NMC
Committed to Nuclear Excellence

Monticello Nuclear Generating Plant
Operated by Nuclear Management Company, LLC

December 21, 2001

10 CFR Part 50
Section 50.90

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

License Amendment Request for
Containment Systems Technical Specification Changes

Attached is a request for a change to the Technical Specifications (TS), Appendix A of Operating License DPR-22, for the Monticello Nuclear Generating Plant. This request is submitted pursuant to and in accordance with the provisions of 10 CFR Part 50, Sections 50.90 and 50.91.

The purpose of this License Amendment Request is to revise the Containment Systems Section of the Technical Specification (TS) to clarify existing requirements, make wording improvements, revise existing limiting condition for operations (LCO) and surveillance requirements (SR), and add an additional TS LCO to the Monticello TS.

Exhibit A contains the Proposed Changes, Reasons for Change, a Safety Evaluation, a Determination of No Significant Hazards Consideration and an Environmental Assessment. Exhibit B contains current Monticello Technical Specification pages marked up with the proposed changes. Exhibit C contains revised Monticello Technical Specification pages.

This submittal does not contain any new NRC commitments. However, it does satisfy a prior statement made by the Monticello Nuclear Generating Plant in Licensee Event Report (LER) 2000-010, Revision 1, dated October 13, 2000. This LER stated that a Technical Specification revision would be submitted to clearly state that an automatic containment isolation valve that is deactivated in the closed position is considered operable.

The Monticello Operations Committee has reviewed this application. A copy of this submittal, along with the Determination of No Significant Hazards Consideration, is being forwarded to our appointed state official pursuant to 10 CFR 50.91(b)(1).

A001

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Nuclear Management Company, LLC requests a period of up to 60 days following receipt of this license amendment to implement the changes.

If you have any questions regarding this License Amendment Request please contact Doug Neve, Licensing Project Manager (Interim), at (763) 295-1353.

Jeffrey S. Forbes
Vice President
Monticello Nuclear Generating Plant

Subscribed to and sworn before me this 21 day of December, 2001.

Notary

COLLEEN A. HANNON
NOTARY PUBLIC - MINNESOTA
My Comm. Exp. Jan. 31, 2005

Attachments:
- Exhibit A – Evaluation of Proposed Changes to the Monticello Technical Specifications
- Exhibit B – Current Monticello Technical Specification Pages Marked Up With Proposed Changes
- Exhibit C – Revised Monticello Technical Specification Pages

cc: Regional Administrator-III, NRC
NRR Project Manager, NRC
Sr. Resident Inspector, NRC
Minnesota Department of Commerce
J Silberg, Esq.

License Amendment Request for
Containment Systems Technical Specification Changes

Evaluation of Proposed Changes to the Monticello Technical Specifications

Pursuant to 10 CFR 50.90 and 10 CFR 50.91, Nuclear Management Company, LLC (NMC) hereby proposes the following changes to Appendix A, of Facility Operating License DPR-22, Technical Specifications (TS) and Bases for Monticello Nuclear Generating Plant.

Background

a. Monticello TS include Limiting Condition for Operation (LCO) and Surveillance Requirements (SR) for Suppression Pool Water Level instrumentation. However, the instruments in question, TS 3.7.A.1.f/4.7.A.1.f, do not meet the requirements of 10 CFR Part 50, Section 50.36(c) for inclusion into the Technical Specifications. Change 1 to this license amendment request provides for the deletion of the TS LCO and SR and a proposed wording change to TS LCO 3.7.A.1.e which will allow a 2 hour time period when suppression pool water level may be allowed outside of its required limits.

b. Clarifications to the Action Statements of TS Section 3.7.A are needed due to multiple action requirements causing operator confusion regarding which action statement is applicable. Change 2 of this license amendment request provides the proposed clarifications of TS 3.7.A.

c. Provide a new TS 3.7.A.5.c LCO to allow for a 24 hour time period when oxygen concentration in the containment may be greater than or equal to 4% by volume. This wording is similar to the wording in NUREG-1433 (Reference 1). Change 3 provides this proposed change.

d. Monticello Licensee Event Report (LER) 2000-010 (Reference 2) discusses an event in which two motor operated valves, even though closed, should have been declared inoperable per TS because it had not been demonstrated that the valves met criteria that assured automatic closure capability. Monticello TS 4.7.D.2 requires that the position of at least one fully closed valve in each line having an inoperable automatic containment isolation valve be recorded daily. This TS is being reworded for clarification. Change 4 to license amendment request provides this proposed change.

e. A wording clarification to the existing TS 3.7.A.5.c LCO is also proposed. This TS LCO could be misinterpreted such that purging and venting through the 18 inch purge and vent valves is not allowed when the mode switch is in refuel. Additionally, TS 3.7.A.5.c is proposed to be relocated to TS 3.7.D.3, which is a more appropriate location for the purge and vent isolation valves, with clarifying wording for plant conditions during purging and venting operations. Change 5 to this proposed license amendment request provides these proposed changes.

The proposed changes to Appendix A of the Monticello Operating License are described below. Specific wording changes are shown in Exhibits B and C. The following provides a description of the changes referenced above, the reason for the change, and a safety evaluation for each of the changes.

A. Change 1 – Revision to Suppression Pool Volume and Temperature (pages 157 and 177)

Proposed Changes and Reasons for Changes

Revise TS 3.7.A.1.f/4.7.A.1.f, by deleting this TS LCO and SR for the instrumentation that monitors suppression pool water level. This change will eliminate an unnecessary 6 hour shutdown LCO to calibrate this instrumentation. Also, add an additional wording revision for TS 3.7.A.1.e to allow for a period of 2 hours to return the suppression pool level to within the limits specified, when the suppression pool water level is outside of its required limits.

These changes are needed to eliminate an unnecessary LCO and SR and to allow a 2 hour period of time in which suppression pool water level may be outside its required limits.

The TS Bases have been revised, consistent with the changes described above.

Safety Evaluation

Deleting TS LCO 3.7.A.1.f is acceptable because it does not meet the requirements of 10 CFR 50.36(c)(2)(ii) for inclusion into the TS. The instrumentation of TS 3.7.A.1.f does not meet the criteria established in 10 CFR 50.36(c)(2)(ii), in that, this instrumentation is not used for detection or to provide an indication in the control room of a significant abnormal degradation of the reactor coolant pressure boundary. Additionally, this instrumentation is not part of the primary success path and does not provide a safety function or actuation to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Nor, has this instrumentation been shown, either through operating experience or probabilistic risk assessment, to be significant to the public health and safety. Specifying suppression pool water level meets criteria 2 of 10 CFR 50.36(c)(2)(ii) as a variable and is satisfied by TS 3.7.A.1.e, and is not proposed to be changed.

