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Enclosed is our draft comments and evaluation of the BWROG submittals on improved standard technical specifications for BWR/4 and BWR/6 containment systems.

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BWROG SUBMITTED STS FOR CONTAINMENT SYSTEMS OF BWR/4 REACTORS REVIEWED BY PLANT SYSTEMS BRANCH (SPLB)

1.1 DEFINITIONS

Primary Containment Integrity
Secondary Containment Integrity

3.6 CONTAINMENT SYSTEMS

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Regarding STS 3.6.1.7 "MSIV Leakage Control System," and STS 3.6.3.1 "Hydrogen Recombiner System," SPLB reviewed also the Surveillance Requirements (SRs)

3.3.6.3.1, 3.3.6.3.2 and 3.3.6.3.3 for the MSIV Leakage Control System Instrumentation and the SR 3.3.6.4.1 for the Hydrogen Recombiner System Instrumentation. These SRs were spelled out under the Instrumentation section and cross references to them were made under STS 3.6.1.7 and 3.6.3.1. Regarding STS 3.6.1.6 "Primary Containment [and Pressure] Isolation Valves," SPLB review was limited only to the primary containment isolation valves. Based on its review of the containment systems revised STS by the BWROG, SPLB finds the revised STS 3.6.1.3 "Primary Containment Pressure", and 3.6.1.4 "Drywell Average Air Temperature" and the SRs specified above acceptable. SPLB finds the remaining revised STS by BWROG for containment systems for BWR/4 reactors unacceptable. Enclosure 3 contains SPLB marked-up pages for the containment systems.

PLANT SYSTEMS BRANCH
DRAFT EVALUATION AND COMMENTS
ON BWROG REVISED STANDARD TECHNICAL SPECIFICATIONS
FOR CONTAINMENT SYSTEMS FOR BWR/4 REACTORS

The Plant Systems Branch has reviewed the BWR Owners Group (BWROG) submittals dated May 5, 1989 and June 23, 1989 on improved BWR/4 Standard Technical Specifications (STS) for containment systems. Our evaluation and comments are provided below.

I. DEFINITIONS OF PRIMARY CONTAINMENT INTEGRITY AND SECONDARY CONTAINMENT INTEGRITY

A. Existing GE Standard Technical Specifications (GE STS) for BWR/4 contain definitions of primary containment integrity and secondary containment integrity in the Definitions section. These definitions have been deleted in the revised STS by the BWR owners Group (BWROG). The BWROG justified the deletions stating that they are confusing when they are compared to their respective Limiting Conditions for Operations (LCOs) and that further all the requirements identified in the definitions have been specifically addressed in the revised STS LCOs for primary and secondary containments. The staff disagrees with the deletions and the associated justification. The staff believes that summarizing all the requirements in one place in the document, that is, in the Definitions Section, has considerable merit to it since it provides for clarity. Therefore, the staff requires the inclusion of definitions of the primary containment integrity and secondary containment integrity in the Definitions section of the revised STS for BWR/4.

B. The staff requires modifications of the definitions currently found in the existing STS for BWR/4 as appropriate, for example, references for Tables may be deleted. Also, the identifications for specifications may have to be changed. The existing definition refers only to a single barrier for

providing isolation of a primary containment penetration. However, the applicant GICs require dual barriers. Therefore, the revised STS definition should incorporate the need to provide dual barriers. ~~The revised STS definition of primary containment integrity should also include reference to specifications which cover suppression chamber and primary containment purge system.~~

II. REVISED STS 3.6.1.1 PRIMARY CONTAINMENT

A. The revised STS 3.6.1.1 "Primary Containment," and revised STS 3.6.1.6 "Primary Containment [and Pressure] Isolation Valves" combine the current BWR/4 STS 3/4.6.1.1 "Primary Containment Integrity," and 3/4.6.1.2 "Primary Containment Leakage," and 3/4.6.1.2 "Suppression Chamber". The caption "Primary Containment" given to revised STS 3.6.1.1 is too broad and vague. It should be changed to "Primary Containment Integrity." Also, the LCO for the revised STS states that the primary containment shall be OPERABLE. The LCO for the corresponding GE STS 3/4.6.1.1 states that the primary containment integrity shall be maintained. The staff believes that the word OPERABLE is too broad and that it may include other requirements in addition to maintaining the primary containment integrity. Since other requirements are specifically addressed in separate specifications, the LCO should be limited to maintaining the primary containment integrity. As a followup, Condition A and the associated ACTION should be reworded so as to refer to primary containment integrity rather than its operability.

B. The Surveillance Requirements (SRs) 3.6.1.1.2, 3.6.1.1.3 and 3.6.1.6.12 should be combined into a single SR to include all Appendix J, Type A, B and C tests. The current scheme of relocating the SR pertaining to Appendix J, Type C tests alone in a different revised STS (3.6.1.6) is confusing. It is more appropriate to put the above SR under the specification that deals with the containment integrity than elsewhere.

C. The current GE STS SR 4.6.1.1.d requires verification of compliance of suppression chamber with GE STS 3.6.2.1 which deals with the suppression chamber. The above SR has been prescribed as part of verification of the primary containment integrity. The subject GE STS 3/4.6.2.1 addresses the issue of drywell-to-suppression chamber bypass leakage in the LCO Item b

and the associated ACTION e and the SR 4.6.2.1.f. The revised SR 3.6.1.1. deals with the surveillance requirement for the drywell-to-suppression chamber bypass leakage covered by existing SR 4.6.2.1.f. The revised STS on suppression chamber deletes the LCO Item b and the associated ACTION e of the GE STS. The staff does not consider that the surveillance requirement SR 3.6.1.1.1 by itself can cover all the requirements identified in the existing GE STS 3/4.6.2.1, LCO Item b, associated ACTION e and the SR 4.6.2.1.f. No SR can be a substitute for an LCO or its associated ACTION if one is specified. SR at best only provides a reasonable assurance that the LCO will be met at all times during the specified plant operational conditions. Also, the specified ACTION has to be performed whenever an LCO is not met. So, the staff cannot agree with the Owners Group that a SR by itself can be a substitute for an LCO or its associated ACTION. The staff, therefore, requires the GE STS 3.6.2.1, LCO Item b and the associated ACTION e to be incorporated in the revised STS 3.6.1.1.

D. The Bases Section for revised STS 3.6.1.1 must define the parameters L_a, L_d and L_{rt} as required by Appendix J. Also, the writeup should be revised to refer to primary containment integrity instead of primary containment operability.

