the valves motive force thus preventing a change in the valve position by a single active failure. De-activation may be accomplished by opening the supply breaker for a motor operated valve, isolating air to an air operated valve, removing the supply fuse for a solenoid operated valve, or any other means for ensuring the isolation barrier cannot be affected by a single active failure.

TS 3.6.d

Proper functioning of the Shield Building Ventilation System is essential to the performance of the Containment System. Therefore, except for reasonable periods of maintenance outage for one redundant train of equipment, the complete system should be in readiness whenever CONTAINMENT SYSTEM INTEGRITY is required. Proper functioning of the Auxiliary Building Special Ventilation System is similarly necessary to preclude possible unfiltered leakage through penetrations that enter the Special Ventilation Zone (Zone SV).

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

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

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

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

The COLD SHUTDOWN condition precludes any energy releases or buildup of containment pressure from flashing of reactor coolant in the event of a system break. The restriction to fuel that has been irradiated during power operation allows initial testing with an open containment when negligible activity exists. The shutdown margin for the COLD SHUTDOWN condition assures subcriticality with the vessel closed even if the most reactive RCC assembly were inadvertently withdrawn. Therefore, the two parts of TS 3.6.a allow CONTAINMENT SYSTEM INTEGRITY to be violated when a fission product inventory is present only under circumstances that preclude both criticality and release of stored energy.

When the reactor vessel head is removed with the CONTAINMENT SYSTEM INTEGRITY violated, the reactor must not only be in the COLD SHUTDOWN condition, but also in the REFUELING shutdown condition. A 5% shutdown margin is specified for REFUELING conditions to prevent the occurrence of criticality under any circumstances, even when fuel is being moved during REFUELING operations. ~~The requirement of a 40°F minimum containment ambient temperature is to assure that the minimum containment vessel metal temperature is well above NDTT + 30° criterion for the shell material.~~

This specification also prevents positive insertion of reactivity whenever Containment System integrity is not maintained if such addition would violate the respective shutdown margins. Effectively, the boron concentration must be maintained at a predicted concentration of 2,100 ppm[1] or more if the Containment System is to be disabled with the reactor pressure vessel open.

TS 3.6.e

The 2 psi limit on internal pressure provides adequate margin between the maximum internal pressure of 46 psig and the peak accident pressure resulting from the postulated Design Basis Accident as discussed in Sections 14.2 and 14.3 of the USAR.[2]

---

[1] USAR Table 3.2-1

[2] USAR Section 5

The reactor containment vessel is designed for 0.8 psi internal vacuum, the occurrence of which will be prevented by redundant vacuum breaker systems.

TS 3.6.f

The requirement of a 40°F minimum containment ambient temperature is to assure that the minimum containment vessel metal temperature is well above NDTT + 30° criterion for the shell material.

ATTACHMENT 3

Letter from Mark L. Marchi (WPSC)

To

Document Control Desk (NRC)

Dated

January 13, 2000

Proposed Amendment 165

Affected TS Pages:

Table of Contents TS i through TS iii
TS 1.0-2
TS 3.6-1 through TS 3.6-5
TS B3.6-1 through TS B3.6-5

TABLE OF CONTENTS
TECHNICAL SPECIFICATIONS
APPENDIX A

Section	Title	Page

e. OPERABLE-OPERABILITY

A system or component is OPERABLE or has OPERABILITY when it is capable of performing its intended function within the required range. The system or component shall be considered to have this capability when: (1) it satisfies the LIMITING CONDITIONS FOR OPERATION defined in TS 3.0; and (2) it has been tested periodically in accordance with TS 4.0 and has met its performance requirements.

Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that is required for the system or component to perform its intended function is also capable of performing their related support functions.

f. OPERATING

A system or component is considered to be OPERATING when it is performing the intended function in the intended manner.

g. DELETED

3.6 CONTAINMENT SYSTEM

APPLICABILITY

Applies to the integrity of the Containment System.

OBJECTIVE

To define the operating status of the Containment System.

SPECIFICATION

a. Containment

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

   A. The reactor is in the COLD SHUTDOWN condition with the reactor vessel head installed, or

   B. The reactor is in the REFUELING shutdown condition.

2. Whenever Containment System Integrity is required, the Reactor Containment Vessel and Shield Building equipment hatches are properly closed.

   A. If Containment System Integrity is required and the OPERABILITY requirements of TS 3.6.a.2 are not met, then within 1 hour initiate action to:

      1. Achieve HOT STANDBY within the next 6 hours,

      2. Achieve HOT SHUTDOWN within the following 6 hours, and

      3. Achieve COLD SHUTDOWN within the next 36 hours.

b. Containment Air Locks

1. When Containment System Integrity is required, both Containment Air Locks shall be OPERABLE, except as permitted by TS 3.6.b.2.

