ENCLOSURE 1

CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255

TECHNICAL SPECIFICATION CHANGE REQUEST
CONTAINMENT SYSTEM

CONSUMERS POWER COMPANY
Docket 50-255
Technical Specifications Change Request
License DPR-20

It is requested that the Technical Specifications contained in the Facility Operating License DPR-20, Docket 50-255, for the Palisades Plant be changed as described below.

Attachment 1 to this change request contains current Technical Specifications pages with the proposed changes included and marked in the margin. Attachment 2 contains the affected current Technical Specifications pages marked with shaded text for the proposed additions and with a line drawn through proposed deletions.

The following abbreviations are used in this change request:

FSAR	Final Safety Analysis Report
GL	Generic Letter
LOCA	Loss of Coolant Accident
LCO	Limiting Condition for Operation
MSLB	Main Steam Line Break
PCS	Primary Coolant System
SR	Surveillance Requirement
STS	Standard Technical Specifications (NUREG 1432)
TS	Current Palisades Technical Specifications

The proposed changes are described below. Each change is classified as one of the following categories:

ADMINISTRATIVE - A change which is editorial in nature, which only involves movement of requirements within the TS without affecting their technical content, or clarifies existing TS requirements. These changes are discussed generically in the No Significant Hazards Determination.

MORE RESTRICTIVE - A change which only adds new requirements, or which revised an existing requirement resulting in additional operational restriction. These changes are discussed generically in the No Significant Hazards Determination.

LESS RESTRICTIVE - A change which deletes any existing requirement, or which revises any existing requirement resulting in less operational restriction. These changes are described individually in the No Significant Hazards Determination.

I. <u>The following Changes are Proposed:</u>

A. Throughout TS Sections 3.6 and 4.5, terms defined in Section 1.0 of the TS were replaced with upper case text to indicate that the term was a defined term. This change emulates Standard Technical Specification (STS) usage and has been done in other recently revised sections of TS.

Change A does not alter any TS requirements and is therefore classified as Administrative.

B. The definition of Containment Integrity has been revised as follows:

1) The phrase "when all the following are true" was deleted as unnecessary. It is implied that the listed conditions must be true.

Change B.1 does not alter any TS requirements and is therefore classified as Administrative.

2) Part "a" of the definition was revised to delete the exception provided by its reference to Table 3.6.1 (which is deleted by Change H), in accordance with the guidance of GL 91-08. The exception provided in Table 3.6.1 allows the manual isolation valves associated with Penetration 33, the Safety Injection Tank drain line) to be opened under administrative control. That allowance is restored by a similar, but more general, note added to LCO 3.6.1. The generalization of the allowance is addressed by Change G.2.

Change B.2, moves an existing allowance to open specific manual containment isolation within the TS; that allowance is generalized by Change G.2. Change B.2 is therefore classified as Administrative, and the generalization of the subject allowance is addressed under Change G.2.

3) Part "c" of the definition was revised to delete the word "personnel.". There are two air locks in the Palisades containment. While both are for personnel entry and exit, one is referred to as the "Personnel Air Lock" and the other as the "Emergency Air Lock." This change is intended to assure the requirement is understood to apply to both air locks and not just the "Personnel Air Lock."

Change B.3 does not alter any TS requirements and is therefore classified as Administrative.

4) Part "d" of the definition was revised to delete the parenthetical wording "(as demonstrated by satisfying isolation times specified in Table 3.6.1 and leakage criterion in Specification 4.5.2) which amplifies the defined term "OPERABLE". The deleted wording is redundant to the requirements of LCO 4.0.3, and the definition of "operable".

The deleted wording was part of the initial issue of the Palisades TS, circa 1971. At that time, the definition of "operable" read: "A system or component is operable if it is capable of fulfilling its design functions." and TS did not contain the explicit LCO 4.0.3 requirement to declare equipment to be inoperable when its surveillance was not met. Since that time, Amendment 130 added LCO 4.0.3 and Amendment 162 revised the definition of "operable" to agree with STS.

Change B.4 does not alter any TS requirements and is therefore classified as Administrative.

C. TS Section 3.6 was revised to delete the "Applicability" and "Objective" statements. The Applicability statement does not specify the applicable conditions as is done in STS, rather it states: "Applies to the reactor containment building." The Objective statement is redundant to information provided in the Basis.

Change C is considered ADMINISTRATIVE because the existing "Applicability" and "Objective" statements contain no requirements and serve no function.

D. LCO Section 3.6 was rearranged to place all LCO requirements together on page 3-40, and to put all of the bases sections together on the following page. A basis paragraph was added for LCO 3.6.4, Hydrogen Recombiners, where none is currently provided. The last basis paragraph on current page 3-40g was deleted since it is not pertinent to the requirements themselves. In addition, the bases were editorially revised to be consistent with the LCO sequence, terminology, and requirements. The basis paragraphs in the marked up pages were numbered to show their proposed order.

Change D does not alter any TS requirements and is therefore classified as Administrative.

E. LCO 3.6.1 was revised editorially as follows:

1. The title was replaced with a general requirement for containment integrity. The wording "Containment integrity shall not be violated" was replaced with "CONTAINMENT INTEGRITY shall be maintained". The conditions requiring containment integrity were retained as items a, b, and c.

   Change E.1 does not alter any TS requirements and is therefore classified as Administrative.

2. The words in LCO 3.6.1a "as defined in Specification 1.0" were deleted as unnecessary. The information that Containment Integrity is a defined term is now provided by the upper case text.

   Change E.2 does not alter any TS requirements and is therefore classified as Administrative.

3. LCO 3.6.1a was revised to state the LCO applicability as "when the plant is above COLD SHUTDOWN" rather than to state when it could be violated as "unless the reactor is in the cold shutdown condition." The revised wording provides a more direct statement of the requirement and its applicable conditions. LCOs 3.6.1b and 3.6.1c were revised similarly.

   Change E.3 does not alter any TS requirements and is therefore classified as Administrative.

4. LCO 3.6.1b was revised from "unless the boron concentration is greater than refueling concentration" to "unless the PCS boron concentration is REFUELING BORON CONCENTRATION." The abbreviation "PCS" (Primary Coolant System) was added for clarity; the words "greater than" were deleted because the definition for Refueling Boron Concentration specifies a minimum requirement and being "greater than" is implicit in that definition; the words "refueling concentration" were replaced with the defined term "REFUELING BORON CONCENTRATION" which, as noted in the basis, was the intent.

   Change E.4 does not alter any TS requirements and is therefore classified as Administrative.

5. LCO 3.6.1c was revised to place the exception at the end to better fit with the balance of the changes to LCO 3.6.1.

   Change E.5 does not alter any TS requirements and is therefore classified as Administrative.

F. Actions 3.6.1b. and c. were combined and revised to use wording similar to Action 3.6.3.A.1 of the STS. Action 3.6.1d. was renumbered 3.6.1.c.

   Change F does not alter any TS requirements and is therefore classified as Administrative.

G. A footnote was added to LCO 3.6.1 which allows 1) entry through a locked air lock door to perform repairs on other airlock components, and 2) penetration flow paths to be unisolated intermittently under administrative control, without violating the LCO requirement for containment integrity. A basis paragraph was added to discuss this footnote.

1. Airlock Note:

The allowance for air lock entry is intended to assure that LCO 3.6.1 is not interpreted as prohibiting use of a similar footnote added to corrective action 4.5.2c. (Change P).

The air lock entry footnote has been added LCO 3.6.1 and to the second paragraph of Action 4.5.2c(3) to eliminate the potential for initiation of an unnecessary plant shutdown. The proposed allowance is the same as that provided in Note 1 of STS LCO 3.6.2, Containment Air Locks.

This change is necessary to avoid the possibility of an easily repaired fault on one air lock door leading to initiation of a plant shutdown. Such an event occurred at Palisades during July, 1996. During a semiannual air lock pressure test, unquantifiable leakage occurred on the inner door of the personnel air lock. The second paragraph of Action statement 4.5.2.c.(3) required that the outer door be immediately locked closed and tested within four hours. It also required that repairs be initiated immediately. Since strongbacks were in place to hold the inner door closed against test pressure and the outer door was required to be locked closed, entry into the air lock to effect repairs was not possible.

The subject note was included in the STS to allow repairs in just such a situation. The "Actions" section of the Bases for STS LCO 3.6.2 states:

> *The ACTIONS are modified by a Note that allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. It is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which 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 because of 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 immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.*

Change G.1 provides an allowance which is not included in TS. Therefore, Change G.1 is classified as Less Restrictive.

2. Penetration Opening Note:

The allowance for opening penetrations under administrative control was added in accordance with the guidance of GL 91-08. Current TS Table 3.6.1 contains an allowance to open the manual valves used for Safety Injection Tank sampling, Penetration 33. This change proposes deleting that table. GL 91-08 suggests replacing such allowances with a more general note; the STS provides a similar note. The wording from the STS is proposed since that is the more recent publication. (The bracketed STS text referring to 42 inch valves was not included because Palisades no longer has large purge valves installed. They have been removed and their penetrations have been blocked.)