III. 3.6.1.2 PRIMARY CONTAINMENT AIR LOCK

A. The revised STS LCO 3.6.1.2 refers to a single air lock since the lead plant has only one air lock. The STS has to be further revised to accommodate the possibility of more than one primary containment air lock.

B. Section 3.6.1.3b of the current GE STS for BWR/4 relates overall air lock leakage rate criterion to the OPERABLE requirements of the air lock. BWROG has deleted this criterion from revised STS LCO 3.6.1.2 stating that it is covered in the revised STS SR 3.6.1.2.2. The staff disagrees with the Owners Group position that an SR can substitute an LCO. An LCO has to be met at any time during specified operational conditions. Likewise, the associated corrective ACTION has to be performed at any time it is detected that the corresponding LCO has not been met. On the other hand, surveillance requirements stipulate operability demonstration tests or verifications only at specified intervals. Such tests or verifications are intended

to provide reasonable assurance that in the interval between tests or verifications, the subject systems, equipment or components will be OPERABLE and perform their intended function, when required. However, the staff will accept deletion of overall air lock leakage OPERABILITY criterion from the LCO, provided the associated acceptance criterion is explicitly spelled out in the corresponding Basis. This is consistent with current staff position of relocating Appendix J requirements from the STS, except those that Appendix J specifically requires to be put in the TS. The staff finds that the Bases Section does not explicitly spell out the acceptance criterion for the overall air lock leakage rate. Therefore, the staff finds the deletion of the overall air lock leakage rate OPERABILITY criterion from either the revised LCO 3.6.1.2 or its associated Basis, unacceptable.

C. The revised STS LCO 3.6.1.2 deletes Section 3.6.1.3.a of the current GE STS for BWR/4s which requires both the inner and outer doors of each air lock be closed during power operation. The Owners Group has justified the deletion by referring to the provision of an interlock mechanism, and the revised SR 3.6.1.2.1 covering the demonstration of its operability. The Owners Group contends that such a provision meets the air lock operability requirements. The staff does not consider closure of a single air lock door is sufficient to maintain full containment integrity without an exemption. Therefore, the staff has always applied the single failure criterion for air lock doors. Further, the staff considers the air lock interlock failure and air lock door seal failure as failures of active components. Since the surveillance of interlock is once per 6 months as specified in revised SR 3.6.1.2.1, it is possible that its failure can be unnoticed for a period of 6 months. Therefore, the staff finds that to rely on the closure of a single door instead of two will increase the probability of loss of containment integrity in the event of failure of either a door seal or the interlock. The relaxation of the single failure criterion applied to the air lock will unacceptably reduce the margin of safety for containment integrity. The staff position on the single failure criterion for air lock doors is similar to that for containment isolation valves in a penetration, which requires two barriers. Moreover, there is nothing in the revised ACTION statements or Bases section which implies that both the doors have to be kept closed during power operation to ensure

operability of the air lock. Therefore, the staff finds the deletion of the requirement for both air lock doors to be closed during power operation unacceptable.

D. A single NOTE on permissible access under administrative control into and out of containment to cover all the corrective ACTIONS A.1, A.2 and A.3 instead of three as proposed should be sufficient. The access should be restricted to entry and exit through one air lock door which is otherwise kept closed and that too only for performing all the specified ACTIONS. The cumulative total access time for performing all the specified ACTIONS should not exceed 1 hour per year. The above NOTE should be applicable to conditions B, C, D and E identified in the revised STS. The staff finds the NOTES in their present form unacceptable.

E. The current GE STS 3.8.1.3 ACTION a.2 for BWR/4 allows the operation of the plant under the specified condition (locking closed an operable air lock door within 24 hours) only until the next required overall air lock leakage test. The revised STS does not have such a time limit. The staff finds omission of the time limit unacceptable, since it allows indefinite operation with one OPERABLE air lock door closed and the other in an inoperable state. Likewise, the staff finds omission of the time limit unacceptable when interlock mechanism for the air lock continues to be inoperable beyond 24 hours.

F. Revised STS SR 3.6.1.2.2 has specified "no detectable seal leakage" as the acceptance criteria for air lock door seal testing. The staff finds this to be unrealistically stringent. Therefore, the staff recommends quantifying the seal leak rate.

IV 3.6.1.7 MSIV LEAKAGE CONTROL SYSTEM

A. Owners Group states that the provisions of LCO 3.0.4 are not applicable, but has not justified the inapplicability. The staff finds this unacceptable.

B. Owner's Group has added the ACTION CONDITION B to cover the situation when both the MSIV Leakage Control Subsystems (LCS) are inoperable. The required ACTIONS B.1 and B.2 permit continued plant operation provided at least

one subsystem is restored to OPERABLE status within 7 days and the initial inoperable subsystem is restored to OPERABLE status within 30 days from discovery of the initial inoperable subsystem. GE STS 3.6.1.4 for BWR/4 ACTION statement does not allow the above required actions when both the subsystems are inoperable. The owners group justified the added required ACTIONS B.1 and B.2 stating that the 7 day completion time for one subsystem is consistent with other technical specifications which have a 30 day completion time for a single inoperable subsystem, and that these actions provide an opportunity to restore the subsystem prior to an unnecessary plant shutdown. The staff disagrees with the added ACTION Condition B and the associated REQUIRED ACTIONS B.1 and B.2 and the BWROG justification for them. BWROG has not provided a specific justification for the relaxation sought for the MSIV-LCS but rather relies on such flexible provisions permitted in technical specifications for other systems that have two subsystems. Moreover, the MSIV-LCS performs a vital function by processing the fission products which could leak through the closed MSIVs after a design basis LOCA. Therefore, at least one subsystem must be always available during plant OPERATIONAL CONDITIONS 1, 2 and 3. For the above reasons, the staff finds the added ACTION CONDITION B and the associated REQUIRED ACTIONS B.1 and B.2 and COMPLETION TIMES for them specified in revised STS 3.6.1.7 unacceptable.

C. For the same reasons stated in Item B above, the staff finds the wording of ACTION CONDITION C specified in revised STS 3.6.1.7 unacceptable.

D. SR 3.6.1.7.2 of revised STS 3.6.1.7 does not provide how electrical continuity of each MSIV-LCS subsystem heater element circuitry will be demonstrated once every 31 days. Current GE STS SR 4.6.1.4.a.3 for BWR/4 specifies how the above can be demonstrated. BWROG states that the details of how operability is demonstrated has been moved to the Bases Section. Also, the proposed SR deletes demonstration tests once every 31 days for the outboard MSIV-LCS subsystem heater element. Proposed SR 3.6.1.7.3 is not adequate to cover this deletion, since it has to be implemented only once every 18 months. For the above reasons, the staff finds the SR 3.6.1.7.2 of revised STS 3.6.1.7 unacceptable.