Additionally, the deletion of TS SR 4.7.A.1.f is acceptable because, without the LCO which it supports, this SR no longer satisfies the requirements of 10 CFR 50.36(c)(3) for inclusion in the TS.

Revising the wording of TS 3.7.A.1.e, to allow up to 2 hours to restore level, is acceptable because the suppression pool water level does not change rapidly during normal

operation. During operations that do create changes to the suppression pool water level, the level of the pool is closely monitored. Because of the large volume of water in the suppression pool the pool level changes very slowly. The 2 hour completion time is sufficient to restore suppression pool water level to within limits. If the water level cannot be returned to within its established band within the 2 hour period then the reactor will have to be placed in a condition in which this LCO does not apply, which means placing the reactor in cold shutdown within 24 hours and suspending all activities with the potential for draining the reactor vessel.

b. Change 2 – Clarify Action Statements in TS Section 3.7.A (pages 163, 165, 166)

Proposed Changes and Reasons for Changes

Add the following action statements for TS Sections 3.7.A.1, 3.7.A.3, 3.7.A.4 and 3.7.A.5:

1) Add TS 3.7.A.1.f, which states that if the requirements of TS 3.7.A.1 cannot be met, place the reactor in a cold shutdown condition within 24 hours, and suspend all activities with the potential for draining the reactor vessel.

2) Add TS 3.7.A.3.c, which states that if the requirements of TS 3.7.A.3 cannot be met, the reactor shall be placed in a cold shutdown condition within 24 hours.

3) Add TS 3.7.A.4.f, which states that if the requirements of TS 3.7.A.4 cannot be met, the reactor shall be placed in a cold shutdown condition within 24 hours.

4) Renumber TS 3.7.A.6 as 3.7.A.5.d, and reword it to state that if the requirements of specification 3.7.A.5 cannot be met, the reactor shall be placed in a hot shutdown condition within 12 hours.

These changes are need to resolve the overlay of applicability for TS 3.7.A.2.a, 3.7.A.2.b and 3.7.A.2.c.

TS Bases changes are also included.

Safety Evaluation

Currently, TS Sections 3.7.A.2.a, 3.7.A.2.b and 3.7.A.2.c contain specific action statements which govern time allowed before shutdown if LCOs are not met. TS Section 3.7.A.6 is an action statement which currently applies to all of 3.7.A, therefore, Sections 3.7.A.2.a, 3.7.A.2.b and 3.7.A.2.c have two separate and different applicability action statements. This overlap in TS applicability results in conflict and confusion on the part of operators as to which action statement is applicable. The proposed changes will resolve the overlap by

1) If the containment atmosphere exceeds the oxygen concentration of greater than or equal to 4% by volume, then the oxygen concentration must be restored to less than 4% oxygen by volume within the subsequent 24-hour period. The 24-hour period is allowed when oxygen concentration is greater than or equal to 4% by volume because of the low probability of an event that would generate significant amounts of hydrogen occurring during this period;

2) If oxygen concentration cannot be restored to less than 4% by volume within the subsequent 24-hour period, the plant must be brought to a condition in which the LCO does not apply. To achieve this, the reactor must be placed in the hot shutdown condition within 12 hours. These changes do not involve equipment modifications.

The renaming, restructuring and rewording of TS 3.7.A.5/4.7.A.5 is acceptable because it will enhance the current TS requirements by adding an additional LCO which places a specified time limit on oxygen concentration greater than or equal to 4% by volume and by making the TS requirements more easily understood, which will help to prevent errors and provides more detailed instructions.

d. Change 4 – Primary Containment Automatic Isolation Valves (pages 170, 171, 171a, 182, 182a and 189)

Proposed Changes and Reasons for Changes

Rename TS 3.7.D/4.7.D from Primary Containment Automatic Isolation Valves to Primary Containment Isolation Valves. Revise TS 3.7.D.2 LCO for inoperable primary containment isolation valves (PCIVs) to state that: 1) in the event one or more penetration flow paths with one PCIV inoperable, that reactor operation in the run mode may continue provided at least one valve in each line having an inoperable valve is deactivated in the isolated condition within 4 hours (except allowing 8 hours for MSIVs and 72 hours for excess flow check valves); and, 2) in the event of one or more penetration flow paths with two PCIVs inoperable, reactor operation in the run mode may continue provided at least one valve in each line having two inoperable valves is deactivated in the isolated condition within 1 hour. In both cases, provide the definition of deactivated as being electrically or pneumatically disarmed or otherwise secured. Also add a footnote applicable to both cases, stating that valves closed to satisfy the requirements of this specification may be reopened on an intermittent basis under Operations Committee approved administrative controls.

Revise the SR to change the interval at which de-activated and isolated valves must be recorded from "daily" to "monthly" for isolation devices outside of primary containment. For those isolation devices inside primary containment, their position shall be recorded prior to entering Hot Shutdown or Startup from the Cold Shutdown condition, if the containment was deinerted during the Cold Shutdown, and if the surveillance has not been performed in

the previous 92 days. Also, this SR is footnoted to allow isolation devices inside high radiation areas to be verified closed by use of administrative means.

The proposed changes, described above, will provide additional clarifications and explanations by enhancing the LCO and SR wording to provide clearer more easily understood descriptions of conditions and requirements. This change also satisfies a previous statement made by Monticello Nuclear Generating Plant in LER 2000-010, Revision 1, dated October 13, 2000.

TS Bases changes are also included.

Safety Evaluation

Revising the title of TS Section 3.7.D/4.7.D is acceptable because it more closely reflects the substance of the LCOs and SRs within this section of the TS.

Providing a revision to the LCO for inoperable primary containment isolation valves is acceptable because it provides clarification of what is specifically required for this method of isolation, which is stated to be 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 a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. Additionally, the clarification provided as to how to deactivate an inoperable primary containment isolation valve, which is to electrically or pneumatically disarm or otherwise secure the valve is also acceptable based on engineering judgement, industry standards and the importance of primary containment operability during times when primary containment integrity is required.