Change G.2 provides a more general allowance for opening containment isolation valves than is provided in TS Table 3.6.1. Therefore, Change G.2 is classified as Less Restrictive.

H. Table 3.6.1, Containment Penetrations and Valves, was deleted using the guidance provided in Generic Letter 91-08. The current table lists containment penetrations, their functions, the isolation valve number, and the required closure time. The table lists those penetrations closed by an automatic isolation valve and Penetration 33, the Safety Injection drain line. An allowance is provided to open the manual valves on Penetration 33 for sampling.

GL 91-08 provides specific guidance for changing the wording of the former STS requirements when lists of containment isolation valves are removed. While the exact wording provided in GL 91-08 is not appropriate for the Palisades TS, the guidance provided was followed where it does apply:

Table 3.6.1 was deleted.

References to the deleted list were removed from the Containment Integrity definition (Change B) and the valve timing surveillance requirement (Change R) which were the only such references.

The suggested wording "Each containment valve" is similar to the wording that appears in valve timing SR 4.5.3c. Other TS references to containment isolation valves are not limited to the valves listed in the deleted table.

No exception to LCO 3.0.4 was necessary since the Palisades 3.0.4 has been revised as allowed by GL 87-09.

A footnote was added to LCO 3.6.1 to address opening isolation valves under administrative control (Change G). The basis paragraph for that footnote suggested by GL 91-08 has been added.

The Palisades TS currently contain no exception for Type C testing, so no clarifying note was added.

SR 4.5.3c, Isolation Valve Timing, was revised to delete the reference to Table 3.6.1. (Change R)

Change H (the deletion of Table 3.6.1) deletes the existing list of containment isolation valves, but does not alter existing TS requirements or those components to which they apply. Lists of containment isolation valves are provided in the FSAR and in those plant procedures which perform penetration leak testing and isolation valve closure time testing. The set of valves subject to the requirements of TS 3.6 and 4.5 will not change due to the proposed change. Therefore Change H is classified as Administrative.

I. LCO 3.6.2 was revised providing three differences from current TS: 1) the allowable containment pressure is reduced, with different pressure limits specified when the reactor is critical and when it is not, 2) the containment pressure LCO no longer applies during Cold Shutdown, and 3) an Action statement has been provided.

1. The existing TS requirement is for containment pressure to be maintained below 3 psig. That limit is unchanged from the initial Palisades TS issued in 1971. Since that time the accident analyses, for at power conditions, have been revised to use a more restrictive limit, 1.0 psig. The 1.0 psig limit has been maintained by administrative control. A TS change request containing this more restrictive limit was submitted to the NRC on November 24, 1980. Since that time, the 1.0 psig limit has been maintained by administrative control. The change request was subsequently withdrawn on January 24, 1989.

   LCO 3.6.2, as revised, provides two containment pressure limits, each more restrictive than the current limit. One limit, 1.5 psig, is applicable when the plant is above Cold Shutdown (ie., when the PCS is above 210°F); the other, 1.0 psig, is applicable when the plant is in Power Operation or Hot Standby (ie., when the reactor may be critical).

   Because the containment purge valves must remain closed, containment air temperature and pressure tend to rise as the plant is heated to operating temperature. Due to the low allowable pressure and limited containment ventilation path, this pressure rise has occasionally restricted the heatup rate, and unnecessarily delayed returning the plant to service. A special containment analysis was performed which is applicable only with the reactor shutdown. That analysis demonstrated that containment design pressure and temperature would not be exceeded for a LOCA or a Main Steam Line Break with an initial containment pressure of 1.5 psig, provided the reactor was subcritical. It is proposed that the 1.5 psig limit be applicable when the plant is above Cold Shutdown (ie,. above

210°). It is proposed that the more restrictive limit, of 1.0 psig, be applicable in Hot Standby and during Power Operation.

Since proposed LCO 3.6.2 requires containment pressure to be maintained at a lower pressure than current TS, Change I.1 is classified as More Restrictive.

2. The existing containment pressure LCO applies at all times except for containment leak rate tests; the proposed LCO does not apply when the plant is in Cold Shutdown (ie., below 210°F). The containment pressure LCO is not necessary during Cold Shutdown because it is intended to assure that design containment pressure is not exceeded if a LOCA or MSLB should occur. With the plant at Cold Shutdown, neither the PCS nor the Main Steam System contains sufficient energy to cause containment pressurization if a piping failure should occur.

   Although both proposed limits are more limiting than the existing TS limit of 3.0 psig, Change I.2 revises LCO 3.6.2 so that it is no longer applicable in Cold Shutdown. Therefore, Change I.2 is classified as Less Restrictive.

3. An Action statement was added to provide guidance on action to be taken if containment pressure exceeds the specified limit. The actions specified are equivalent to those specified in STS LCO 3.6.4, Containment Pressure.

   The Palisades TS definitions of Hot Standby, Hot Shutdown, and Cold Shutdown differ from those in STS. TS Section 1.0 contains the following definitions:

   > *The COLD SHUTDOWN condition shall be when the primary coolant is at SHUTDOWN BORON CONCENTRATION and T_{ave} is less than 210°F.*
   >
   > *The HOT SHUTDOWN condition shall be when the reactor is subcritical by an amount greater than or equal to the margin as specified in Technical Specification 3.10 and T_{ave} is greater than 525°F.*
   >
   > *The HOT STANDBY condition shall be when T_{ave} is greater than 525°F and any of the CONTROL RODS are withdrawn and the neutron flux power range instrumentation indicates less than 2% of RATED POWER.*

   Currently, if containment pressure was to exceed the TS limit, an LCO 3.0.3 entry would be required. LCO 3.0.3 provides one hour to restore compliance or prepare for a plant shutdown and then requires the plant to be placed in:

   > *At least HOT STANDBY within the next 6 hours,*
   > *At least HOT SHUTDOWN within the following 6 hours, and*
   > *At least COLD SHUTDOWN within the subsequent 24 hours.*

The proposed action allows one hour to restore compliance and then requires:

> *"be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours."*

Change I.3 provides the same amount of time to restore compliance, one hour, as LCO 3.0.3. However, if pressure is not restored within that hour the proposed change would require the plant be in HOT SHUTDOWN within six additional hours, which is more restrictive than LCO 3.0.3. Therefore, Change I.3 is classified as More Restrictive.

J. Current TS LCO 3.6.3 is actually a Surveillance Requirement (SR). It is proposed that LCO 3.6.3 be moved to Section 4 of the TS with other SRs, as SR 4.5.3d. The requirement has been editorially revised to:

1. Require a "visual" check rather than an "administrative" check. This change makes the requirement agree with the basis and with plant operating practice. The basis has been revised to discuss which valves are required to be locked closed.

   Change J.1 is considered a clarification. The basis describes the required check as visual, and the requirement has always been performed by visually checking each valve. Therefore, Change J.1 does not alter any TS requirements and is classified as Administrative.

2. Add an exception for valves open under administrative control, as suggested by GL 91-08. The allowance for the valves to be opened under administrative control is discussed under Change G.2. Change J.2 provides an allowance that does not exist in current TS. Therefore, Change J.2 is classified as Less Restrictive.

K. A new LCO is proposed to replace the former 3.6.3. That LCO provides a TS limit on containment average air temperature. The current TS contain no such limit, yet the value is used as an initial condition of the Safety Analyses and therefore meets Criterion B of 10 CFR 50.36(c)(2)(ii). The proposed limit is that value used in the safety analyses; the proposed Action is modeled after that in STS LCO 3.6.5; the wording is chosen to be similar to the balance of TS Section 3.6. The basis paragraph discussing containment pressure was revised to also discuss containment temperature.

Since proposed LCO 3.6.3 adds a restriction which is not currently in TS, Change K is classified as More Restrictive.

L. LCO 3.6.4 and the included Action were rewritten editorially using more consistent terminology for the hydrogen recombiners.

Change L does not alter any TS requirements and is therefore classified as Administrative.

M. LCO 3.6.5 was rewritten:

1. The title was deleted and parts a. and b. were combined into a single paragraph, similar to the arrangement of other LCOs in Section 3.6. Consistent terminology was used for the "purge exhaust isolation valves" and "air room supply isolation valves."

   Change M.1 does not alter any TS requirements and is therefore classified as Administrative.

2. The applicable conditions have been made more restrictive in order to agree with the LCO for containment integrity. The basis wording implies that this was the original intent. The current applicability is "whenever the reactor is in a HOT SHUTDOWN, HOT STANDBY, or POWER OPERATION condition" (ie., above 525°F). The basis states the requirement applies "above COLD SHUTDOWN" (ie., above 210°F).

   Since Change M.2 makes LCO 3.6.5 applicable over a wider range of operating conditions than the current requirements, Change M.2 is classified as More Restrictive.

3. The component identifiers for the purge exhaust and air room supply isolation valves were deleted. Their functional names describe the valves adequately. There are no other valves in the plant which are "purge exhaust" or "air room supply" isolation valves.

   As currently written, LCO 3.6.5 contains both valve names and component identifiers. These two means of identification are redundant, and unnecessary. Change M.3 deletes the component identifiers from LCO 3.6.5, but does not alter existing TS requirements or those components to which they apply.