In this context, the staff notes that the BASIS for SR 3.6.1.7.2 does not contain the details.

E. SR 3.6.1.7.3 of revised STS 3.6.1.7 is incomplete when compared with SR 4.6.1.4.C of GE STS 3.6.1.4 for BWR/4. The BWROG states that the details of the system functional test have been moved to the Bases Section. However, the Bases Section does not explicitly call for verification of the operation of each interlock and timer as designed. Also, the Bases vaguely refer to verifying the capacity of the blowers to develop the necessary vacuum. The staff considers that as a minimum, the SR 6.1.7.3 of the revised STS should include the specific details pertaining to the verification of the blowers capacity to develop vacuum as identified in SR 4.6.1.4.C.2 of GE STS. For the reasons stated above, the staff finds SR 3.6.1.7.3 of the revised STS in its present form unacceptable.

V. REVISED STS 3.6.1.5 PRIMARY CONTAINMENT PURGE SYSTEM

A. The lead plant, Hatch 2, does not have any primary containment purge system isolation valves. However, it has 18 inch fast acting excess flow isolation damper which may be kept open for inerting, deinerting, and pressure control. For the above reason, the lead plant does not have any specific technical specification for the primary containment purge system. BWROG has developed a plant specific Technical Specification 3.6.1.5 applicable to the lead plant. An examination of the existing TS for a large number of BWR/4 reactors indicates that the plant specific STS 3.6.1.5 developed by BWROG will have little relevance to other BWR/4 reactors. Therefore, the staff intends to review and evaluate the plant specific STS 3.6.1.5 in the next phase of review. The staff also notes that the Owners Group has not indicated that STS dealing with primary containment purge system isolation valves which will be meaningful for a large number of BWR/4 reactors will be provided in a supplementary submittal. The staff requires such a submittal. Though the staff's position relating to the review of revised STS 3.6.1.5 is as stated above, it is providing comments to guide the BWROG in developing meaningful STS for the primary containment purge system. These comments are addressed in the items that follow. These comments are based on resolution of Multiplant Action Item B-24.

B. The staff's position is that the primary containment purge system isolation valves must always be sealed closed irrespective of their sizes unless they are qualified to close under accident conditions.

C. Valves that are qualified as stated above may be open for a restricted time (typically, 90 hours per 365 days in plant operational conditions 1, 2 and 3) provided such opening is limited to inerting, deinerting or pressure control. The time limit, however, need not be applied for pressure control activity, provided it is performed using a small (typically 1 or 2 inch) bypass exhaust pathway. The LCO must specify for what activities the valves may be opened. Relocating them in the Basis section as suggested by BWROG is not acceptable. The LCO must specify the cumulative open time for qualified valves, if there are any Also, it must restrict the open lines to one supply line and one exhaust line at any one time.

D. BWROG has suggested extending the isolation time for affected penetration(s) from the current valve of 4 hours to 8 hours. The staff finds the justification provided inadequate. The staff considers the isolation time of 4 hours as reasonable time period to restore primary containment integrity.

E. The staff does not consider leak rate measurement surveillance tests conducted for purge system isolation valves with resilient seals in accordance with Appendix J, Type C test intervals as sufficient. This is, because the isolation valves with resilient seals that provide a direct pathway from the containment to the environment have been historically found to be more vulnerable to degradation than isolation valves in other systems. For this reason, the staff requires them to be tested more frequently (quarterly or biannually as appropriate) than once every 2 years as required by Appendix J. These tests are in addition to the required Appendix J Type C tests for the purge system isolation valves.

F. Few BWR/4 reactors (e.g., Peach Bottom Units 2 and 3) have inflatable seals for the purge isolation valves. The special surveillance requirements for such valves should be identified in a supplementary submittal.

VI. REVISED STS 3.6.2.1 SUPPRESSION POOL AVERAGE TEMPERATURE

A. GE STS 3/4.6.2.1 for BWR/4 reactors which deals with the technical specification for the operation of the suppression chamber is split among BWROG revised STS 3.6.2.1 (Suppression pool average temperature), STS 3.6.2.2

(Suppression pool water level), and STS 3.6.1.1 (Primary containment - SR 3.6.1.1.1 for drywell-to-suppression chamber bypass leakage). Revised LCO Conditions A, B and C relate limiting suppression pool average temperatures under various conditions to OPERABLE IRM channel readings. The BWROG has explained the reference to the IRM channel reading in the Basis section.

The staff finds the above approach of handling suppression chamber operability by three separate revised STS and relating pool average temperatures under various conditions to IRM channel readings acceptable. However, the staff finds that GE STS LCO 3.6.2.1.b which deals with drywell-to-suppression chamber bypass leakage is deleted and covered only partially by revised SR 3.6.1.1.1. The staff does not consider that a surveillance requirement can be a substitute for an LCO. Rather, it is a requirement which provides a reasonable assurance that the LCO will be met at all times during the specified plant operational conditions. The staff also finds that the GE STS 3.6.2.1, ACTION item e which identifies the ACTION to be taken when the bypass leakage exceeds the acceptable limit has been deleted. The staff finds these deletions unacceptable. The staff considers that the LCO and the associated ACTION should be incorporated in the revised STS 3.6.1.1, "Primary containment."

B. Revised STS ACTION conditions and required ACTIONS do not include GE STS 3.6.2.1., ACTION statements c and d which specify the ACTIONS to be taken when temperature instrumentation channel(s) is (are) inoperable. BWROG justified the deletions stating that these represent part of routine operational monitoring and that they do not represent instruments which support operability. The staff disagrees with the deletions and the associated justification. The operability of these channels are essential for monitoring the pool temperature and taking appropriate corrective actions in a timely manner. Therefore, the staff finds the deletions unacceptable.

C. The revised STS SR do not include GE STS 3.6.2.1 SR Items c and e which deal with visual examination of the suppression chamber after SRV operation, and channel check, channel functional test and channel calibration surveillance test intervals for the suppression pool water temperature instrumentation channels. Regarding the visual examination, BWROG justified the

deletion quoting the Topical Report NEDO-30832, "Elimination of Limit on BWR Suppression Pool Temperature for SRV Discharge with Quenchers." The staff agrees with the elimination of visual examination requirement provided the SRV discharges are through "T" or "X" Quenchers. However, the staff cannot accept the deletion of the SR relating to channel check, channel functional test and channel calibration since the SR provides the needed assurance that at least one pair in each pool sector will be operable to provide pool temperature monitoring capability.