Changing the interval at which deactivated and isolated valves must be recorded from daily to monthly is acceptable because the devices are operated under administrative controls and the probability of their misalignment is low. This required action does not require any testing or device manipulation. Rather, it involves verification that those devices outside of primary containment and capable of being mispositioned are in the correct position. For the devices inside primary containment, the time period specified is prior to entering Startup or Hot Shutdown from Cold Shutdown, if primary containment was deinerted during Cold Shutdown, and if the surveillance has not been performed in the previous 92 days. This period of time is based on engineering judgement and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility. Additionally, having this surveillance requirement modified by a footnote that applies to devices located in high radiation areas, and allows them to be verified by use of administrative means is considered acceptable because access to these areas is typically restricted. Therefore, the probability of misalignment of these devices, once they have been checked and verified to be in the proper position, is low.

e. Change 5 - Purge and Vent Valve LCO Relocation (pages 171a and 182a)

Proposed Changes and Reasons for Changes

Relocate TS 3.7.A.5.c LCO requirements to TS 3.7.D.3. In addition, reword this LCO for clarification. This rewording states that inerting and deinerting operations permitted by TS 3.7.A.5.b shall be via the 18-inch purge and vent valves (equipped with 40-degree limit stops). All other purging and venting, when primary containment integrity is required, shall be via the 2-inch purge and vent bypass line and the Standby Gas Treatment System.

These changes are needed to eliminate confusion and clarify conditions for the use of the 18-inch purge and vent valves.

TS Bases changes are also included.

Safety Evaluation

Relocating the requirements of TS 3.7.A.5.c to 3.7.D.3 is acceptable because it places the requirement for limiting the use of the purge and vent valves in a more appropriate TS. Since the 18-inch purge and vent valves are primary containment isolation valves it is more appropriate for the LCO limiting their use to be located in the Primary Containment Isolation Valves section of TS, rather than in the Primary Containment Oxygen Concentration section. Rewording this TS for clarification is also acceptable because it reduces confusion on the part of the operators as to when these valves can be used for purging and venting. The existing wording of this TS could be misinterpreted such that purging and venting through the 18-inch purge and vent valves is not allowed when the mode switch is in refuel. This clarification also restricts the use of these valves, in that they may not be used when primary containment integrity is required, except as allowed by TS 3.7.A.5.b.

These changes do not involve equipment modifications or program changes and therefore do not adversely affect the public health and safety.

No Significant Hazards Consideration Determination

Nuclear Management Company, LLC (NMC), proposes the changes of this License Amendment Request to revise the Monticello Technical Specifications (TS) for Containment Systems. These proposed changes provide additional time to correct a situation in which suppression pool water level may be outside the established limits, and delete an unnecessary TS regarding suppression pool water level instrumentation. Restructure the TS to provide clear Action Statements where needed. Add a time limit in

3. *The proposed amendment will not involve a significant reduction in the margin of safety.*

Providing additional time to correct a situation in which suppression pool water level may be outside the established limits, deleting an unnecessary TS regarding suppression pool water level instrumentation, restructuring the TS to provide clear Action Statements where needed; adding a time limit in which to restore oxygen concentration in the containment to within limits; and clarifying specific use and actions for Primary Containment Isolation Valves does not result in a significant reduction in the margin of safety. Allowing up to 2 hours to restore level, is acceptable because the suppression pool water level does not change rapidly during normal operation, and during operations that do create changes to the suppression pool water level, the level of the pool is closely monitored. The changes that provide specific LCO action statements for allowed time to place the reactor in a condition in which the LCO is no longer applicable are acceptable based on industry practices and engineering judgements. Adding an additional LCO which places a specified time limit on oxygen concentration greater than or equal to 4% by volume is acceptable because it provides a TS requirement which limits additional oxygen in the containment. Providing a revision to the LCO for inoperable primary containment isolation valves is acceptable because it clarifies what is specifically required for this method of isolation, and changing the interval at which deactivated and isolated valves must be recorded from daily to monthly is acceptable because the devices are operated under administrative controls and the probability of their misalignment is low. Relocating TS requirements is acceptable because it places the requirement for limiting the use of the purge and vent valves in a more appropriate TS and rewording the LCO is acceptable because it provides clarification for use of the purge and vent valves.

Therefore, these proposed changes will not involve a significant reduction in the margin of safety.

Based on the evaluation described above and pursuant to 10 CFR Part 50, Section 50.91, NMC has determined that operation of the Monticello Nuclear Generating Plant in accordance with the proposed license amendment request does not involve any significant hazards considerations as defined in 10 CFR Part 50, Section 50.92.

Environmental Assessment

Nuclear Management Company, LLC has evaluated the proposed change and determined that:

1. The changes do not involve a significant hazards consideration.

2. The change does not involve a significant change in the type or significant increase in the amounts of any effluent that may be released offsite.

3. The change does not involve a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed changes meet the eligibility criterion for categorical exclusion set forth in 10 CFR Part 51, Section 51.22(c)(9). Therefore, pursuant to 10 CFR Part 51, Section 51.22(b), an environmental assessment of the proposed change is not required.

References:

1) NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," April, 2001.

2) Monticello License Event Report No. 2000-010, Revision 1, "Technical Specification Surveillance Requirement for Containment Isolation Valves Not Performed," October 13, 2000.

License Amendment Request for
Containment Systems Technical Specification Changes

Current Monticello Technical Specification Pages Marked Up
With Proposed Change

This exhibit consists of current Technical Specification pages marked up with the proposed change. The pages included in this exhibit are as listed below:

Pages

157
163
165
166
170
171
171a
177
180
182
182a
189

d. During reactor isolation conditions the reactor pressure vessel shall be depressurized to <200 psig at normal cooldown rates if the suppression pool temperature exceed 120°F.

e. The suppression ~~chamber~~ **pool** water level shall be > -4.0 and < +3.0 inches.

⇑

INSERT

With suppression pool water level not within limits, restore water level to within limits within the succeeding 2 hours.

~~f. Two channels of torus water level instrumentation shall be operable. From and after the date that one channel is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding 30 days unless such channel is sooner made operable. If both channels are made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding six hours unless at least one channel is sooner made operable.~~

INSERT

f. If the requirements of 3.7.A.1 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours, and suspend all activities with the potential for draining the reactor vessel.

d. Whenever there is indication of relief valve operation with a suppression pool temperature of > 160°F and the primary coolant system pressure >200 psig, an extended visual examination of the suppression chamber shall be conducted before resuming power operation.

e. The suppression ~~chamber~~ **pool** water level shall be checked once per day.

~~f. The suppression chamber water level indicators shall be calibrated semiannually.~~

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
3. Pressure Suppression Chamber - Reactor Building Vacuum Breakers	3. Pressure Suppression Chamber - Reactor Building Vacuum Breakers
a. Except as specified in 3.7.A.3.b below, two pressure suppression chamber-reactor building vacuum breakers shall be operable at all times when the primary containment integrity is required. The set point of the differential pressure instrumentation which actuates the pressure suppression chamber-reactor building vacuum breakers shall be 0.5 psi.	a. The pressure suppression chamber-reactor building vacuum breakers and associated instrumentation including set point shall be checked for proper operation every three months.
b. From and after the date that one of the pressure suppression chamber-reactor building vacuum breakers is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such vacuum breaker is sooner made operable, provided that the repair procedure does not violate primary containment integrity.	