   Change M.3 does not alter any TS requirements and is therefore classified as Administrative.

4. Part b. of LCO 3.6.5 was revised to address the subject valves not being locked closed (as required by part a) rather than addressing their being open. In addition, the requirement in part a was revised to delete the specific requirement to "electrically" lock the valves closed, which would imply that other means of locking the valves closed was unacceptable. The Basis for LCO 3.6.5 was also rewritten accordingly. These changes are considered to be clarification and not changes in requirements.

Change M.4 does not alter any TS requirements and is therefore classified as Administrative.

N. In several places within Section 4.5.2 and its basis, numbers written in the form "six (6)" were revised to eliminate the redundancy. This usage occurs in only a few places and these changes make the subject paragraphs more consistent with the rest of the TS. The third basis paragraph on page 4-23 was revised to reflect the newer usage of the term LCO.

Change N does not alter any TS requirements and is therefore classified as Administrative.

O. The second paragraph of action statement 4.5.2c.(3), on page 4-20, has been renumbered as 4.5.2c.(4). The subject paragraph addresses a different condition and provides different required actions than the first paragraph of 4.5.2c.(3). Since that paragraph comprises a separate Action Statement from the first paragraph, it has been numbered separately.

Change O does not alter any TS requirements and is therefore classified as Administrative.

P. A footnote, "Entry and exit is permissible to perform repairs on the affected air lock components", has been added to the second paragraph of action statement 4.5.2c.(3) on page 4-20. The addition of that footnote is discussed under Change G.1, above. A bases description has been provided for the note.

Change P provides an allowance which is not included in TS. Therefore, Change P is classified as Less Restrictive.

Q. Paragraph 4.5.2d.(1) has been revised to delete a frequency requirement, referring to the period prior to the first post operational integrated leak rate testing, which is no longer applicable.

Since the deleted portion of the SR is no longer applicable, Change Q does not alter any TS requirements and is therefore classified as Administrative.

R. Surveillance Requirement 4.5.3c has been revised to delete the reference to deleted Table 3.6.1, in accordance with the guidance of GL 91-08. The proposed revision to SR 4.5.3c, Isolation Valve Timing, omits specifying valve closure time, but requires valve timing to be verified in accordance with Section XI of the ASME boiler and Pressure Vessel Code. The inservice testing required by Specification 6.5.7, the Inservice Inspection and Testing Program, include the verification of stroke times for a broader class of valves than those containment isolation valves that are listed in Table 3.6.1. The removal of valve closure times from the SR would not alter the TS requirements to verify that valve stroke times are within their limits.

Change R does not alter any TS requirements and is therefore classified as Administrative.

S. As discussed in Change J, above, the existing LCO 3.6.3 was revised and renumbered as 4.5.3d. The associated Basis paragraph has also been moved to section 4.5.

Change S does not alter any TS requirements and is therefore classified as Administrative.

T. Surveillance Requirement 4.5.2d(2) was moved to from section 4.5.2 to section 4.5.3 and renumbered 4.5.3e. This change was made because the subject paragraph deals with containment isolation valve testing (the subject of 4.5.3) and not the frequency of local leak rate testing (the subject of 4.5.2).

Change T does not alter any TS requirements and is therefore classified as Administrative.

U. Surveillance requirement 4.5.3a was revised, replacing the words "prior to returning the valve to service" with prior to declaring the valve to be OPERABLE". This change is intended to avoid the implication that the valve can not be returned to service, during periods when Containment Integrity (and isolation valve Operability) is not required, without performance of the required testing. As proposed, the subject testing would only be required when the valve is required to be OPERABLE. That interpretation agrees with surveillance requirement 4.0.1.

Change U does not alter any TS requirements and is therefore classified as Administrative.

II. Analysis of No Significant Hazards Consideration

Consumers Power Company finds that this proposed Technical Specifications change involve no significant hazards and accordingly, a no significant hazards determination per 10 CFR 50.92(c) is justified.

As discussed in Section I, the each proposed change has been classified as Administrative, More Restrictive, or Less Restrictive. Administrative and More Restrictive changes are discussed generically; Less Restrictive changes are discussed individually.

Five of the proposed changes are classified as being "Less Restrictive":

G.1) Allowance in LCO 3.6.1 to enter an air lock to perform maintenance.

G.2) Allowance in LCO 3.6.1 to open containment isolation valves under administrative control.

I.2) Revising the applicable conditions of LCO 3.6.2, Containment Pressure to exclude Cold Shutdown.

J.2) Exception in SR 4.5.3d for valves opened under administrative control as allowed by LCO 3.6.1.

P) Allowance in SR 4.5.2 to enter an air lock to perform maintenance.

Four of the proposed changes are classified as being "More Restrictive":

I.1) Revising LCO 3.6.2 to reduce the allowable containment pressure.

I.3) Addition of an action statement to LCO 3.6.2, Containment Pressure.

K) Addition of a new LCO which restricts Containment Temperature.

M.2) Revising the applicable conditions for LCO 3.6.5, Purge Valves.

The remaining changes are all classified as being "Administrative".

<u>Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?</u>

1. Changes G.1, G.2, J.2, and P:

Proposed changes G.1 and P allow limited access through the operable door of an air lock when the other door is inoperable; current Technical Specifications do not. Proposed changes G.2 and J.2 allow unisolating containment penetration flow paths intermittently under administrative control; current TS do provide a similar allowance, but only for one specific penetration. These changes cannot significantly increase the probability of an accident because opening an air lock door or a containment penetration is not, itself, an initiator and does not affect the items which are initiators of any analyzed accident.

The ability to open the operable door or to open a containment penetration, even if it means the containment boundary is temporarily not intact, does not significantly increase the consequences of an accident previously evaluated because of the low probability of an event that could pressurize the containment occurring during the short time the operable door or containment penetration is expected to be open. In a case where containment integrity (or containment operability) is lost due to excessive leakage, both the Palisades Technical Specifications and the Standard Technical Specifications allow one hour of continued operation for its restoration. That time period is allowed without regard to the magnitude of the potential leakage, and would be allowed even if both personnel air lock doors leaking excessively. The additional allowance of permitting the operable door to be opened momentarily for entry or egress when the other door is inoperable due to excessive leakage would not significantly add to the probability of containment leakage and the resultant consequences of an accident. Similarly, the allowance to open any containment penetration intermittently under administrative control, which currently is allowed for one penetration, would not significantly add to the probability of containment leakage and the resultant consequences of an accident.

Therefore, operation of the Facility in accordance with proposed changes G.1, G.2, J.2, and P would not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Change I.2:

Change I.2 alters existing LCO 3.6.2, Containment Pressure so that it no longer applies during Cold Shutdown. LCO 3.6.2 is intended to limit containment pressure to that value used as an initial condition in the safety analysis. Containment pressure is an initial condition in analyses which assure that containment internal pressure will not exceed the containment design values during a LOCA or MSLB. Containment pressure is not an initiator of any accident previously evaluated. Neither a LOCA nor a MSLB occurring during Cold Shutdown would pressurize the containment. Therefore, a containment pressure LCO is not necessary, during Cold Shutdown, to assure that containment design pressure and temperature is not exceeded. The STS Containment pressure LCO is not applicable in Cold Shutdown.

Therefore, operation of the Facility in accordance with proposed change I.2 would not involve a significant increase in the probability or consequences of an accident previously evaluated.

3. More Restrictive Changes:

"More Restrictive" changes only add new requirements, or revise existing requirements to result in additional operational restrictions. The TS, with all "More Restrictive" changes incorporated, will still contain all of the requirements which existed prior to the changes. Therefore, "More Restrictive" changes cannot involve a significant increase in the probability or consequences of an accident previously evaluated.

4. "Administrative" changes make wording changes which clarify existing TS requirements, without affecting their technical content. Since "Administrative" changes do not alter the technical content of any requirements, they cannot involve a significant increase in the probability or consequences of an accident previously evaluated.

<u>Do the proposed changes create the possibility of a new or different kind of accident from any previously evaluated?</u>

1. Changes G.1, G.2, J.2, and P:

   Proposed changes G.1 and P allow limited access through the operable door of an air lock when the other door is inoperable; current Technical Specifications do not. Proposed changes G.2 and J.2 allow unisolating containment penetration flow paths intermittently under administrative control; current TS do provide a similar allowance, but only for one specific penetration. Opening an air lock door or a containment penetration does not affect the operating conditions or operation of any plant systems (other than the containment); it does not create a threat to the integrity of any operating system or alter any system operating practice or settings.

   Since the opening of an air lock door or a containment penetration only affects the potential leakage from the containment, and does not affect any of the operating plant systems, operation of the Facility in accordance with the proposed Technical Specifications change would not create the possibility of a new or different kind of accident from any previously evaluated.