D. The required ACTION for Condition D (pool average temperature > 100°F but < 120°F does not include placing one RHR loop in the suppression pool cooling mode which is, however, required by GE STS 3.6.2.1, ACTION Item 2.b. The BWROG justified the deletion stating that the requirement is covered by plant procedures. The staff finds this unacceptable.

VII. REVISED STS 3.6.2.2 SUPPRESSION POOL WATER LEVEL

A. Revised STS 3.6.2.2 specifies a time interval of 4 hours for restoring the suppression pool water level to within the LCO defined range when the water level is outside the range. However, GE STS 3.6.2.1, ACTION Item a specifies a restoration time of 1 hour. BWROG justified the relaxation stating that the maximum and the minimum LCO pool water levels are Emergency Procedure entry conditions and that the adverse consequences of excessive water level variations are mitigated by these procedures. The staff finds the reliance solely on emergency procedures to provide relief when LCO cannot be met, unacceptable. Since the specified range for the water level is based on LOCA and SRV discharge calculations, it is essential that the level is restored to within the LCO specified limits in a very short time. Therefore, unless the Owners Group can demonstrate that the relaxation of restoration time from the current value of 1 hour to 4 hours will have minimal adverse impact from a safety standpoint, the staff cannot accept the proposed relaxation in the revised STS.

VIII. 3.6.2.4 RESIDUAL HEAT REMOVAL SUPPRESSION POOL SPRAY

A. BWROG has not explained why the provisions of LCO 3.0.4 are not applicable for the condition when one RHR suppression pool spray subsystem is inoperable. There is no such statement in GE STS 3.6.2.2 for BWR/4. The staff finds this unacceptable.

B. Revised STS 3.6.2.4 specifies a completion time of 7 days for restoring one inoperable RHR suppression pool spray subsystem to OPERABLE status. However, the GE STS 3.6.2.2, ACTION Item "a" specifies <u>two</u> completion times which are 72 hours and 7 days and both of these are put in parenthesis. This means that for some BWR/4 reactors, 7 days allowed outage time (AOT) may be alright while for others only 72 hours AOT will be appropriate. The AOT is plant specific in the sense that some of the components of the inoperable subsystem may be required for performing some other safety function (e.g., ECCS function). Additionally, the AOT may depend upon the scope of the safety function performed by the spray system. Therefore, unless the Owners Group addresses the above concerns or alternatively specifies 72 hours, the staff cannot accept the specified completion time.

C. The required ACTIONS and completion times for Condition B which deals with the situation when both the subsystems are inoperable allows continued plant operation provided one of them is restored to OPERABLE status within a short time and the other is restored to OPERABLE status within 7 days from discovery of the initial inoperable subsystem.

The GE STS 3.6.2.2, ACTION Item b, on the other hand, indicates that bringing the reactor into a shutdown mode will be the only corrective ACTION available for some BWR/4 reactors. Therefore, unless the Owners Group identifies the need to bring the reactor into MODE 3 within 12 hours and MODE 4 within 36 hours on discovery of inoperability of both the subsystems for some reactors, the staff cannot accept the proposed required ACTIONS and the associated completion times.

D. SR 3.6.2.4.1 includes the words, "or can be aligned to its correct position." Staff finds the addition of the above words unacceptable. Aligning each

valve to its correct position is a corrective action and the objective of the SR is to verify whether each valve is in its correct position. The need for aligning them to correct positions discovered during verification tests will indicate that the spray system has been inoperable for an undefined length of time.

E. SR 3.6.2.4.2 is put in bracket; but the GE STS SR 4.6.2.2.b is not put in bracket. The staff is concerned whether the BWROG considers surveillance testing of the recirculation flow rate of RHR pumps as optional. If it is, it is unacceptable to the staff.

IX. Revised STS 3.6.2.3 RESIDUAL HEAT REMOVAL SUPPRESSION POOL COOLING

A. BWROG has not explained why the provisions of LCO 3.0.4 are not applicable for the condition when one RHR suppression pool cooling subsystem is inoperable. There is no such statement in GE STS 3.6.2.2 for BWR/4. The staff finds this unacceptable.

B. Revised STS 3.6.2.3 specifies a completion time of 7 days for restoring one inoperable RHR suppression pool cooling subsystem to OPERABLE status instead of 72 hours as specified by GE STS 3.6.2.3, ACTION Item "a". The BWROG justified the relaxed limit stating that it is consistent with current requirements for the lead BWR/4 and with the ECCS and RHR suppression pool spray requirements. The staff agrees with the specified completion time for the lead plant. However, the staff finds that the BWROG has not explained why the relaxed time is also applicable for other BWR/4 reactors. Until the BWROG addresses this concern, the staff cannot accept the relaxed closure time specified for all BWR/4 reactors.

C. Revised STS 3.6.2.3 has added required ACTIONS B.1 and B.2 and associated completion times to cover the condition when both the cooling subsystems are inoperable. GE STS 3.6.2.3, ACTION Item "b", however, requires shut-down of the reactor in specified times for the above situation. The staff finds the addition and the associated justification unacceptable.

D. SR 3.6.2.3.1 includes the words, "or can be aligned to its correct position." Staff finds the addition of the above words unacceptable.

Aligning each valve to its correct position is a corrective action and the objective of the SR is to verify whether each valve is in its correct position.

X. REVISED STS 3.6.1.6 PRIMARY CONTAINMENT [AND PRESSURE] ISOLATION VALVE

A. Revised STS 3.6.1.6, "APPLICABILITY" wording is different from the corresponding wording in GE STS 3.6.3. BWROG in its justification states that the lead BWR/4 does not require primary containment isolation valves (PCIVs) during operations with a potential for draining the reactor vessel or when handling irradiated fuel in secondary containment. However, the BWROG has not stated whether this is also true for other BWR/4 reactors. Also, it is not clear whether inoperable PCIVs can drain the vessel during certain operations for other BWR/4 reactors. If this be so, merely relying on secondary containment and associated LCOs to provide appropriate compensating actions is not sufficient. The secondary containment LCOs and associated ACTIONS cannot be a substitute for the ACTIONS specified in GE STS 3.6.3 for PCIVs. Therefore, the staff cannot accept the modified "APPLICABILITY" statements given in the revised STS 3.6.1.6. Also a note under "APPLICABILITY" statements refers to condition D which is not defined anywhere. The note does not clarify anything and should be deleted.

B. The revised STS 3.6.1.6 allows a completion time of 8 hours for condition A instead of 4 hours as specified in GE STS 3.6.3 ACTION Item "a". The BWROG justified this extension stating that it is consistent with other isolation requirements. The staff finds the extension unacceptable since the applicable GDCs require dual barriers for all containment penetrations to maintain containment integrity when it is required. For the same reason, the NOTE for Condition A which states that the specified corrective ACTION A.1 is not applicable to penetrations that have only one valve on the line needs revision.