INSERT

c. If the requirements of 3.7.A.3 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours.

e. One position alarm circuit can be inoperable providing that the redundant position alarm circuit is operable. Both position alarm circuits may be inoperable for a period not to exceed seven days provided that all vacuum breakers are operable.

INSERT

f. If the requirements of 3.7.A.4 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours.

5. **Primary** Containment ~~Atmosphere Control~~ **Oxygen Concentration**

a. The primary containment atmosphere shall be reduced to less than 4% oxygen by volume with nitrogen gas whenever the reactor is in the run mode, except as specified in 3.7.A.5.b.

b. Within the 24-hour period subsequent to placing the reactor in the run mode following shutdown, the containment atmosphere oxygen concentration shall be reduced to less than 4% by volume, and maintained in this condition. Deinerting may commence 24 hours prior to leaving the run mode for a reactor shutdown.

b. When the position of any drywell-suppression chamber vacuum breaker valve is indicated to be not fully closed at a time when such closure is required, the drywell to suppression chamber differential pressure decay shall be demonstrated to be less than that shown on Figure 3.7.1 immediately and following any evidence of subsequent operation of the inoperable valve until the inoperable valve is restored to a normal condition.

c. When both position alarm circuits are made or found to be inoperable, the control panel indicator light status shall be recorded daily to detect changes in the vacuum breaker position.

5. **Primary** Containment ~~Atmosphere Control~~ **Oxygen Concentration**

Whenever inerting is required, the primary containment oxygen concentration shall be measured and recorded on a weekly basis.

c. Except for inerting and deinerting operations permitted in (b) above, all containment purging and venting above cold shutdown shall be via a 2-inch purge and vent valve bypass line and the Standby Gas Treatment System. Inerting and deinerting operations may be via the 18-inch purge and vent valves (equipped with 40-degree limit stops) aligned to the Reactor Building plenum and vent.

Relocate To TS 3.7.D.3 And Reword

~~6~~. d. If the requirements of 3.7.A.**5** cannot be met, the reactor shall be placed in a **Hot S**hutdown condition within **12** hours.

B. Standby Gas Treatment System

1. Two separate and independent standby gas treatment system circuits shall be operable at all times when secondary containment integrity is required, except as specified in sections 3.7.B.1.(a) and (b).

   a. After one of the standby gas treatment system circuits is made or found to be inoperable for any reason, reactor operation and fuel handling is permissible only during the succeeding seven days, provided that all active components in the other standby gas treatment system are operable. Within 36 hours following the 7 days, the reactor shall be placed in a condition for which the standby gas treatment system is not required in accordance with Specification 3.7.C.2.(a) through (d).

INSERT ⇐

c. Whenever primary containment oxygen concentration is equal to or exceeds 4% by volume, except as permitted by 3.7.A.5.b above, within the subsequent 24 hour period return the oxygen concentration to less than 4% by volume.

B. Standby Gas Treatment System

1. Once per month, operate each train of the standby gas treatment system for $\geq$ 10 continuous hours with the inline heaters operating.

reactor core, operations with a potential for reducing the shutdown margin below that specified in specification 3.3.A, and handling of irradiated fuel or the fuel cask in the secondary containment are to be immediately suspended if secondary containment integrity is not maintained.

D. Primary Containment ~~Automatic~~ Isolation Valves **(PCIVs)**

1. During reactor power operating conditions, all Primary Containment automatic isolation valves and all primary system instrument line flow check valves shall be operable except as specified in 3.7.D.2.

D. Primary Containment ~~Automatic~~ Isolation Valves **(PCIVs)**

1. The primary containment automatic isolation valve surveillance shall be performed as follows:

   a. At least once per operating cycle the operable isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and closure times.

   b. At least once per operating cycle the primary system instrument line flow check valves shall be tested for proper operation.

   c. All normally open power-operated isolation valves shall be tested in accordance with the Inservice Testing Program. Main Steam isolation valves shall be tested (one at a time) with the reactor power less than 75% of rated.

2. ~~In the event any Primary Containment automatic isolation valve becomes inoperable, reactor operation in the run mode may continue provided at least one valve in each line having an inoperable valve is closed.~~

3. ~~If Specification 3.7.D.1 and 3.7.D.2 cannot be met, initiate normal orderly shutdown and have reactor in the cold shutdown condition within 24 hours.~~

d. At least once per week the main steam-line power-operated isolation valves shall be exercised by partial closure and subsequent reopening.

2. ~~Whenever a Primary Containment automatic isolation valve is inoperable, the position of at least one fully closed valve in each line having an inoperable valve shall be recorded daily.~~

3. ~~Deleted~~

4. ~~The seat seals of the drywell and suppression chamber 18-inch purge and vent valves shall be replaced at least once every six operating cycles. If periodic Type C leakage testing of the valves performed per surveillance requirement 4.7.A.2.b identifies a common mode test failure attributable to seat seal degradation, then the seat seals of all drywell and suppression chamber 18-inch purge and vent valves shall be replaced.~~

INSERT ATTACHED

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
2. a. In the event one or more penetration flow paths with one PCIV inoperable, reactor operation in the run mode may continue provided that within the subsequent 4 hours (8 hours for MSIVs and 72 hours for EFCVs) at least one valve in each line having an inoperable valve is deactivated in the isolated condition. This requirement may be satisfied by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. (Deactivated means electrically or pneumatically disarm or otherwise secure the valve.)*	2. Whenever a penetration flow path is isolated by a valve deactivated in the isolated position, the position of the deactivated and isolated valves outside primary containment shall be recorded monthly. ** For isolation devices inside primary containment which have not been recorded in the previous 92 days, their position shall be recorded prior to entering Startup or Hot Shutdown from Cold Shutdown, if the primary containment was de-inerted while in Cold Shutdown.
b. In the event one or more penetration flow paths with two PCIVs inoperable, reactor operation in the run mode may continue provided that within the subsequent 1 hour at least one valve in each line having inoperable valves is deactivated in the isolated condition. This requirement may be satisfied by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. (Deactivated means electrically or pneumatically disarm or otherwise secure the valve.)*	

* Isolated valves closed to satisfy these requirements may be reopened on an intermittent basis under Operations Committee approved administrative controls.