2. Change I.2:

   Change I.2 alters existing LCO 3.6.2, Containment Pressure so that it no longer applies during Cold Shutdown. LCO 3.6.2 is intended to limit containment pressure to that value used as an initial condition in the safety analysis. Containment pressure is an initial condition in analyses which assure that containment internal pressure will not exceed the containment design values during a LOCA or MSLB. Neither a LOCA nor a MSLB occurring during Cold Shutdown would pressurize the containment. Therefore, a containment pressure LCO is not necessary, during Cold Shutdown, to avoid creation of a new or different kind of accident. The STS Containment pressure LCO is not applicable in Cold Shutdown.

   Therefore, operation of the Facility in accordance with proposed change I.2 would not create the possibility of a new or different kind of accident from any previously evaluated.

3. More Restrictive Changes:

   "More Restrictive" changes only add new requirements, or revise existing requirements to result in additional operational restrictions. The TS, with all "More Restrictive" changes incorporated, will still contain all of the requirements which existed prior to the changes. Therefore, "More Restrictive" changes cannot create the possibility of a new or different kind of accident from any previously evaluated.

4. "Administrative" changes make wording changes which clarify existing TS requirements, without affecting their technical content. Since "Administrative" changes do not alter the technical content of any requirements, they cannot create the possibility of a new or different kind of accident from any previously evaluated.

Do the proposed changes involve a significant reduction in a margin of safety?

1. Changes G.1, G.2, J.2, and P:

   Proposed changes G.1 and P allow limited access through the operable door of an air lock when the other door is inoperable; current Technical Specifications do not. Proposed changes G.2 and J.2 allow unisolating containment penetration flow paths intermittently under administrative control; current TS do provide a similar allowance, but only for one specific penetration. The ability to open the operable door or a containment penetration, even if it means the containment boundary is temporarily not intact, does not involve a significant reduction in a margin of safety because of the low probability of an event that could pressurize the containment occurring during the short time the operable door or penetration is expected to be open.

   Therefore, operation of the Facility in accordance with the proposed Technical Specifications change would not involve a significant reduction in a margin of safety.

2. Change I.2:

   Change I.2 alters existing LCO 3.6.2, Containment Pressure so that it no longer applies during Cold Shutdown. LCO 3.6.2 is intended to limit containment pressure to that value used as an initial condition in the safety analysis. Containment pressure is an initial condition in analyses which assure that containment internal pressure will not exceed the containment design values during a LOCA or MSLB. Neither a LOCA nor a MSLB occurring during Cold Shutdown would pressurize the containment. Therefore, elimination of a Cold Shutdown LCO for containment pressure would not affect the post-accident pressure or temperature. Since peak post accident and temperature would be unaffected by the proposed change, operation of the Facility in accordance with proposed change I.2 would not involve a significant reduction in a margin of safety.

3. More Restrictive Changes:

   "More Restrictive" changes only add new requirements, or revise existing requirements to result in additional operational restrictions. The TS, with all "More Restrictive" changes incorporated, will still contain all of the requirements which existed prior to the changes. Therefore, "More Restrictive" changes cannot involve a significant reduction in a margin of safety.

4. "Administrative" changes make wording changes which clarify existing TS requirements, without affecting their technical content. Since "Administrative" changes do not alter the technical content of any requirements, they cannot involve a significant reduction in a margin of safety.

IV. Conclusion

The Palisades Plant Review Committee has reviewed this Technical Specifications Change Request and has determined that proposing this change does not involve an unreviewed safety question. Further, the change involves no significant hazards consideration. This change has been reviewed by the Nuclear Performance Assessment Department.

ATTACHMENT 1

CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255

TECHNICAL SPECIFICATION CHANGE REQUEST
CONTAINMENT SYSTEM

Proposed Pages

10 Pages

PALISADES PLANT TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

1.0 DEFINITIONS (continued)

CHANNEL FUNCTIONAL TEST

A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated signal into the channel to verify that it is OPERABLE, including any alarm and trip initiating function.

COLD SHUTDOWN

The COLD SHUTDOWN condition shall be when the primary coolant is at SHUTDOWN BORON CONCENTRATION and T_{ave} is less than 210°F.

CONTAINMENT INTEGRITY

CONTAINMENT INTEGRITY is defined to exist when:

a. All nonautomatic containment isolation valves and blind flanges are closed (OPERABLE).

b. The equipment hatch is properly closed and sealed.

c. At least one door in each air lock is properly closed and sealed.

d. All automatic containment isolation valves are OPERABLE or are locked closed.

e. The uncontrolled containment leakage satisfies Specification 4.5.

CONTROL RODS

CONTROL RODS shall be all full-length shutdown and regulating rods.

CORE OPERATING LIMITS REPORT (COLR)

The COLR is the document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 6.6.5. Plant operation within these limits is addressed in individual Specifications.

DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 shall be that concentration of I-131 (μCi/gm) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134 and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

3.6 CONTAINMENT SYSTEM

3.6.1 CONTAINMENT INTEGRITY shall be maintained:*

a. When the plant is above COLD SHUTDOWN,

b. When the reactor vessel head is removed (unless the PCS boron concentration is at REFUELING BORON CONCENTRATION), and

c. When positive reactivity changes are made by boron dilution or CONTROL ROD motion (except for testing one CONTROL ROD at a time).

ACTION:

With one or more containment isolation valves inoperable (including during performance of valve testing), maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valves to OPERABLE status within 4 hours; or

b. Isolate each affected penetration within 4 hours by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange; or

c. Be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3.6.2 The containment internal pressure shall not exceed:

a. 1.5 psig when above COLD SHUTDOWN and below HOT STANDBY; and

b. 1.0 psig when in POWER OPERATION or HOT STANDBY.

With containment internal pressure above the limit, restore pressure to within the limit within 1 hour, or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3.6.3 The containment average air temperature shall not exceed 140°F when the plant is above COLD SHUTDOWN. With containment average air temperature above the limit, restore temperature to within the limit within 8 hours, or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3.6.4 Two independent containment hydrogen recombiners shall be OPERABLE when the plant is in POWER OPERATION or HOT STANDBY. With one recombiner inoperable, restore the inoperable recombiner to OPERABLE status within 30 days or be in at least HOT SHUTDOWN within the next 12 hours.

3.6.5 The containment purge exhaust and air room supply isolation valves shall be locked closed whenever the plant is above COLD SHUTDOWN. With one containment purge exhaust or air room supply isolation valve not locked closed, lock the valve closed within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

* Entry and exit is permissible through a "locked" air lock door to perform repairs on other air lock components. Penetration flow paths may be unisolated intermittently under administrative control.

3.6 CONTAINMENT SYSTEM (continued)

3.6.1 Basis

Maintaining CONTAINMENT INTEGRITY ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. CONTAINMENT INTEGRITY also ensures that the release of radioactive material to the environment will be consistent with the assumptions used in Section 14 events of the Palisades FSAR.

COLD SHUTDOWN conditions assure that no steam will be formed and, hence, there would be no pressure buildup in the containment if the primary coolant system ruptures. REFUELING BORON CONCENTRATION provides sufficient SHUTDOWN MARGIN to precludes criticality under any circumstances.

A footnote to LCO 3.6.1 allows temporary deviation from the requirements of CONTAINMENT INTEGRITY. The allowance for air lock entry to perform repairs is discussed in the basis for Section 4.5.2. The opening of locked or sealed-closed containment penetration flow paths on an intermittent basis under administrative control includes the following considerations: (1) Stationing an operator, who is in constant communication with control room, at the valve controls, (2) Instructing this operator to close these valves in an accident situation, and (3) Assuring that environmental conditions will not preclude access to close the valves nor preclude the valves from closing, and that this action will prevent the release of radioactivity outside the containment.

The Actions specified in LCO 3.6.1 provide time for trouble-shooting, repairs, and pressure testing of isolation valves or other components.

The containment design pressure of 55 psig would not be exceeded during a Main Steam Line Break (MSLB) or a Loss of Coolant Accident (LOCA) if the average containment air temperature was ≤140°F and the internal containment pressure was ≤1.0 psig during reactor operation (or ≤1.5 psig when above COLD SHUTDOWN with the reactor shutdown)[1].

The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a sudden hydrogen-oxygen burn following a LOCA or MSLB. The recombiners accomplish this by recombining hydrogen and oxygen in a slow continuous manner, to form water vapor. Operation of the hydrogen recombiners is manually initiated. Two 100% capacity, independent hydrogen recombiners are provided. A single recombiner is capable of maintaining the containment hydrogen concentration in containment below the hydrogen flammability limit.

The containment purge exhaust and air room supply isolation valves are required to be locked closed above COLD SHUTDOWN because they are not assured to be capable of closing during DBA conditions[2]. To ensure that the valves are closed and that the seals have not degraded, a between the valves leak rate test is periodically performed. Maintaining these valves locked closed during plant operation ensures that excessive quantities of radioactive materials will not be released via the containment purge exhaust or air room supply ventilation systems. The valves may be locked closed electrically, mechanically, or by other physical means.

References

(1) FSAR, Section 14.18.
(2) Standard Review Plan 6.2.4 and Branch Technical Position CSB 6-4.