C. It is not clear whether the pressure isolation valves covered in required ACTION A.2.2.2 are also primary containment isolation valves. If they are, then the staff cannot accept a check valve as an acceptable primary containment isolation valve without prior staff approval of plant specific analysis, unless it is inside the containment and additionally there is another

for

operable automatic valve as outboard containment isolation valve ~~in~~ the penetration. The above position is in accordance with applicable GDCs. The identified ACTION for pressure isolation valves that do not have any primary containment isolation function, the associated completion time for the ACTION and the SR 3.6.1.6.10 are not reviewed under containment systems. These are reviewed separately.

D. The revised STS 3.6.1.6 identifies the immediate suspension of core alteration when the completion times for required ACTION for Condtion A are not met in Mode 4 or 5. The GE STS 3.6.3, however, requires additionally, suspension of operations involving handling of irradiated fuel in the secondary containment and suspension of operations involving a potential for ~~draining~~ or draining the reactor vessel. The staff finds the deletion of the additional requirements by the BWROG and the associated justification unacceptable (for further discussion, see Item A above).

E. SR 3.6.1.6.1 limits verification of closure once every 31 days only to manual valves and blind flanges while GE STS SR 4.6.1.1 includes deactivated automatic isolation valves secured in position to the above list. The staff requires inclusion of the automatic isolation valves in the list. Similarly, the staff requires inclusion of the automatic isolation valves in SR 3.6.1.6.3.

F. SR 3.6.1.6.8 does not indicate that no squib will remain in use beyond the expiration of its shelf-life or operating life, as applicable. ~~At the least~~ As a minimum, the staff requires the inclusion of the 36 month test criterion in the SR and the other criterion mentioned above in the Bases Section.

G. It is not clear why SR 3.6.1.6.11 and the associated frequency are put in bracket. This should be explained.

XI. REVISED STS 3.6.1.9 SUPPRESSION CHAMBER-TO-DRYWELL VACUUM BREAKERS

A. The revised STS specifies a closure time of 8 hours from discovery of a single vacuum breaker in the open condition (Condition A identified in the STS). GE STS 3.6.4.1, ACTION Item b specifies the required corrective

ACTION for an open single vacuum breaker in a pair. The required ACTION calls for verification of closure of the other vacuum breaker in the pair within 2 hours and restoration of the open breaker to closed position within 72 hours. The BWROG justifies a closure time of 8 hours stating that the 2 hour closure time mentioned above is not appropriate to the lead BWR/4 since the lead plant has only single vacuum breakers and not pairs of vacuum breakers. However, it is obvious that the GE STS 3.6.4.1, ACTION Item b, requires the affected line to be closed by verifying it to be so within 2 hours. While the staff agrees that restoration of the open breaker in the pair to closed position within 72 hours is not appropriate for the lead plant, the staff cannot agree with keeping the affected line open up to 8 hours. Therefore, the staff requires a closure time of 2 hours for one open vacuum breaker. This is because, closure within a very short time will significantly reduce leakage between the drywell and the suppression chamber and the potential for suppression chamber overpressure due to bypass leakage if a LOCA were to occur.

B. Condition B has the words, "for reasons other than Condition A." These are explained in the Bases section. BWROG states that separate conditions have been developed and the identified corrective ACTIONS are specific to the lead BWR/4. The quoted words given above in the revised STS are vague and are not helpful to the operators. Since Condition B primarily covers a vacuum breaker which is inoperable for opening but known to be closed, it should be so identified. Moreover, the existing GE STS for BWR/4 (STS 3.6.4.1, ACTION Item a) allows a longer time for corrective ACTION, only for the situation where a vacuum breaker is inoperable for opening but known to be closed. This is because the above situation presents less risk. The quoted words may represent situations where the longer time for corrective action may be inappropriate. Also, the revised STS allows 7 days to restore the inoperable vacuum breaker to OPERABLE status instead of 3 days as required in the current STS. BWROG has justified the extended AOT stating that it is consistent with other containment functions for a single required subsystem inoperable when other subsystems are available to perform the intended function. BWROG has further stated that the above situation will not affect the isolation function. The staff finds the above justification inadequate. It may be noted that a longer time for completion of corrective

action is allowed in the current STS only because the isolation function will not be affected. However, there may be transients which may require the vacuum breaker to be OPERABLE for opening. Therefore, unless BWROG can demonstrate that the required vacuum relief can be provided during such transients with one vacuum breaker out of service, the staff cannot accept the extension of AOT to 7 days from the currently specified 3 days.

C. Condition C, the associated ACTIONS and completion times specified in the revised STS are not acceptable since they represent malfunctioning of two vacuum breakers. BWROG states that the above condition is specific to the lead BWR/4 configuration but has not explained why corrective ACTIONS have to be identified for such a condition for the lead plant. At any rate, it is inappropriate to include such a condition and the associated ACTIONS and completion times in the STS for BWR/4 reactors.

D. Revised STS has deleted ACTION Items C.1 and C.2 specified in GE ST 3.6.4.1 for BWR/4. The deleted ACTION item covers any vacuum breaker which has its position indicator inoperable. BWROG justifies the deletion stating that either the ACTION item is not applicable to the lead plant (C.1 which deals with BWR/4 reactors that have vacuum breakers in pairs) or that it is covered by SR 3.6.1.9.1 (C.2). The staff agrees with the deletion of the current STS ACTION Item C.1 for the lead plant. However, the staff finds substitution of current STS ACTION Item C.2 by SR 3.6.1.9.1 unacceptable. ACTION item requires that whenever a component is found to be inoperable during applicable operational conditions, the prescribed corrective ACTION has to be performed. The SR on the other hand requires surveillance to be conducted only at specified intervals. Also, the deleted ACTION Item C.2 requires verification of closure of vacuum breaker(s) with inoperable position indicator(s) within 24 hours after such discovery and once every 15 days thereafter by differential pressure testing. The revised STS does not address this requirement. The above concerns have to be addressed.

E. Revised STS 3.6.1.9, SR 3.6.1.9.1. specifies verification of closure of all vacuum breakers once every 14 days instead of once every 7 days as specified in GE STS 3.6.4.4, SR 4.6.4.1.0. BWROG has justified the extension stating that other STS surveillance frequencies for component position verification

are typically set at 31 days. The staff does not consider the above justification as valid since the surveillance frequency for each category of components has to be determined separately based on its application and reliability.