** Isolation devices in high radiation areas may be verified by use of administrative means.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
3. The inerting and deinerting operations permitted by TS 3.7.A.5.b shall be via the 18-inch purge and vent valves (equipped with 40-degree limit stops) aligned to the Reactor Building plenum and vent. All other purging and venting, when primary containment integrity is required, shall be via the 2-inch purge and vent bypass line and the Standby Gas Treatment System.	3. The seat seals of the drywell and suppression chamber 18-inch purge and vent valves shall be replaced at least once every 6 operating cycles. If periodic Type C leakage testing performed per surveillance requirement 4.7.A.2.b identifies a common mode failure attributable to seat seal degradation, then all drywell and suppression chamber 18-inch purge and vent valves seat seals shall be replaced.
4. If Specification 3.7.D.1, 3.7.D.2 and 3.7.D.3 cannot be met initiate normal orderly shutdown and have the reactor in the Cold Shutdown condition within 24 hours.	

Bases 3.7 (Continued) :

If a loss of coolant accident were to occur when the reactor water temperature is below 330◈F, the containment pressure will not exceed the 62 psig design pressure, even if no condensation were to occur. The maximum allowable pool temperature, whenever the reactor is above 212◈F, shall be governed by this specification. Thus, specifying water volume-temperature requirements applicable for reactor water temperatures above 212◈F provides additional margin above that available at 330◈F.

The large amount of water that must be added or removed to cause a significant change in the suppression chamber water inventory is not likely to go un-noticed. With a daily check of water level, there is an extremely low probability that a loss of coolant accident will occur simultaneously with water level being outside of the specified range. ~~Two indicators provide redundant readings for comparison (with no automatic action initiation). The provisions allowing one or both indicators out of service are consistent with the need for a redundant indicator and the frequency for checking the level, respectively~~.

INSERT

Therefore, allowing up to 2 hours to restore level, should be acceptable for a limited time. The 2 hour completion time is sufficient to restore suppression pool water level to within limits.

~~In conjunction with the Mark I Containment Short Term Program, a plant unique analysis was performed which demonstrated a factor of safety of at least two for the weakest element in the suppression chamber support system and attached piping~~.

Bases 3.7 (Continued) :

vacuum breaker selector switch, and a common test switch. The reactor building vacuum breaker panel contains one red light and one green light for each of the eight valves. There are four independent limit switches on each valve. The two switches controlling the red lights are adjusted to provide an indication of disc opening of less than 1/8" at the bottom of the disc. These switches are also used to activate the valve position alarm circuits. The two switches controlling the green lights are adjusted to provide indication of the disc very near the full open position.

The control room alarm circuits are redundant and fail safe. This assures that no simple failure will defeat alarming to the control room when a valve is open beyond allowable and when power to the switches fails. The alarm is needed to alert the operator that action must be taken to correct a malfunction or to investigate possible changes in valve position status, or both. If the alarm cannot be cleared due to the inability to establish indication of closure of one or more valves, additional testing is required. The alarm system allows the operator to make this evaluation on a timely basis. The frequency of the testing of the alarms is the same as that required for the position indication system.

Operability of a vacuum breaker valve and the four associated indicating light circuits shall be established by cycling the valve. The sequence of the indicating lights will be observed to be that previously described. If both green light circuits are inoperable, the valve shall be considered inoperable and a pressure test is required immediately and upon indication of subsequent operation. If both red light circuits are inoperable, the valve shall be considered inoperable, however, no pressure test is required if positive closure indication is present.

Oxygen concentration is limited to 4% by volume to minimize the possibility of hydrogen combustion following a loss of coolant accident. Significant quantities of hydrogen could be generated if the core cooling systems failed to sufficiently cool the core. The occurrence of primary system leakage following a major refueling outage or other scheduled shutdown is more probable than the occurrence of the loss of coolant accident upon which the specified oxygen concentration limit is based. Permitting access to the drywell for leak inspections during a startup is judged prudent in terms of the added plant safety offered without significantly reducing the margin of safety. Thus, to preclude the possibility of starting the reactor and operating for extended periods of time with significant leaks in the primary system, leak inspections are scheduled during startup periods, when the primary system is at or near rated operating temperature and pressure. The 24-hour period to provide inerting is judged to be sufficient to perform the leak inspection and establish the required oxygen concentration. **If the containment atmoshere exceeds the oxygen concentration of ≥ 4% by volume, then the oxygen concentration must be restored to < 4% by volume within the subsequent 24 hour period. The 24 hour period is allowed when oxygen concentration is ≥ 4% by volume because of the low probability and long duration of an event that would generate significant amounts of hydrogen occuring during this period.** The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase oxygen concentration. Once the containment is filled with nitrogen to the required concentration, no monitoring of oxygen concentration is necessary. However, at least once a week the oxygen concentration will be determined as added assurance.

Bases 3.7 (Continued) :

While only a small amount of particulates are released from the primary containment as a result of the loss of coolant accident, high-efficiency particulate filters before and after the charcoal filters are specified to minimize potential particulate release to the environment and to prevent clogging of the charcoal adsorbers. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a system leak tightness of less than 1% bypass leakage for the charcoal adsorbers using halogenated hydrocarbon and a HEPA filter efficiency of at least 99% removal of DOP particulates. Laboratory carbon sample test results indicate a radioactive methyl iodide removal efficiency for expected accident conditions. The allowable penetration for the laboratory test is based on the 90% adsorber efficiency assumed in the off-site dose analysis and a safety factor of $\geq$ 2. Operation of the standby gas treatment circuits significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers. If the performance requirements are met as specified, the calculated doses would be less than the guidelines stated in 10 CFR 100 for the accidents analyzed.

D. Primary Containment Isolation Valves

The function of the Primary Containment Isolation Valves (PCIVs), in combination with other accident mitigation systems, is to limit fission product release during and following postulated Design Basis Accidents (DBAs) to within limits. The PCIVs help ensure that an adequate primary containment boundary is maintained during and after an accident by minimizing potential paths to the environment. Therefore, TS requirements provide assurance that primary containment function assumed in the safety analysis will be maintained. These valves are either passive or active (automatic). Manual valves, deactivated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices.

~~Double isolation valves are provided on lines penetrating the primary containment~~. Closure of one of the valves in each line would be sufficient to maintain the integrity of the Primary Containment. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a loss-of-coolant accident. Details of the Primary Containment isolation valves are discussed in Section 5.2 of the USAR. A listing of all Primary Containment automatic isolation valves including maximum operating time is given in USAR Table 5.2-3b.