4.5.2 Local Leak Detection Tests (continued)

c. Corrective Action

(1) If at any time it is determined that 0.60 L_a is exceeded, repairs shall be initiated immediately. If repairs are not completed and conformance to the acceptance criterion of 4.5.2.b(1) is not demonstrated within 48 hours, the plant shall be placed in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

(2) If at any time it is determined that total containment leakage exceeds L_a, within one hour action shall be initiated to place the plant in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

(3) If air lock door seal leakage is greater than 0.023 L_a, repairs shall be initiated immediately to restore the door to less than specification 4.5.2.b(2). In the event repairs cannot be completed within 7 days, the plant shall be placed in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

(4) If air lock door seal leakage results in one door causing total containment leakage to exceed 0.60 L_a, the door shall be declared inoperable and the remaining OPERABLE door shall be immediately locked closed* and tested within 4 hours. As long as the remaining door is found to be OPERABLE, the provisions of 4.5.2.c(2) do not apply. Repairs shall be initiated immediately to establish conformance with specification 4.5.2.b(1). In the event conformance to this specification cannot be established within 48 hours the plant shall be placed in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

* Entry and exit is permissible through a "locked" air lock door to perform repairs on the affected air lock components.

4.5 CONTAINMENT TESTS

4.5.2 Local Leak Detection Tests (continued)

d. Test Frequency

(1) Individual penetrations and containment isolation valves shall be leak rate tested at a frequency of at least every refueling, not exceeding a two-year interval, except as specified in (a) and (b) below:

(a) The containment equipment hatch and the fuel transfer tube shall be tested at each refueling outage or after each time used, if that be sooner.

(b) A full air lock penetration test shall be performed at six-month intervals. During the period between the six-month tests when CONTAINMENT INTEGRITY is required, a reduced pressure test for the door seals or a full air lock penetration test shall be performed within 72 hours after either each air lock door opening or the first of a series of openings.

4.5.3 Containment Isolation Valves

a. The isolation valves shall be demonstrated OPERABLE by performance of a cycling test and verification of isolation time for auto isolation valves prior to declaring the valve to be OPERABLE after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit.

b. Each isolation valve shall be demonstrated OPERABLE by verifying that on each containment isolation right channel or left channel test signal, applicable isolation valves actuate to their required position during COLD SHUTDOWN or at least once per refueling cycle.

c. The isolation time of each power operated or automatic valve shall be verified in accordance with Section XI of the ASME Boiler and Pressure Vessel Code.

d. Prior to the reactor going critical after a refueling outage, a visual check will be made to confirm that all "locked-closed" manual containment isolation valves are closed and locked (except for valves that are open under administrative control as permitted by LCO 3.6.1).

e. Each three months the isolation valves must be stroked to the position required to fulfill their safety function unless it is established that such operation is not practical during plant operation. The latter valves shall be full-stroked during each COLD SHUTDOWN.

Basis

The containment is designed for an accident pressure of 55 psig.[1] While the reactor is operating, the internal environment of the containment will not exceed a pressure of 1.0 psig or a temperature of 140°F. With these initial conditions, following a design basis LOCA, the steam-air mixture will not exceed 55 psig.

Prior to initial operation, the containment was strength-tested at 63 psig and then leak rate tested. The design objective of this preoperational leak rate test was established as 0.1% by weight per 24 hours at 55 psig. This leakage rate is consistent with the construction of the containment,[2] which is equipped with independent leak-testable penetrations and contains channels over all unaccessible containment liner welds, which were independently leak-tested during construction.

Accident analyses have been performed on the basis of a leakage rate of 0.1% by weight per 24 hours. With this leakage rate and with a reactor power level of 2530 MWt, the potential public exposure would be below 10 CFR 100 guideline values in the event of the Maximum Hypothetical Accident.[3]

The performance of a periodic integrated leak rate test during plant life provides a current assessment of potential leakage from the containment in case of an accident that would pressurize the interior of the containment. In order to provide a realistic appraisal of the integrity of the containment under accident conditions, this periodic leak rate test is to be performed without preliminary repairs or adjustments unless those repairs or adjustments are preceded and followed by local leak rate tests and the integrated leak rate results are adjusted to reflect the as found condition of the containment.

This normal manner is a coincident two-of-four high radiation or two-of-four high containment pressure signals which will close all containment isolation valves not required for engineered safety features except the component cooling lines' valves which are closed by CHP only. The control system is designed on a two-channel (right and left) concept with redundancy and physical separation. Each channel is capable of initiating containment isolation.[4]

The Type A test requirements including pretest test methods, test pressure, acceptance criteria, and reporting requirements are in accordance with the Containment Leak Rate Testing Program.[5,6]

The frequency of the periodic integrated leak rate test is keyed to the refueling schedule for the reactor because these tests can best be performed during refueling shutdowns. The specified frequency is based on three major considerations:

First is the low probability of leaks in the liner because of (a) the test of the leak tightness of the welds during erection; (b) conformance of the complete containment to a low leak rate at 55 psig during preoperational testing which is consistent with 0.1% leakage at design basis accident (DBA) conditions: and (c) absence of any significant stresses in the liner during reactor operation.

Basis (continued)

Second is the more frequent testing, at the full accident pressure, of those portions of the containment envelope that are most likely to develop leaks during reactor operation (penetrations and isolation valves) and the low value ($0.60L_a$) of the total leakage that is specified as acceptable from penetrations and isolation valves.

Third is the Containment Structural Integrity Surveillance Program which provides assurance that an important part, of the structural integrity of the containment is maintained.

The basis for specification of a total leakage rate of 0.60 L_a from penetrations and isolation valves is specified to provide assurance that the integrated leak rate would remain within the specified limits during the intervals between integrated leak rate tests. This value allows for possible deterioration in the intervals between tests.

The basis for specification of an air lock door seal leakage rate of 0.023 L_a is to provide assurance that the failure of a single air lock door will not result in the total containment leakage exceeding 0.6 L_a. The 7 day period specified for restoring the air lock door leakage to within limits is acceptable since it requires that the total containment leakage limit is not exceeded.

Action 4.5.2c(4) is modified by a footnote that allows entry and exit to perform repairs on the affected air lock component. After each entry and exit, the OPERABLE door must be immediately closed. If the outer door is inoperable, then it may be easily accessed for most repairs. However, if the inner door is inoperable, or if repairs on the outer door must be performed from the barrel side, then it is permissible to enter the air lock through the OPERABLE door, which 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 because of 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.

CONTAINMENT INTEGRITY will be assured if a visual check is made of all manual containment isolation valves which are required to be locked closed, to verify they are actually closed and locked, prior to plant start-up after a refueling outage where one or more valves could inadvertently be left open (except for valves that are open under administrative control as permitted by LCO 3.6.1).

Containment isolation valves which are required to be locked closed are discussed in the FSAR[7]. These valves are those manual containment isolation valves which are not opened during operation except as allowed by LCO 3.6.1.

Basis (continued)

A reduction in prestressing force and change in physical conditions are expected for the prestressing system. Allowances have been made in the reactor building design for the reduction and changes. The inspection results for each tendon inspected shall be recorded on the forms provided for that purpose and comparison will be made with previous test results and the initial quality control records.

Force-time records will be established and maintained for each of the tendon groups, dome, hoop and vertical. If the force measured for a tendon is less than the lower bound curve of the force-time graph, two adjacent tendons will be tested. If either of the adjacent or more than one of the original sample population falls below the lower bound of the force-time graph, an investigation will be conducted before the next scheduled surveillance. The investigation shall be made to determine whether the rate of force reduction is indeed occurring for other tendons. If the rate of reduction is confirmed, the investigation shall be extended so as to identify the cause of the rate of force reduction. The extension of the investigation shall determine the needed changes in the surveillance inspection schedule and the criteria and initial planning for corrective action.

If the force measured for a tendon at any time exceeds the upper bound curve of the band on the force-time graph, an investigation shall be made to determine the cause.

If the comparison of corrosion conditions, including chemical tests of the corrosion protection material, indicate a larger than expected change in the conditions from the time of installation or last surveillance inspection, and investigation shall be made to detect and correct the causes.

The prestressing system is a necessary strength element of the plant safeguards and it is considered desirable to confirm that the allowances are not being exceeded. The technique chosen for surveillance is based upon the rate of change of force and physical conditions so that the surveillance can either confirm that the allowances are sufficient, or require maintenance before minimum levels of force or physical conditions are reached.

The end anchorage concrete is needed to maintain the prestressing forces. The design investigations concluded that the design is adequate. The prestressing sequence has shown that the end anchorage concrete can withstand loads in excess of those which result when the tendons are anchored. At the time of initial pressure testing, the containment building had been subjected to temperature gradients equivalent to those for normal operating conditions while the prestressing tendon loads are at their maximum.

However, after the initial pressure test both concrete creep and prestressing losses increase with the greatest rapidity and result in a redistribution of the stresses and a reduction in end anchor force. Because of the importance of the containment and the fact that the design was new, it was considered prudent to continue the surveillance after the initial period.

Basis (continued)

Containment dome delamination inspections performed in 1970 and 1982 have confirmed that no concrete delamination has occurred. The possibility that delamination might occur in the future is remote because dome tendon prestress forces gradually diminish through normal tendon relaxation and concrete strength normally increases over time. To account for this remote possibility, however, an additional delamination inspection will be performed in the event that 5% or more of the installed tendons must be retensioned to compensate for excessive loss of prestress. This inspection would be to confirm that any systematic excessive prestress loss did not result from delamination and that the retensioning process did not result in delamination.