G. Revised STS 3.6.1.9 has deleted the SR 4.6.4.1 of the current GE STS for BWR/4. The deleted SR deals with the need to perform a CHANNEL CALIBRATION once per 18 months to verify operability of position indicators. BWROG has justified the deletion stating that this is covered in the Bases. The staff finds the Bases for the SR do not explicitly cover the channel calibration issue. Therefore, the staff finds the deletion of the channel calibration requirement from the revised STS SR unacceptable.

H. Quite a few BWR/4 reactors have vacuum breakers in pairs. BWROG must provide revised STS to cover such reactors in a supplementary submittal.

XII. REVISED STS 3.6.1.10 REACTOR BUILDING-TO-SUPPRESSION CHAMBER VACUUM BREAKERS

A. Revised LCO 3.6.1.10 has deleted the words "and closed" which is in the GE STS 3.6.4.2 LCO. BWROG relies on the definition of operability given in the Bases for deleting the quoted words. The staff considers that the inclusion of the quoted words provides clarity. So, the staff requires the quoted words to be restored in the LCO.

B. Condition A of revised STS 3.6.1.10 considers "inoperable for opening but known to be closed" and "open" as inoperable. The prescribed corrective ACTION and the completion time for the ACTION is same for both cases. GE STS 3.6.4.2 ACTION Items a and b, however, prescribe different ACTIONS. BWROG has justified the same ACTION completion time for the case when one vacuum breaker is open stating that this automatically requires the other vacuum breaker to be OPERABLE, since otherwise the plant would have to be shut as per Condition B of the revised S. The staff considers that it is essential to verify within 2 hours that the other vacuum breaker in the affected line is indeed closed. Therefore, the staff finds BWROG treating both inoperable conditions on a par unacceptable.

C. The required ACTION A.1 is vague. For the vacuum breaker which is inoperable for opening but known to be closed, the required ACTION has to be clearly spelled out as restoring it to OPERABLE status. Further, the restoration time of 7 days instead of 3 days as specified in GE STS 3.6.4.2, ACTION Item "a" has not been well justified. (See Item XI.D). For the above reasons, the staff finds the required ACTION A.1 and the completion time for the vacuum breaker which is inoperable for opening but known to be closed, unacceptable.

D. The required ACTION A.1 for the vacuum breaker which is open is vague. It has to be clearly spelled out as closing the inoperable vacuum breaker. Further, the closing time has been extended to 7 days instead of 3 days as specified in GE STS 3.6.4.2, ACTION Item "b". The above ACTION is in addition to the verification that the other vacuum breaker is in a closed position within 2 hours. The staff finds the required ACTION A.1 and the completion time for the vacuum breaker which is open, unacceptable.

E. Revised STS 3.6.1.10 has deleted ACTION Item "c" of GE STS 3.6.4.2. The deleted item deals with the condition of an inoperable position indicator. The staff finds the BWROG justification which refers to the Bases section unsatisfactory. Therefore, the staff finds the deletion unacceptable.

F. SR 3.6.1.10.2 extends the surveillance functional test interval from the existing interval of 31 days as stated in GE STS SR 4.6.4.2.b.1.a to 92 days. The Owners Group justifies this extension stating that it is consistent with current requirements for the lead BWR/4. The staff does not consider this as an adequate reason for extending it to all other BWR/4 reactors. Therefore, the staff finds the extension unacceptable. Also, the staff finds the deletion of GE STS SR 4.6.4.2.b.1.b., which calls for surveillance tests of the vacuum breaker position indicators during the functional tests of the vacuum breakers, unacceptable.

G. SR 3.6.1.10.3 excludes performance of CHANNEL CALIBRATION once per 18 months to verify operability of position indicators. This is required by GE STS SR 4.6.4.2.b.2.c). The staff finds the exclusion unacceptable (see Item XI.G).

XIII. REVISED STS 3.6.4.1.1 SECONDARY CONTAINMENT - OPERATING
REVISED STS 3.6.4.1.2 SECONDARY CONTAINMENT - REFUELING

A. GE STS 3.6.5.1 which covers secondary containment integrity for BWR/4 reactors has been split up into two Revised STS mentioned above. BWROG states that the unique configuration of the lead BWR/4 has necessitated such a split. Specifically, the refueling floor for Hatch-1 and the lead plant Hatch-2 is part of a common secondary containment. The above configuration may not be the case for some multiple unit BWR/4 reactors. Also, there are quite a few single unit BWR/4 reactors. Therefore, the revised STS 3.6.4.1 and 3.6.4.2 may not be applicable in entirety for those categories of BWR/4 reactors. The Owners Group must provide applicable STS to cover such reactors in a supplementary submittal.

B. The captions for the revised STS 3.6.4.1.1 and 3.6.4.1.2 are vague. The staff considers that it will be more appropriate to caption them as "Secondary Containment Integrity During Operation," and "Secondary Containment During Refueling." Alternatively, they can be captioned as "Reactor Enclosure Secondary Containment Integrity", and "Refueling Area Secondary Containment Integrity" provided the above captions are applicable for the lead BWR/4 and the refueling area secondary containment is a subset of the reactor enclosure secondary containment. There is an added advantage in using the alternative captions if they are applicable, since in such a case, Unit 1 need not be referred to at all in the revised STS. As for as possible, any unit TS must be complete by itself and should avoid insertion of another unit TS. If the alternative captions are applicable and used, the associated LCOs ACTIONS and SRs must also be modified to reflect the alternative captions.

C. The staff notes that the LCOs 3.6.4.1.1 and 3.6.4.1.2 refer to secondary containment operability instead of its integrity. The staff considers this inappropriate for the same reasons as explained in Item II.B. Also, the words "normal or modified" have been added in parenthesis in the LCOs for Unit 1. BWROG has not explained this addition. Further, it is not clear why Unit 2 has not been included in the LCO 3.6.4.1.2 which governs secondary containment integrity during refueling. If the alternative captions

suggested above are applicable, then the LCOs can be redefined to reflect such captions. In such a case, there will be no need to refer to Unit 1. Until all the concerns identified Items B and C are resolved satisfactorily, the staff cannot accept either the captions or the associated LCOs.

D. The condition statement A, and C for revised STS 3.6.4.1.1 and the condition statement A for revised STS 3.6.4.1.2 must be redefined so as to refer to loss of secondary containment integrity rather than loss of its operability.

E. Applicability for LCO 3.6.4.1.2 deletes operations involving the potential for draining the reactor vessel (OPDRVs). Since such a potential exists during refueling also, though reduced, the APPLICABILITY statement should include the above operations.

F. It is not clear why the identified SRs for Unit 2 during Modes 1, 2, 3 and OPDRVs are not applicable for that unit during operations involving handling of the irradiated fuel in the secondary containment or core alterations. The staff requires this concern to be addressed.