The TS are modified by a footnote allowing penetration flow path(s) to be unisolated intermittently under Operations Committee approved administrative controls. These controls consist of stationing a dedicated

operator at the controls of the valve who is in constant communication with the control room. In this way, the penetration can be rapidly isolated when a need for the primary containment isolation is indicated.

With one or more penetration flow paths with one PCIV inoperable, the affected penetration must be isolated within 4 hours (8 hours for MSIVs and 72 hours for EFCVs). The 4 hour completion time is reasonable considering the time required to isolate the penetration and the relative importance of supporting primary containment. The 8 hour completion time for MSIVs allows a period of time to restore the MSIVs to operable status given the fact that MSIV closure will result in a potential for plant shutdown. The 72 hour completion time for EFCVs is reasonable considering the instrument and the small diameter of the penetration piping combined with the ability of the penetration to act as an isolation boundary. With one or more penetrations with two PCIVs inoperable, either the inoperable PCIVs must be returned to operable status or the affected penetration flow path must be isolated within 1 hour.

Specification 3.7.D.3 requires the containment to be purged and vented through the standby gas treatment system except during inerting and deinerting operations. This provides for iodine and particulate removal from the containment atmosphere. Use of the 2-inch flow path prevents damage to the standby gas treatment system in the event of a loss of coolant accident during purging or venting. Use of the reactor building plenum and vent flow path for inerting and deinerting operations permits the control room operators to monitor the activity level of the resulting effluent by use of the Reactor Building Vent Wide Range Gas Monitors.

E. Combustible Gas Control System

The function of the Combustible Gas Control System (CGCS) is to maintain oxygen concentrations in the post-accident containment atmosphere below combustible concentrations. Oxygen may be generated in the hours following a loss of coolant accident from radiolysis of reactor coolant.

The Technical Specifications limit oxygen concentrations during operation to less than four percent by volume during operation. The maintenance of an inert atmosphere during operation precludes the build-up of a combustible mixture due to a fuel metal-water reaction. The other potential mechanism for generation of combustible mixtures is radiolysis of coolant which has been found to be small.

A special report is required to be submitted to the Commission to outline CGCS equipment failures and corrective actions to be taken if inoperability of one train exceeds thirty days. In addition, if both trains are inoperable for more than 30 days, the plant is required to shutdown until repairs can be made.

Bases 4.7 (Continued) :

D. Primary Containment Isolation Valves

Those large pipes comprising a portion of the reactor coolant system whose failure could result in uncovering the reactor core are supplied with automatic isolation valves (except those lines needed for emergency core cooling system operation or containment cooling). The closure times specified in USAR Table 5.2-3b are adequate to prevent loss of more coolant from the circumferential rupture of any of these lines outside the containment than from a steam line rupture. Therefore, this isolation valve closure time is sufficient to prevent uncovering the core.

The primary containment isolation valves are highly reliable, have low service requirement, and most are normally closed. The initiating sensor and associated trip channels are also checked to demonstrate the capability for automatic isolation. Reference Section 5.2.2.5.3 and Table 5-2-3b USAR. The test interval of once per operating cycle for automatic initiation results in a failure probability of 1.1×10^{-7} that a line will not isolate. More frequent testing for valve operability results in a more reliable system.

Normally closed PCIVs are considered operable when :

Manual valves are closed, or opened in accordance with appropriate administrative controls, or

Automatic valves or remote manual valves are capable of performing their intended safety function, or

Automatic valves or remote manual valves are de-activated and secured in their closed position and this condition has been included in their design basis, or

Blind flanges are in place, or

Closed systems are intact.

With one or more penetration flow paths with one or more PCIVs inoperable, the affected penetration flow paths must be isolated. 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 a closed and de-activated automatic valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For an isolated penetration the device used to isolate the penetration should be the closest available valve to the primary containment. Affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that primary

Bases 4.7 (Continued) :

containment penetrations required to be isolated 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 that those devices outside containment and capable of potentially being mispositioned are in the correct position. The completion time of "monthly" for devices outside containment is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For the devices inside primary containment, the time period specified "prior to entering Startup or Hot Shutdown from Cold Shutdown, if primary containment was deinerted while in Cold Shutdown, if not performed in the previous 92 days" is based on engineering judgement and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility.

The surveillance requirements are modified by a footnote allowing both active and passive isolation devices located in high radiation areas to be verified by use of administrative means. Allowing 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 in the proper position, is low.

The containment is penetrated by a large number of small diameter instrument lines. A program for the periodic testing (see Specification 4.7.D) and examination of the valves in these lines has been developed and a report covering this program was submitted to the AEC on July 27, 1973.

The main steam line isolation valves are functionally tested on a more frequent interval to establish a high degree of reliability.

E. Combustible Gas Control System

The Combustible Gas Control System (CGCS) is functionally tested once every six months to ensure that the recombiner trains will be available if required. In addition, calibration and maintenance of essential components is specified once each operating cycle.

License Amendment Request for
Containment Systems Technical Specification Changes

Revised Monticello Technical Specification Pages

This exhibit consists of revised Technical Specification pages that incorporate the proposed change. The pages included in this exhibit are as listed below:

Pages

157
163
165
166
170
171
171a
177
180
181
182
182a
189

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
d. During reactor isolation conditions the reactor pressure vessel shall be depressurized to <200 psig at normal cooldown rates if the suppression pool temperature exceed 120°F.	d. Whenever there is indication of relief valve operation with a suppression pool temperature of ≥ 160°F and the primary coolant system pressure >200 psig, an extended visual examination of the suppression chamber shall be conducted before resuming power operation.
e. The suppression pool water level shall be $\geq$ -4.0 and $\leq$ +3.0 inches. With suppression pool water level not within limits, restore water level to within limits within the succeeding 2 hours.	e. The suppression pool water level shall be checked once per day.
f. If the requirements of 3.7.A.1 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours, and suspend all activities with the potential for draining the reactor vessel.	

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
3. Pressure Suppression Chamber - Reactor Building Vacuum Breakers	3. Pressure Suppression Chamber - Reactor Building Vacuum Breakers
a. Except as specified in 3.7.A.3.b below, two pressure suppression chamber-reactor building vacuum breakers shall be operable at all times when the primary containment integrity is required. The set point of the differential pressure instrumentation which actuates the pressure suppression chamber-reactor building vacuum breakers shall be 0.5 psi.	a. The pressure suppression chamber-reactor building vacuum breakers and associated instrumentation including set point shall be checked for proper operation every three months.
b. From and after the date that one of the pressure suppression chamber-reactor building vacuum breakers is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such vacuum breaker is sooner made operable, provided that the repair procedure does not violate primary containment integrity.	
c. If requirements of 3.7.A.3 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours.	