References

(1) Updated FSAR Section 5.8.1.

(2) Updated FSAR Section 5.8.8

(3) Updated FSAR Section 14.22

(4) Updated FSAR Section 6.7.2.3

(5) 10 CFR Part 50, Appendix J.

(6) Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program", September 1995.

(7) Updated FSAR Section 5.1.

ATTACHMENT 2

CONSUMERS POWER COMPANY
PALISADES PLANT
DOCKET 50-255

TECHNICAL SPECIFICATION CHANGE REQUEST
CONTAINMENT SYSTEM

Existing Pages Marked to Show Proposed Changes

16 Pages

PALISADES PLANT TECHNICAL SPECIFICATIONS
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Amendment No. ~~169~~, ~~174~~,

1.0 DEFINITIONS (continued)

CHANNEL FUNCTIONAL TEST

A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated signal into the channel to verify that it is OPERABLE, including any alarm and trip initiating function.

COLD SHUTDOWN

The COLD SHUTDOWN condition shall be when the primary coolant is at SHUTDOWN BORON CONCENTRATION and T_{ave} is less than 210°F.

CONTAINMENT INTEGRITY

CONTAINMENT INTEGRITY is defined to exist when ~~all the following are true~~:

a. All nonautomatic containment isolation valves and blind flanges are closed (OPERABLE) ~~except as noted in Table 3.6.1~~.

b. The equipment hatch is properly closed and sealed.

c. At least one door in each ~~personnel~~ air lock is properly closed and sealed.

d. All automatic containment isolation valves are OPERABLE ~~(as demonstrated by satisfying isolation times specified in Table 3.6.1 and leakage criterion in Specification 4.5.2)~~ or are locked closed.

e. The uncontrolled containment leakage satisfies Specification 4.5.

CONTROL RODS

CONTROL RODS shall be all full-length shutdown and regulating rods.

CORE OPERATING LIMITS REPORT (COLR)

The COLR is the document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits shall be determined for each reload cycle in accordance with Specification 6.6.5. plant operation within these limits is addressed in individual Specifications.

DOSE EQUIVALENT I-131

DOSE EQUIVALENT I-131 shall be that concentration of I-131 (μCi/gm) which alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134 and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, "Calculation of Distance Factors for Power and Test Reactor Sites."

Amendment No. ~~31~~, ~~43~~, ~~54~~, ~~57~~, ~~68~~, ~~118~~, ~~124~~, ~~128~~, ~~137~~, ~~162~~, ~~174~~

3.6 CONTAINMENT SYSTEM

Applicability

Applies to the reactor containment building.

Objective

To assure the integrity of the reactor containment building.

Specifications

3.6.1 Containment Integrity CONTAINMENT INTEGRITY shall be maintained:*

a. Containment integrity as defined in Specification 1.0 shall not be violated unless the reactor is in the cold shutdown condition. When the plant is above COLD SHUTDOWN,

b. Containment integrity shall not be violated when the reactor vessel head is removed (unless the PCS boron concentration is greater than refueling concentration at REFUELING BORON CONCENTRATION), and.

c. Except for testing one rod at a time, When positive reactivity changes shall not be are made by CONTROL ROD motion or boron dilution or CONTROL ROD motion (except for testing one CONTROL ROD at a time). unless the containment integrity is intact.

ACTION:

With one or more containment isolation valves inoperable (including during performance of valve testing), maintain at least one isolation valve operable OPERABLE in each affected penetration that is open and either:

a. Restore the inoperable valves to operable OPERABLE status within 4 hours,; or

b. Isolate each affected penetration within 4 hours by use of at least one closed and deactivated automatic valve secured in the isolation position, or, closed manual valve, or blind flange; or

c. Isolate the affected penetration within 4 hours by use of at least one closed manual valve or blind flange; or

dc. Be in at least hot shutdown HOT SHUTDOWN within the next 6 hours and in cold shutdown COLD SHUTDOWN within the following 30 hours.

* Entry and exit is permissible through a "locked" air lock door to perform repairs on other air lock components. Penetration flow paths may be unisolated intermittently under administrative control.

Basis

[1] The operability of the containment isolation valves Maintaining CONTAINMENT INTEGRITY ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment.

3.6 CONTAINMENT SYSTEM (Continued)

3.6.1 Basis (Continued)

[2] ~~Containment isolation~~ CONTAINMENT INTEGRITY also ensures that the release of radioactive material to the environment will be consistent with the assumptions used in Section 14 events of the Palisades FSAR.

[3] A footnote to LCO 3.6.1 allows temporary deviation from the requirements of CONTAINMENT INTEGRITY. The allowance for air lock entry to perform repairs is discussed in the basis for Section 4.5.2. The opening of locked or sealed-closed containment penetration flow paths on an intermittent basis under administrative control includes the following considerations: (1) Stationing an operator, who is in constant communication with control room, at the valve controls, (2) Instructing this operator to close these valves in an accident situation, and (3) Assuring that environmental conditions will not preclude access to close the valves nor preclude the valves from closing, and that this action will prevent the release of radioactivity outside the containment.

[4] The ~~above~~ Actions specified in LCO 3.6.1 ~~requirements~~ provide time ~~in which~~ for trouble-shooting, repairs and pressure testing of isolation valves or other components ~~may occur~~.

TABLE 3.6.1

CONTAINMENT PENETRATIONS AND VALVES

PEN NUMBER	SYSTEM NAME AND SERVICE LINE SIZE	VALVE ID NO	REMARKS
1A	PURGE AIR EXHAUST (8")	CV 1805 CV 1806	Auto isolation valve; required closure time = 25 seconds
1C	PURGE AIR EXHAUST (8")	CV 1807 CV 1808	Auto isolation valve; required closure time = 25 seconds
5	S/G (E 50A) BLOWDOWN (4")*	CV 0767 CV 0771	Auto isolation valve; required closure time = 25 seconds
6	S/G (E 50B) BLOWDOWN (4")*	CV 0768 CV 0770	Auto isolation valve; required closure time = 25 seconds
11	CONDENSATE TO SHIELD COOLING SURGE TANK (1 ½")	CV 0939 CK CD401	Auto isolation valve; required closure time = 25 seconds
14	COMPONENT COOLING WATER IN (10")	CV 0910 CK CC0910	Auto isolation valve; required closure time = 25 seconds
15	COMPONENT COOLING WATER OUT (10")	CV 0911 CV 0940	Auto isolation valve; required closure time = 25 seconds
16	S/G (E 50A) RECIRCULATION (4")*	CV 0739	Auto isolation valve; required closure time = 25 seconds

* Penetration line size; isolation valves are 2-inch

TABL[illegible]5.1

CONTAINMENT PENETRATIONS AND VALVES

PEN NUMBER	SYSTEM NAME AND SERVICE LINE SIZE	VALVE ID NO	REMARKS
21	H_2 MONITOR (½")	SV 2415A SV 2415B	Auto isolation valve; required closure time = 25 seconds
21A	H_2 MONITOR (½")	SV 2413A SV 2413B	Auto isolation valve; required closure time = 25 seconds
25	CLEAN WASTE RECEIVER TANK VENT TO STACK (2")	CV 1064 CV 1065	Auto isolation valve; required closure time = 25 seconds
26	NITROGEN TO CONTAINMENT (1")	CV 1358 CK $N_2$400	Auto isolation valve; required closure time = 25 seconds
33	SAFETY INJECTION TANK DRAIN (2")	MV ES3234 MV ES3234A	These valves are allowed to be open for testing/sampling no more than 4 hours per sample
36	LETDOWN TO PURIFICATION ION EXCHANGER (2")	CV 2009	Auto isolation valve; required closure time = 25 seconds
37	PRIMARY SYSTEM DRAIN TANK PUMP RECIRC (1½")	CV 1001 CK CRW403	Auto isolation valve; required closure time = 25 seconds
38	CONDENSATE RETURN FROM STEAM HEATING UNITS (2")	CV 1501 CV 1502	Auto isolation valve; required closure time = 25 seconds

TABLE 3.6.1

CONTAINMENT PENETRATIONS AND VALVES

PEN NUMBER	SYSTEM NAME AND SERVICE LINE SIZE	VALVE ID NO	REMARKS
39	CONTAINMENT HEATING SYSTEM (4")	CV 1503 Blind flange in place during power operation	Auto isolation valve; required closure time = 25 seconds
40	PRI COOLANT SYSTEM SAMPLE LINE (½")	CV 1910 CV 1911	Auto isolation valve; required closure time = 25 seconds
40A	H_2 MONITOR (½")	SV 2414A SV 2414B	Auto isolation valve; required closure time = 25 seconds
40B	H_2 MONITOR (½")	SV 2412A SV 2412B	Auto isolation valve; required closure time = 25 seconds
41	DEGASIFIER PUMP DISCHARGE (3")	CV 1004 CK CRW407	Auto isolation valve; required closure time = 25 seconds
42	DEMINERALIZED WATER TO QUENCH TANK (2")	CV 0155 CK V0155B	Auto isolation valve; required closure time = 25 seconds
44	CONTROLLED BLEED OFF FROM RCP'S (3/4")	CV 2083 CV 2099	Auto isolation valve; required closure time = 25 seconds
46	CONTAINMENT VENT HEADER (4")	CV 1101 CV 1102	Auto isolation valve; required closure time = 25 seconds