G. The revised STS specified a completion time of "as soon as practicable" for suspension of OPDRVs when secondary containment integrity for one or both of the units is lost during OPDRVs. This is vague and therefore unacceptable. The OPDRVs must be suspended immediately.

H. SR 3.6.4.1.1.2 must include blowout panels.

K. It is not clear why the SR relating to secondary containment vacuum verification once every 24 hours is put in brackets.

XIV. REVISED STS 3.6.4.2.1 SECONDARY CONTAINMENT ISOLATION VALVES - Operating
REVISED STS 3.6.4.2.2 SECONDARY CONTAINMENT ISOLATION VALVES - Refueling

A. GE STS 3.6.5.2 which covers secondary containment automatic isolation dampers or valves has been split up into Revised STS 3.6.4.2.1 and 3.6.4.2.2 as captioned above. The Owners Group states that the unique configuration of the lead BWR/4 secondary containment has necessitated such a split. The

Owners Group must provide applicable STS to cover BWR/4 reactors that do not a secondary containment design similar to the lead plant secondary containment design.

B. The captions for revised STS 3.6.4.2.1 and 3.6.4.2.2 do not include dampers. Some BWR/4 reactors may have only secondary containment isolation dampers. Therefore, it is better to put both dampers and valves in parenthesis in the STS. Also, the alternative captions (one involving the reactor enclosure secondary containment ventilation system isolation valves or dampers and the other involving the refueling area secondary containment ventilation system isolation valves or dampers) can be used if they are applicable for the lead BWR/4. In such a case, Unit 1 need not be referred to at all in the revised STS. If the alternative captions are applicable and used, the associated LCOs, ACTIONS and SRs must also be modified to reflect the alternative captions.

C. It is not clear why Unit 2 has not been included in the LCO 3.6.4.2.2. which governs secondary containment isolation valves or dampers operability during refueling. BWROG must explain this omission.

D. The associated APPLICABILITY statement for LCO 3.6.4.2.2 should include operations involving the potential for draining the vessel during refueling. This should be followed up by corresponding required ACTION also.

E. It is not clear why the identified SRs for Unit 2 during Modes 1, 2, 3 and OPDRVs are not applicable for that unit during operations involving handling of the irradiated fuel in the secondary containment or core alterations. The staff requires this concern to be addressed.

F. The revised STS allows suspension of OPDRVs as soon as practicable when identified ACTIONS and the associated completion times are not met when one or more secondary containment isolation valves is (are) inoperable during OPDRVs. This is vague and, therefore, unacceptable. The OPDRVs must be suspended immediately.

G. SR 3.6.4.2.1.1 must include verification of automatic isolation valves or dampers once every 31 days as to whether they are deactivated and secured in their positions. These are the ones that are required to be closed during accident conditions.

H. SRs 3.6.4.2.1.2 and 3.6.4.2.1.3 must include the quarterly verification of isolation time and the 18 month verification of isolation actuation on isolation actuation test signal for the automatic isolation valves or dampers also.

XV. REVISED STS 3.6.3.1 HYDROGEN RECOMBINER SYSTEM

A. BWROG has not explained why the provisions of LCO 3.0.4 are not applicable when one primary containment hydrogen recombiner subsystem is inoperable. The corresponding GE STS 3.6.6.1 for BWR/4 does not exclude the provisions of LCO 3.0.4 for the above situation. The staff finds the exclusion without justification unacceptable.

B. Revised STS 3.6.3.1 has added a plant condition (Condition B) which represents the inoperability of both recombiner subsystems. The STS identifies the required ACTIONS and their completion times for the above condition. Specifically, the STS allows restoration to OPERABLE status of one subsystem within 7 days and the other within 30 days of discovery of inoperability of the initial subsystem. GE STS 3.6.6.1 does not ~~make~~ contain any such ACTION statement. BWROG justified the proposed deletion stating that compliance with other requirements such as those specified in 10 CFR 50.44 provide sufficient overall protection to allow the proposed deviation. The Owners Group further contends that the proposed relaxation is consistent with AOTs for some other systems which include two subsystems. The staff finds the above justification inappropriate. The need for each system has to be decided on its own merits. Also, 10 CFR 50.44 provisions are part of "defense in depth strategy," and are not to be construed as permitting relaxation of some other requirements established by design basis accident analysis. The Bases section has identified the recombiner system as performing a vital safety function in limiting hydrogen concentration in the primary containment to within acceptable limits following a design basis

LOCA. Unavailability of both the subsystems will put the primary containment outside the design basis LOCA envelop analyzed and will therefore represent an unanalyzed situation. Therefore, the staff finds ACTION B and the associated corrective ACTIONS and their completion times unacceptable.

C. SR 3.6.3.1.1 requires demonstration of the heater sheath temperature to at least [600°]F within [60] minutes and maintaining it for at least [2] hours, once every 6 months. BWROG recognizes that the specified temperature is not high enough for hydrogen to recombine with oxygen. BWROG considers that the low temperature demonstration of the system semi-annually should be adequate to conclude the system's acceptable performance given the need to avoid putting undue strain on its lifetime by frequent high temperature demonstration tests. To supplement the above partial tests semiannually, the revised STS has also prescribed SR 3.6.3.1.3, which requires demonstration of the heater sheath temperature increase to [1150°]F within 90 minutes and maintaining the sheath temperature between [1150° and 1300°]F for at least [4] hours, once every 18 months. The staff agrees with the above approach of requiring partial tests semi-annually and full tests once every 18 months. However, the staff considers the words "sheath" in the SRs 3.6.3.1.1 and 3.6.3.1.3. Also, the SRs should require the above demonstrations during the recombiner system functional tests (the proposed SRs do not call for such demonstrations during the recombiner system functional tests). The staff finds the SRs 3.6.3.1.1 and 3.6.3.1.3 acceptable subject to the above modifications of the SRs.

D. SR 3.6.3.1.4 specifies that within [90] minutes following completion of the heater sheath temperature demonstration, once every 18 months, specified resistance to ground [$1x10^6$ ohms] for any heater phase must be demonstrated. The corresponding GE STS SR 4.6.6.1.b.2 specifies that the test must be performed within 30 minutes following the functional test mentioned above. BWROG has not explained the reason for extending 30 minutes to 90 minutes. It would appear that the objective in requiring the performance of the insulation test within 30 minutes is to verify whether the desired insulation exists at elevated temperatures which are required for recombiner performance. Therefore, unless BWROG can satisfactorily resolve the above issue, the staff cannot accept the proposed extension.