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
e. One position alarm circuit can be inoperable providing that the redundant position alarm circuit is operable. Both position alarm circuits may be inoperable for a period not to exceed seven days provided that all vacuum breakers are operable.	b. When the position of any drywell-suppression chamber vacuum breaker valve is indicated to be not fully closed at a time when such closure is required, the drywell to suppression chamber differential pressure decay shall be demonstrated to be less than that shown on Figure 3.7.1 immediately and following any evidence of subsequent operation of the inoperable valve until the inoperable valve is restored to a normal condition.
f. If requirements of 3.7.A.4 cannot be met, the reactor shall be placed in a Cold Shutdown condition within 24 hours.	c. When both position alarm circuits are made or found to be inoperable, the control panel indicator light status shall be recorded daily to detect changes in the vacuum breaker position.
5. Primary Containment Oxygen Concentration	5. Primary Containment Oxygen Concentration
a. The primary containment atmosphere shall be reduced to less than 4% oxygen by volume with nitrogen gas whenever the reactor is in the run mode, except as specified in 3.7.A.5.b.	Whenever inerting is required, the primary containment oxygen concentration shall be measured and recorded on a weekly basis.
b. Within the 24-hour period subsequent to placing the reactor in the run mode following shutdown, the containment atmosphere oxygen concentration shall be reduced to less than 4% by volume, and maintained in this condition. Deinerting may commence 24 hours prior to leaving the run mode for a reactor shutdown.	

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
c. Whenever primary containment oxygen concentration is equal to or exceeds 4% by volume, except as permitted by 3.7.A.5.b above, within the subsequent 24 hour period return the oxygen concentration to less than 4% by volume.	
d. If the requirements of 3.7.A.5 cannot be met, the reactor shall be placed in a Hot Shutdown condition within 12 hours.	
B. Standby Gas Treatment System	
1. Two separate and independent standby gas treatment system circuits shall be operable at all times when secondary containment integrity is required, except as specified in sections 3.7.B.1.(a) and (b).	B. Standby Gas Treatment System
a. After one of the standby gas treatment system circuits is made or found to be inoperable for any reason, reactor operation and fuel handling is permissible only during the succeeding seven days, provided that all active components in the other standby gas treatment system are operable. Within 36 hours following the 7 days, the reactor shall be placed in a condition for which the standby gas treatment system is not required in accordance with Specification 3.7.C.2.(a) through (d).	1. Once per month, operate each train of the standby gas treatment system for ≥ 10 continuous hours with the inline heaters operating.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
reactor core, operations with a potential for reducing the shutdown margin below that specified in specification 3.3.A, and handling of irradiated fuel or the fuel cask in the secondary containment are to be immediately suspended if secondary containment integrity is not maintained.	
D. Primary Containment Isolation Valves (PCIVs)	D. Primary Containment Isolation Valves (PCIVs)
1. During reactor power operating conditions, all Primary Containment automatic isolation valves and all primary system instrument line flow check valves shall be operable except as specified in 3.7.D.2.	1. The primary containment automatic isolation valve surveillance shall be performed as follows: a. At least once per operating cycle the operable isolation valves that are power operated and automatically initiated shall be tested for simulated automatic initiation and closure times. b. At least once per operating cycle the primary system instrument line flow check valves shall be tested for proper operation. c. All normally open power-operated isolation valves shall be tested in accordance with the Inservice Testing Program. Main Steam isolation valves shall be tested (one at a time) with the reactor power less than 75% of rated. d. At least once per week the main steam-line power-operated isolation valves shall be exercised by partial closure and subsequent reopening.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
2. a. In the event one or more penetration flow paths with one PCIV inoperable, reactor operation in the run mode may continue provided that within the subsequent 4 hours (8 hours for MSIVs and 72 hours for EFCVs) at least one valve in each line having an inoperable valve is deactivated in the isolated condition. This requirement may be satisfied by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow secured. (Deactivated means electrically or pneumatically disarm or otherwise secure the valve.)*	2. Whenever a penetration flow path is isolated by a valve deactivated in the isolated position, the position of the deactivated and isolated valves outside primary containment shall be recorded monthly.** For isolation devices inside primary containment which have not been recorded in the previous 92 days, their position shall be recorded prior to entering Startup or Hot Shutdown from Cold Shutdown, if the primary containment was de-inerted while in Cold Shutdown.
b. In the event one or more penetration flow paths with two PCIVs inoperable, reactor operation in the run mode may continue provided that within the subsequent 1 hour at least one valve in each line having inoperable valves is deactivated in the isolated condition. This requirement may be satisfied by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. (Deactivated means electrically or pneumatically disarm or otherwise secure the valve.)*	
* Isolated valves closed to satisfy these requirements may be reopened on an intermittent basis under Operations Committee approved administrative controls.	** Isolation devices in high radiation areas may be verified by use of administrative means.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
3. The inerting and deinerting operations permitted by TS 3.7.A.5.b shall be via the 18-inch purge and vent valves (equipped with 40-degree limit stops) aligned to the Reactor Building plenum and vent. All other purging and venting, when primary containment integrity is required, shall be via the 2-inch purge and vent valve bypass line and the Standby Gas Treatment System.	3. The seat seals of the drywell and suppression chamber 18-inch purge and vent valves shall be replaced at least once every six operating cycles. If periodic Type C leakage testing of the valves performed per surveillance requirement 4.7.A.2.b identifies a common mode test failure attributable to seat seal degradation, then the seat seals of all drywell and suppression chamber 18-inch purge and vent valves shall be replaced.
4. If Specification 3.7.D.1, 3.7.D.2 and 3.7.D.3 cannot be met, initiate normal orderly shutdown and have reactor in the Cold Shutdown condition within 24 hours.	

Bases 3.7 (Continued):

If a loss of coolant accident were to occur when the reactor water temperature is below 330°F, the containment pressure will not exceed the 62 psig design pressure, even if no condensation were to occur. The maximum allowable pool temperature, whenever the reactor is above 212°F, shall be governed by this specification. Thus, specifying water volume-temperature requirements applicable for reactor water temperatures above 212°F provides additional margin above that available at 330°F.

The large amount of water that must be added or removed to cause a significant change in the suppression chamber water inventory is not likely to go un-noticed. With a daily check of water level, there is an extremely low probability that a loss of coolant accident will occur simultaneously with water level being outside of the specified range.

Therefore, allowing up to 2 hours to restore level, should be acceptable for a limited time. The 2 hour completion time is sufficient to restore suppression pool water level to within limits.