TABL[illegible]6.1

CONTAINMENT PENETRATIONS AND VALVES

PEN NUMBER	SYSTEM NAME AND SERVICE LINE SIZE	VALVE ID NO	REMARKS
47	PRIMARY SYSTEM DRAIN TANK PUMP SUCTION (4")	CV 1002 CV 1007	Auto isolation valve; required closure time = 25 seconds
49	CLEAN WASTE RECEIVER TANK CIRCULATION PUMP SUCTION (6")	CV 1038 CV 1036	Auto isolation valve; required closure time = 25 seconds
52	CONTAINMENT SUMP DRAIN TO DIRTY WASTE TANK (4")	CV 1103 CV 1104	Auto isolation valve; required closure time = 25 seconds
55	S/G (E 50B) RECIRCULATION (4")*	CV 0738	Auto isolation valve; required closure time = 25 seconds
67	CLEAN WASTE RECEIVER TANK PUMP RECIRC (3")	CV 1037 CK CRW408	Auto isolation valve; required closure time = 25 seconds
68	AIR SUPPLY TO AIR ROOM (12")	CV 1813 CV 1814	Auto isolation valve; required closure time = 25 seconds
69	CLEAN WASTE RECEIVER TANK PUMP SUCTION (4")	CV 1045 CV 1044	Auto isolation valve; required closure time = 25 seconds

*Penetration line size; isolation valves are 2 inch.

3.6.2 The containment internal pressure shall not exceed: ~~3 psig (except for containment leak rate tests).~~
a. 1.5 psig when the plant is above COLD SHUTDOWN and below HOT STANDBY; and
b. 1.0 psig when the plant is in POWER OPERATION or HOT STANDBY.
With containment internal pressure above the limit, restore pressure to within the limit within 1 hour, or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

~~3.6.3 Prior to the reactor going critical after a refueling outage, an administrative check will be made to confirm that all "locked closed" manual containment isolation valves are closed and locked.~~

[New] 3.6.3 The containment average air temperature shall not exceed 140°F when the plant is above COLD SHUTDOWN. With containment average air temperature above the limit, restore temperature to within the limit within 8 hours, or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Basis

[2] ~~The primary coolant system~~ COLD SHUTDOWN conditions ~~of cold shutdown~~ assure that no steam will be formed and, hence, there would be no pressure buildup in the containment if the primary coolant system ruptures. ~~The shutdown margins are selected based on the type of activities that are being carried out. The refueling boron concentration~~ REFUELING BORON CONCENTRATION provides ~~shutdown margin~~ sufficient SHUTDOWN MARGIN to preclude criticality under any circumstances.

[5] ~~Regarding internal pressure limitations,~~ the containment design pressure of 55 psig would not be exceeded during a Main Steam Line Break (MSLB) or a Loss of Coolant Accident (LOCA) if the average containment air temperature was ≤140°F and the internal containment pressure ~~before a major loss of coolant accident were as much as~~ was ~~4~~ ≤1.0 psig~~.~~(1) during reactor operation (or ≤1.5 psig when above COLD SHUTDOWN with the reactor shutdown)(1).

~~The containment integrity will be protected if the visual check of all "locked closed" manual isolation valves to verify them closed is made prior to plant start-up after an extended outage where one or more valves could inadvertently be left open.~~

References
(1) FSAR, Section 14.18.
(2) Standard Review Plan 6.2.4 and Branch Technical Position CSB 6-4.

3.6.4 Two independent containment hydrogen recombiners shall be ~~operable~~ OPERABLE when ~~the reactor is at power or at hot standby~~ the plant is in POWER OPERATION or HOT STANDBY. With one ~~hydrogen~~ recombiner ~~system~~ inoperable, restore the inoperable ~~system~~ recombiner to ~~operable~~ OPERABLE status within 30 days or be in at least ~~hot shutdown~~ HOT SHUTDOWN within the next 12 hours.

Basis

[6] The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a sudden hydrogen-oxygen burn following a LOCA or MSLB. The recombiners accomplish this by recombining hydrogen and oxygen in a slow continuous manner, to form water vapor. Operation of the hydrogen recombiners are manually initiated. Two 100% capacity, independent hydrogen recombiners are provided. A single recombiner is capable of maintaining the containment hydrogen concentration in containment below the hydrogen flammability limit.

3.6 CONTAINMENT SYSTEM (Cont'd)

3.6.5 ~~Containment Purge and Ventilation Systems~~

~~a.~~ The containment purge exhaust ~~and ventilation isolation valves CV 1805, CV 1806, CV 1807, CV 1808~~ and air room supply isolation valves ~~CV 1813 and CV 1814~~ shall be ~~electrically~~ locked closed whenever the ~~reactor is in a HOT SHUTDOWN, HOT STANDBY, or POWER OPERATION condition~~ plant is above COLD SHUTDOWN.

~~b.~~ With one containment purge exhaust ~~isolation valve~~ or ~~one~~ air room supply isolation valve ~~open~~ not locked closed, ~~close~~ lock the valve closed within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Basis

[7] The containment purge exhaust and ~~ventilation~~ air room supply isolation valves are required to be locked closed ~~in conditions~~ above COLD SHUTDOWN because they are not assured to be capable of closing during DBA conditions[2] ~~, until it can be demonstrated that the valves meet the requirements of Standard Review Plan 6.2.4 and Branch Technical Position CSB 6-4~~. To ensure that the valves are closed and that the seals have not degraded, a between the valves leak rate test ~~will be~~ is periodically performed. Maintaining these valves locked closed during plant operation~~s~~ ensures that excessive quantities of radioactive materials will not be released via the containment purge exhaust or air room supply ventilation systems ~~as detailed in a & b above~~. The valves may be locked closed electrically, mechanically, or by other physical means.

~~The current method of maintaining Containment Building pressure below one psig is by the removal of non condensible gases from the Containment Building through a clean waste receiver tank whose rupture disc has been removed and then ultimately to the plant stack. This path is isolated by two automatic isolation valves prior to entry into the plant stack.~~

4.5.2 Local Leak Detection Tests (continued)

c. Corrective Action

(1) If at any time it is determined that 0.60 L_a is exceeded, repairs shall be initiated immediately. If repairs are not completed and conformance to the acceptance criterion of 4.5.2.b(1) is not demonstrated within 48 hours, the plant shall be placed in at least ~~hot shutdown~~ HOT SHUTDOWN within the next 6 hours and in ~~at least cold shutdown~~ COLD SHUTDOWN within the following 30 hours.

(2) If at any time it is determined that total containment leakage exceeds L_a, within one hour action shall be initiated to ~~bring the plant to hot shutdown~~ place the plant in at least HOT SHUTDOWN within the next ~~six (6)~~ hours and ~~cold shutdown~~ in COLD SHUTDOWN within the following ~~thirty (30)~~ hours.

(3) If air lock door seal leakage is greater than 0.023 L_a, repairs shall be initiated immediately to restore the door to less than specification 4.5.2.b(2). In the event repairs cannot be completed within 7 days, the plant shall be ~~brought to a hot shutdown condition~~ placed in at least HOT SHUTDOWN within the next ~~six (6)~~ hours and ~~cold shutdown~~ in COLD SHUTDOWN within the following ~~thirty (30)~~ hours.

(4) If air lock door seal leakage results in one ~~(1)~~ door causing total containment leakage to exceed 0.60 L_a, the door shall be declared inoperable and the remaining ~~operable~~ OPERABLE door shall be immediately locked closed* and tested within ~~four (4)~~ hours. As long as the remaining door is found to be ~~operable~~ OPERABLE, the provisions of 4.5.2.c(2) do not apply. Repairs shall be initiated immediately to establish conformance with specification 4.5.2.b(1). In the event conformance to this specification cannot be established within 48 hours the plant shall be ~~brought to a hot shutdown~~ placed in at least HOT SHUTDOWN within the next 6 hours and ~~cold shutdown~~ in COLD SHUTDOWN within the following 30 hours.

* Entry and exit is permissible through a "locked" air lock door to perform repairs on the affected air lock components.

4.5.2 Local Leak Detection Tests (continued)

d. Test Frequency

(1) Individual penetrations and containment isolation valves shall be leak rate tested ~~at a frequency of at least every six months prior to the first postoperational integrated leak rate test and~~ at a frequency of at least every refueling ~~thereafter~~, not exceeding a two-year interval, except as specified in (a) and (b) below:

(a) The containment equipment hatch and the fuel transfer tube shall be tested at each refueling ~~shutdown~~ outage or after each time used, if that be sooner.