2. When Containment System Integrity is required, the following conditions of inoperability may exist during the time interval specified:

   A. Both air locks may have one inoperable door if:

      1. An OPERABLE door is verified closed in the affected air lock(s) within 1 hour, and

      2. The OPERABLE door(s) is administratively controlled closed within 24 hours of discovery, except that the OPERABLE door may be opened for entry or exit to repair the inoperable air lock component.

   B. Both air locks may have an inoperable interlock mechanism if:

      1. An OPERABLE door is verified closed in the affected air lock(s) within 1 hour, and

      2. The OPERABLE door(s) is administratively controlled closed within 24 hours of discovery, except that the OPERABLE door may be opened for entry or exit to repair the inoperable air lock component if the entry/exit is under the control of an individual dedicated to perform the interlock function.

   C. One or more containment air locks may be inoperable for reasons other than those in TS 3.6.b.2.A and TS 3.6.b.2.B, if:

      1. Action is initiated immediately to evaluate overall containment leakage rate is less than allowed by TS 4.4,

      2. One door is verified closed in the affected air lock within one hour, and

      3. Restore the air lock to OPERABLE status within 24 hours.

3. If Containment System Integrity is required and the OPERABILITY requirements of TS 3.6.b.2 are not met within the times specified, then within 1 hour initiate action to:

   A. Achieve HOT STANDBY within the next 6 hours,

   B. Achieve HOT SHUTDOWN within the following 6 hours, and

   C. Achieve COLD SHUTDOWN within the next 36 hours.

c. Containment Isolation Valves

1. When Containment System Integrity is required, all containment isolation valves and blind flanges shall be OPERABLE, except as permitted by TS 3.6.c.2.

2. When Containment System Integrity is required, the following conditions of inoperability may exist during the time interval specified:

   A. With one containment isolation valve in a penetration inoperable:

      1. Return the valve to OPERABLE status within 24 hours or isolate the affected penetrations flow path by use of at least one: a) closed and de-activated automatic valve, b) closed manual valve, c) blind flange, or d) check valve with flow through the valve secured. Except that a check valve shall not be used for flow path isolation if the affected penetration has only one containment isolation valve.

      2. Verify the affected flow path is isolated:

         a) For isolation devices outside containment, at least once per 31 days, or

         b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN.

   B. With two containment isolation valves in a penetration inoperable:

      1. Return at least one isolation valve to an OPERABLE status within 1 hour or isolate the affected flow path by use of at least one: a) closed and de-activated automatic valve, b) closed manual valve, or c) blind flange.

      2. Verify the affected flow path is isolated:

         a) For isolation devices outside containment, at least once per 31 days, or

         b) For isolation devices inside containment, prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN.

   C. Containment Penetration flow paths with inoperable containment isolation valves may be unisolated if a dedicated operator is stationed at the valve controls to close the valve, if needed, with continuous communication with the control room.

3. If Containment System Integrity is required and the OPERABILITY requirements of TS 3.6.c.2 are not met within the times specified, then within 1 hour initiate action to:

A. Achieve HOT STANDBY within the next 6 hours,

B. Achieve HOT SHUTDOWN within the following 6 hours, and

C. Achieve COLD SHUTDOWN within the next 36 hours.

d. Shield Building Ventilation and Auxiliary Building Special Ventilation Systems

1. When Containment System Integrity is required, both trains of Shield Building Ventilation System and Auxiliary Building Special Ventilation System shall be OPERABLE, except as permitted by TS 3.6.d.2.

2. When containment system integrity is required, the following conditions of inoperability may exist during the time specified or the reactor shall be shutdown within 12 hours:

A. When one of the two trains of the Shield Building Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

B. When one of the two trains of the Auxiliary Building Special Ventilation System is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 7 days.

3. Performance Requirements

A. The results of the in-place cold DOP and halogenated hydrocarbon tests at design flows on HEPA filters and charcoal adsorber banks shall show ≥99% DOP removal and ≥99% halogenated hydrocarbon removal.

B. The results of laboratory carbon sample analysis from the Shield Building Ventilation System and the Auxiliary Building Special Ventilation System carbon shall show ≥90% radioactive methyl iodide removal at conditions of 130°C, 95% RH for the Shield Building Ventilation System and 66°C, 95% RH for the Auxiliary Building Special Ventilation System.

C. Fans shall operate within ±10% of design flow when tested.

e. If the internal pressure of the reactor containment vessel exceeds 2 psi, the condition shall be corrected within 8 hours or the reactor shall be placed in a subcritical condition.

f. The reactor shall not be taken above the COLD SHUTDOWN condition unless the containment ambient temperature is >40°F.