Bases 3.7 (Continued):

vacuum breaker selector switch, and a common test switch. The reactor building vacuum breaker panel contains one red light and one green light for each of the eight valves. There are four independent limit switches on each valve. The two switches controlling the red lights are adjusted to provide an indication of disc opening of less than 1/8″ at the bottom of the disc. These switches are also used to activate the valve position alarm circuits. The two switches controlling the green lights are adjusted to provide indication of the disc very near the full open position.

The control room alarm circuits are redundant and fail safe. This assures that no simple failure will defeat alarming to the control room when a valve is open beyond allowable and when power to the switches fails. The alarm is needed to alert the operator that action must be taken to correct a malfunction or to investigate possible changes in valve position status, or both. If the alarm cannot be cleared due to the inability to establish indication of closure of one or more valves, additional testing is required. The alarm system allows the operator to make this evaluation on a timely basis. The frequency of the testing of the alarms is the same as that required for the position indication system.

Operability of a vacuum breaker valve and the four associated indicating light circuits shall be established by cycling the valve. The sequence of the indicating lights will be observed to be that previously described. If both green light circuits are inoperable, the valve shall be considered inoperable and a pressure test is required immediately and upon indication of subsequent operation. If both red light circuits are inoperable, the valve shall be considered inoperable, however, no pressure test is required if positive closure indication is present.

Oxygen concentration is limited to 4% by volume to minimize the possibility of hydrogen combustion following a loss of coolant accident. Significant quantities of hydrogen could be generated if the core cooling systems failed to sufficiently cool the core. The occurrence of primary system leakage following a major refueling outage or other scheduled shutdown is more probable than the occurrence of the loss of coolant accident upon which the specified oxygen concentration limit is based. Permitting access to the drywell for leak inspections during a startup is judged prudent in terms of the added plant safety offered without significantly reducing the margin of safety. Thus, to preclude the possibility of starting the reactor and operating for extended periods of time with significant leaks in the primary system, leak inspections are scheduled during startup periods, when the primary system is at or near rated operating temperature and pressure. The 24-hour period to provide inerting is judged to be sufficient to perform the leak inspection and establish the required oxygen concentration. If the containment atmosphere exceeds the oxygen concentration of $\geq 4\%$ by volume, then the oxygen concentration must be restored to $< 4\%$ by volume within the subsequent 24 hour period. The 24-hour period is allowed when oxygen concentration is $\geq 4\%$ by volume because of

Bases 3.7 (Continued):

the low probability and long duration of an event that would generate significant amounts of hydrogen occurring during this period. The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase oxygen concentration. Once the containment is filled with nitrogen to the required concentration, no monitoring of oxygen concentration is necessary. However, at least once a week the oxygen concentration will be determined as added assurance.

B. Standby Gas Treatment System and C. Secondary Containment

The secondary containment is designed to minimize any ground level release of radioactive materials which might result from a serious accident. The reactor building provides secondary containment during reactor operation, when the drywell is sealed and in service; the reactor building provides primary containment when the reactor is shutdown and the drywell is open, as during refueling. Because the secondary containment is an integral part of the complete containment system, secondary containment is required at all times that primary containment is required except, however, for initial fuel loading prior to initial power testing.

The standby gas treatment system is designed to filter and exhaust the reactor building atmosphere to the chimney during secondary containment isolation conditions, with a minimum release of radioactive materials from the reactor building to the environs. One standby gas treatment system circuit is designed to automatically start upon containment isolation and to maintain the reactor building pressure at the design negative pressure so that all leakage should be in-leakage. Should one circuit fail to start, the redundant alternate standby gas treatment circuit is designed to start automatically. Each of the two circuits has 100% capacity. Only one of the two standby gas treatment system circuits is needed to cleanup the reactor building atmosphere upon containment isolation. If one system is found to be inoperable, there is no immediate threat to the containment system performance. Therefore, reactor operation or refueling operation may continue while repairs are being made. If neither circuit is operable, the plant is placed in a condition that does not require a standby gas treatment system.

Bases 3.7 (Continued):

While only a small amount of particulates are released from the primary containment as a result of the loss of coolant accident, high-efficiency particulate filters before and after the charcoal filters are specified to minimize potential particulate release to the environment and to prevent clogging of the charcoal adsorbers. The charcoal adsorbers are installed to reduce the potential release of radioiodine to the environment. The in-place test results should indicate a system leak tightness of less than 1% bypass leakage for the charcoal adsorbers using halogenated hydrocarbon and a HEPA filter efficiency of at least 99% removal of DOP particulates. Laboratory carbon sample test results indicate a radioactive methyl iodide removal efficiency for expected accident conditions. The allowable penetration for the laboratory test is based on 90% adsorber efficiency assumed in the off-site dose analysis and a safety factor of ≥ 2. Operation of the standby gas treatment circuits significantly different from the design flow will change the removal efficiency of the HEPA filters and charcoal adsorbers. If the performance requirements are met as specified, the calculated doses would be less than the guidelines stated in 10 CFR 100 for the accidents analyzed.

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Closure of one of the valves in each line would be sufficient to maintain the integrity of the Primary Containment. Automatic initiation is required to minimize the potential leakage paths from the containment in the event of a loss-of-coolant accident. Details of the Primary Containment isolation valves are discussed in Section 5.2 of the USAR. A listing of all Primary Containment automatic isolation valves including maximum operating time is given in USAR Table 5.2-3b.

The TS are modified by a footnote allowing penetration flow path(s) to be unisolated intermittently under Operations Committee approved administrative controls. These controls consist of stationing a dedicated operator at the controls of the valve who is in constant communication with the control room. In this way, the penetration can be rapidly isolated when a need for the primary containment isolation is indicated.

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Bases 4.7 (Continued):

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Bases 4.7 (Continued):

event occur. This required action does not require any testing or device manipulation. Rather, it involves verification that those devices outside containment and capable of potentially being mispositioned are in the correct position. The completion time of "monthly" for devices outside containment is appropriate because the devices are operated under administrative controls and the probability of their misalignment is low. For the devices inside primary containment, the time period specified "prior to entering Startup or Hot Shutdown from Cold Shutdown, if primary containment was deinerted while in Cold Shutdown, if not performed in the previous 92 days" is based on engineering judgement and is considered reasonable in view of the inaccessibility of the devices and other administrative controls ensuring that device misalignment is an unlikely possibility.

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The main steam line isolation valves are functionally tested on a more frequent interval to establish a high degree of reliability.

E. Combustible Gas Control System

The Combustible Gas Control System (CGCS) is functionally tested once every six months to ensure that the recombiner trains will be available if required. In addition, calibration and maintenance of essential components is specified once each operating cycle.