(b) A full air lock penetration test shall be performed at six-month intervals. During the period between the six-month tests when ~~containment integrity~~ CONTAINMENT INTEGRITY is required, a reduced pressure test for the door seals or a full air lock penetration test shall be performed within 72 hours after either each air lock door opening or the first of a series of openings.

~~(2) Each three months the isolation valves must be stroked to the position required to fulfill their safety function unless it is established that such operation is not practical during plant operation. The latter valves shall be full stroked during each cold shutdown.~~

4.5.3 Containment Isolation Valves

a. The isolation valves shall be demonstrated ~~operable~~ OPERABLE by performance of a cycling test and verification of isolation time for auto isolation valves prior to ~~returning the valve to service~~ declaring the valve to be OPERABLE after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit.

b. Each isolation valve shall be demonstrated ~~operable~~ OPERABLE by verifying that on each containment isolation right channel or left channel test signal, applicable isolation valves actuate to their required position during ~~cold shutdown~~ COLD SHUTDOWN or at least once per refueling cycle.

c. The isolation time of each power operated or automatic valve shall be ~~determined to be within its limit as specified in Table 3.6.1 when tested~~ verified in accordance with Section XI of the ASME Boiler and Pressure Vessel Code.

d. Prior to the reactor going critical after a refueling outage, a visual check will be made to confirm that all "locked-closed" manual containment isolation valves are closed and locked (except for valves that are open under administrative control as permitted by LCO 3.6.1).

e. Each three months the isolation valves must be stroked to the position required to fulfill their safety function unless it is established that such operation is not practical during plant operation. The latter valves shall be full-stroked during each COLD SHUTDOWN.

Basis

The containment is designed for an accident pressure of 55 psig.[1] While the reactor is operating, the internal environment of the containment will ~~be air at approximately atmospheric pressure and a temperature of about 104°F. With these initial conditions, following a LOCA, the temperature of the steam air mixture at the peak accident pressure of 55 psig is 283°F~~ not exceed a pressure of 1.0 psig or a temperature of 140°F. With these initial conditions, following a design basis LOCA, the steam-air mixture will not exceed 55 psig.

Prior to initial operation, the containment was strength-tested at 63 psig and then leak rate tested. The design objective of this preoperational leak rate test was established as 0.1% by weight per 24 hours at 55 psig. This leakage rate is consistent with the construction of the containment,[2] which is equipped with independent leak-testable penetrations and contains channels over all unaccessible containment liner welds, which were independently leak-tested during construction.

Accident analyses have been performed on the basis of a leakage rate of 0.1% by weight per 24 hours. With this leakage rate and with a reactor power level of 2530 MWt, the potential public exposure would be below 10 CFR 100 guideline values in the event of the Maximum Hypothetical Accident.[3]

The performance of a periodic integrated leak rate test during plant life provides a current assessment of potential leakage from the containment in case of an accident that would pressurize the interior of the containment. In order to provide a realistic appraisal of the integrity of the containment under accident conditions, this periodic leak rate test is to be performed without preliminary ~~leak detection surveys or leak repairs and containment isolation valves are to be closed in the normal manner~~ repairs or adjustments unless those repairs or adjustments are preceded and followed by local leak rate tests and the integrated leak rate results are adjusted to reflect the as found condition of the containment.

This normal manner is a coincident two-of-four high radiation or two-of-four high containment pressure signals which will close all containment isolation valves not required for engineered safety features except the component cooling lines' valves which are closed by CHP only. The control system is designed on a two-channel (right and left) concept with redundancy and physical separation. Each channel is capable of initiating containment isolation.[4]

The Type A test requirements including pretest test methods, test pressure, acceptance criteria, and reporting requirements are in accordance with the Containment Leak Rate Testing Program.[5,6]

The frequency of the periodic integrated leak rate test is keyed to the refueling schedule for the reactor because these tests can best be performed during refueling shutdowns. The specified frequency is based on three major considerations~~.~~: First is the low probability of leaks in the liner because of (a) the test of the leak tightness of the welds during erection; (b) conformance of the complete containment to a low leak rate at 55 psig during preoperational testing which ~~in~~ is consistent with 0.1% leakage at design basis accident (DBA) conditions: and (c) absence of any significant stresses in the liner during reactor operation.

4.5 CONTAINMENT TESTS

Basis (continued)

Second is the more frequent testing, at the full accident pressure, of those portions of the containment envelope that are most likely to develop leaks during reactor operation (penetrations and isolation valves) and the low value ($0.60L_a$) of the total leakage that is specified as acceptable from penetrations and isolation valves. Third is the Containment Structural Integrity Surveillance Program which provides assurance that an important part, of the structural integrity of the containment is maintained.

The basis for specification of a total leakage rate of $0.60\ L_a$ from penetrations and isolation valves is specified to provide assurance that the integrated leak rate would remain within the specified limits during the intervals between integrated leak rate tests. This value allows for possible deterioration in the intervals between tests.

The basis for specification of an ~~airlock~~ air lock door seal leakage rate of $0.023\ L_a$ is to provide assurance that the failure of a single ~~airlock~~ air lock door will not result in the total containment leakage exceeding $0.6\ L_a$. The ~~seven (7) day LCO specified for exceeding~~ period specified for restoring the ~~airlock~~ air lock door leakage to within limits is acceptable since it requires that the total containment leakage limit is not exceeded.

Action 4.5.2c(4) is modified by a footnote that allows entry and exit to perform repairs on the affected air lock component. After each entry and exit, the OPERABLE door must be immediately closed. If the outer door is inoperable, then it may be easily accessed for most repairs. However, if the inner door is inoperable, or if repairs on the outer door must be performed from the barrel side, then it is permissible to enter the air lock through the OPERABLE door, which 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 because of 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.

CONTAINMENT INTEGRITY will be assured if a visual check is made of all manual containment isolation valves which are required to be locked closed, to verify they are actually closed and locked, prior to plant start-up after a refueling outage where one or more valves could inadvertently be left open (except for valves that are open under administrative control as permitted by LCO 3.6.1).

Containment isolation valves which are required to be locked closed are discussed in the FSAR[7]. These valves are those manual containment isolation valves which are not opened during operation except as allowed by LCO 3.6.1.

A reduction in prestressing force and change in physical conditions are expected for the prestressing system. Allowances have been made in the reactor building design for the reduction and changes. The inspection results for each tendon inspected shall be recorded on the forms provided for that purpose and comparison will be made with previous test results and the initial quality control records.

Force-time records will be established and maintained for each of the tendon groups, dome, hoop and vertical. If the force measured for a tendon is less than the lower bound curve of the force-time graph, two adjacent tendons will be tested. If either of the adjacent or more than one of the original sample population falls below the lower bound of the force-time graph, an investigation will be conducted before the next scheduled surveillance. The investigation shall be made to determine whether the rate of force reduction is indeed occurring for other tendons. If the rate of reduction is confirmed, the investigation shall be extended so as to identify the cause of the rate of force reduction. The extension of the investigation shall determine the needed changes in the surveillance inspection schedule and the criteria and initial planning for corrective action.

If the force measured for a tendon at any time exceeds the upper bound curve of the band on the force-time graph, an investigation shall be made to determine the cause.

If the comparison of corrosion conditions, including chemical tests of the corrosion protection material, indicate a larger than expected change in the conditions from the time of installation or last surveillance inspection, and investigation shall be made to detect and correct the causes.

4.5 CONTAINMENT TESTS

Basis (continued)

The prestressing system is a necessary strength element of the plant safeguards and it is considered desirable to confirm that the allowances are not being exceeded. The technique chosen for surveillance is based upon the rate of change of force and physical conditions so that the surveillance can either confirm that the allowances are sufficient, or require maintenance before minimum levels of force or physical conditions are reached.

The end anchorage concrete is needed to maintain the prestressing forces. The design investigations concluded that the design is adequate. The prestressing sequence has shown that the end anchorage concrete can withstand loads in excess of those which result when the tendons are anchored. At the time of initial pressure testing, the containment building had been subjected to temperature gradients equivalent to those for normal operating conditions while the prestressing tendon loads are at their maximum.

However, after the initial pressure test both concrete creep and prestressing losses increase with the greatest rapidity and result in a redistribution of the stresses and a reduction in end anchor force. Because of the importance of the containment and the fact that the design was new, it was considered prudent to continue the surveillance after the initial period.

Containment dome delamination inspections performed in 1970 and 1982 have confirmed that no concrete delamination has occurred. The possibility that delamination might occur in the future is remote because dome tendon prestress forces gradually diminish through normal tendon relaxation and concrete strength normally increases over time. To account for this remote possibility, however, an additional delamination inspection will be performed in the event that 5% or more of the installed tendons must be retensioned to compensate for excessive loss of prestress. This inspection would be to confirm that any systematic excessive prestress loss did not result from delamination and that the retensioning process did not result in delamination.

References

(1) Updated FSAR Section ~~5.8.2.~~ 5.8.1.

(2) Updated FSAR Section 5.8.8

(3) Updated FSAR 14.22

(4) Updated FSAR Section ~~8.5.1.2~~ 6.7.2.3.

(5) 10 CFR Part 50, Appendix J.

(6) Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program", September 1995.

(7) Updated FSAR Sections 5.1.