BASIS

Containment System (TS 3.6)

TS 3.6.b

Containment entry and exit is permissible to perform repairs on an inoperable air lock. This means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

Air lock doors in high radiation areas may be verified locked closed by administrative controls or remote indications. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

With the containment air locks interlock mechanism inoperable, entry into and exit from containment is allowed if administratively controlled. To enter/exit containment, the evolution must be under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

With one or more air locks inoperable, for reasons other than those stated in TS 3.6.b.2.A and TS 3.6.b.2.B action is to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed, yet only 1 hour would be provided to verify closed one air lock door prior to requiring a plant shutdown. In addition, even with both doors failing, the overall containment leakage rate can still be within limits. This specified time period is consistent with the ACTIONS of which requires that containment be restored to OPERABLE status within 1 hour. Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

If the inoperable containment air lock cannot be restored to OPERABLE status within the required Completion Time, action must be initiated within one hour to bring the plant to HOT STANDBY within the next 6 hours, HOT SHUTDOWN within the following 6 hours, and COLD SHUTDOWN within the next 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

TS 3.6.c

In the event a containment isolation valve in one or more penetration flow paths is inoperable the affected penetration flow path must be isolated within the specified time constraints. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are 1) a closed and de-activated automatic containment isolation valve, 2) a closed manual valve, 3) a blind flange, and 4) a check valve with flow through the valve secured. For a penetration flow path isolated, the device used to isolate the penetration should be the closest available one to containment. The 24-hour completion time is reasonable, considering the time required to isolate the penetration, perform maintenance, and the relative importance of supporting containment OPERABILITY.

For affected containment penetration flow paths that cannot be restored to OPERABLE status within the 24-hour completion time and that have been isolated, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure containment penetrations, requiring isolation following an accident and no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment and capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period is specified as "prior to entering INTERMEDIATE SHUTDOWN from COLD SHUTDOWN." This is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility. These isolated penetration flow paths may be unisolated under administrative control. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be isolated when a need for containment isolation is indicated.

Isolation devices located in high radiation areas shall be verified closed by use of administrative means. Verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position is small.

Manual isolation components are considered OPERABLE when manual valves are closed, blind flanges are in place, and closed systems are intact.

De-activation of an automatic containment isolation valve is accomplished by removing or interrupting the valves motive force thus preventing a change in the valve position by a single active failure. De-activation may be accomplished by opening the supply breaker for a motor operated valve, isolating air to an air operated valve, removing the supply fuse for a solenoid operated valve, or any other means for ensuring the isolation barrier cannot be affected by a single active failure.

TS 3.6.d

Proper functioning of the Shield Building Ventilation System is essential to the performance of the Containment System. Therefore, except for reasonable periods of maintenance outage for one redundant train of equipment, the complete system should be in readiness whenever CONTAINMENT SYSTEM INTEGRITY is required. Proper functioning of the Auxiliary Building Special Ventilation System is similarly necessary to preclude possible unfiltered leakage through penetrations that enter the Special Ventilation Zone (Zone SV).

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

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

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

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

The COLD SHUTDOWN condition precludes any energy releases or buildup of containment pressure from flashing of reactor coolant in the event of a system break. The restriction to fuel that has been irradiated during power operation allows initial testing with an open containment when negligible activity exists. The shutdown margin for the COLD SHUTDOWN condition assures subcriticality with the vessel closed even if the most reactive RCC assembly were inadvertently withdrawn. Therefore, the two parts of TS 3.6.a allow CONTAINMENT SYSTEM INTEGRITY to be violated when a fission product inventory is present only under circumstances that preclude both criticality and release of stored energy.

When the reactor vessel head is removed with the CONTAINMENT SYSTEM INTEGRITY violated, the reactor must not only be in the COLD SHUTDOWN condition, but also in the REFUELING shutdown condition. A 5% shutdown margin is specified for REFUELING conditions to prevent the occurrence of criticality under any circumstances, even when fuel is being moved during REFUELING operations.

This specification also prevents positive insertion of reactivity whenever Containment System integrity is not maintained if such addition would violate the respective shutdown margins. Effectively, the boron concentration must be maintained at a predicted concentration of 2,100 ppm[1] or more if the Containment System is to be disabled with the reactor pressure vessel open.

TS 3.6.e

The 2 psi limit on internal pressure provides adequate margin between the maximum internal pressure of 46 psig and the peak accident pressure resulting from the postulated Design Basis Accident as discussed in Sections 14.2 and 14.3 of the USAR.[2]

The reactor containment vessel is designed for 0.8 psi internal vacuum, the occurrence of which will be prevented by redundant vacuum breaker systems.

---

[1] USAR Table 3.2-1

[2] USAR Section 5

TS 3.6.f

The requirement of a 40°F minimum containment ambient temperature is to assure that the minimum containment vessel metal temperature is well above NDTT + 30° criterion for the shell material.