XVI. REVISED STS 3.6.3.2 DRYWELL COOLING SYSTEM FANS

A. The LCO for the revised STS 3.6.3.2 deletes the word "independent" for the drywell cooling system fans. Also, it is not clear whether there is a single system with two fans or two independent subsystems each with two fans (see the Bases section). The staff requires that the LCO must be redefined to state clearly how many subsystems have to be OPERABLE, whether they are independent, and how many fans are provided in each subsystem.

B. Revised STS has added Condition B and associated required ACTION and completion times for the ACTIONS. Specifically, the condition involved inoperability of [two] required drywell cooling system fans. The staff finds ACTIONS B.1 and B.2 and associated times for completion unacceptable for the same reasons as those given in this report for a number of systems which contain two subsystems. The corresponding GE STS 3.6.6.3 for BWR/4 does not have any corrective ACTION for inoperability of both hydrogen mixing subsystems.

C. It is not clear why SR 3.6.3.2.2 which deals with the system fan flow rate test is put in bracket. Does this mean that this testing is optional. If so, it is unacceptable.

XVII. REVISED STS 3.6.3.3 PRIMARY CONTAINMENT OXYGEN CONCENTRATION

A. The APPLICABILITY statements of revised STS LCO 3.6.3.3, which deals with primary containment oxygen concentration limit, allows for delay in inerting the primary containment during power ascension when the reactor is in mode 1. Specifically, it permits the primary containment to remain in a deinerted state up to 72 hours after the reactor power has reached 15 percent of its rated thermal power (RTP) instead of 24 hours specified in the corresponding GE STS 3.6.6.4 ACTION statements. Likewise, during scheduled reactor shutdown when the reactor is in Mode 1, the revised STS APPLICABILITY criteria allows deinerting the primary containment much earlier than what is allowed in the GE STS 3.6.6.4 ACTION statements. Specifically, it permits deinerting the primary containment at 72 hours prior to the reactor power falling to less than 15 percent of its RTP instead of 24 hours specified in GE STS 3.6.6.4 ACTION statements. The proposed changes in the

APPLICABILITY statements will result in less time in the inerted state for the primary containment when the reactor is in Mode 1 than that specified in the GE STS APPLICABILITY statements. BWROG has justified the increased allowances during plant startup, and that the shutdown allowance has been fixed to be the same as the startup allowance for consistency. The staff considers that the 24 hours allowance provides sufficient margin to perform the tasks mentioned above. Therefore, the staff finds the extended startup and shutdown allowances unacceptable. Also, the staff finds the APPLICABILITY statements given in the revised STS much less clear than the APPLICABLITY statement in the GE STS 3.6.6.4. Further, RTP should be spelled out as Rated Thermal Power.

B. The oxygen concentration percentage is put in parenthesis in the LCO 3.6.3.3. Since <4% by volume is standard value, there is no need to put it in parenthesis. Also, the verification within 24 hours of thermal power exceeding 15 percent of the RTP should be part of the SR to provide clarity.

Enclosure 3

BWR Owners Group STS
BWR/4

~~ENCLOSURE 3~~
Enclosure 3

1.0 DEFINITIONS

PRIMARY CONTAINMENT INTEGRITY

1.~~XX~~ PRIMARY CONTAINMENT INTEGRITY is ~~established~~ maintained when:

a. All primary containment penetrations required to be closed during accident conditions are either:

1. Capable of being isolated by an OPERABLE primary containment automatic isolation system, or

2. Isolated by locked manual valves, blind flanges, deactivated power-operated valves secured in their closed positions, or

3. Isolated by a closed system (primary containment isolation barrier) with OPERABLE containment isolation valve.

b. All primary containment equipment hatches are closed and sealed.

c. The sealing mechanism associated with each primary containment penetration (e.g., welds, bellows or O-rings) is OPERABLE.

d. Appendix J primary containment leakage rates are within their required limits.

e. Each primary containment air lock is in compliance with the requirements of Specification 3.6.1.2.

f. The drywell-to-suppression chamber bypass leakage is within the limit specified in the BASIS for Specification 3.6.1.2.

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~~SECONDARY~~ CONTAINMENT INTEGRITY ~~[illegible]~~ is ~~established~~ maintained.

1. ~~**~~ SECONDARY CONTAINMENT INTEGRITY ~~shall exist~~ when:

   a. All secondary containment penetrations required to be closed during accident conditions are either:

      1. Capable of being closed by an OPERABLE secondary containment automatic isolation system, or

      2. Closed by at least one manual valve, blind flange, or deactivated power-operated ~~automatic~~ (valve) (or) (damper) (, as applicable) secured in its closed position, ~~except as provided in Table 3.6.5.2-1 of Specification 3.6.5.2.~~

   b. All secondary containment hatches and blowout panels are closed and sealed.

   c. The standby gas treatment system is in compliance with the requirements of Specification 3.6.4.3

   d. (At least one) (The) door in each access to the secondary containment is closed (except for normal entry and exit).

   e. The sealing mechanism associated with each secondary containment penetration, e.g., welds, bellows or O-rings, is OPERABLE.

   f. The pressure within the secondary containment is less than or equal to the value required by Specification ~~3.6.5.2.a~~ 3.6.4.1.1.

BWR/4

3.6 CONTAINMENT SYSTEMS

3.6.1.1 Containment Integrity (Primary)
~~Primary Containment~~

LCO 3.6.1.1 ~~The~~ PRIMARY CONTAINMENT INTEGRITY shall be maintained ~~OPERABLE~~.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. PRIMARY CONTAINMENT ~~inoperable~~ INTEGRITY not maintained.	A.1 Restore PRIMARY CONTAINMENT INTEGRITY ~~to OPERABLE status~~.	1 hour
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~

Note: 1. Define Appendix J Parameters L_a, L_d and L_t in the corresponding BASIS for the TS 3.6.1.1.

2. Also, identify in the BASIS, the acceptable drywell to suppression chamber bypass leakage limit (less than or equal to 10 % of the acceptable A/$\sqrt{k}$ design value of [0.03] ft^2). In the ~~base~~ BASIS also relate this to an equivalent leakage through a ( ) inch diameter orifice at a differential pressure of ( ) psig.

3. ~~The BASIS should~~ Identify the above leakage limit as one of the requirements to be met for considering that the primary containment ~~integrity~~ INTEGRITY is maintained.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1.1	Demonstrate Drywell-to-Suppression Chamber differential pressure does not decrease at a rate > [0.25] inches water gauge per minute tested over a [10] minute period at an initial differential pressure of [1] psid.	18 months [AND -----NOTE----- Only required after two consecutive tests fail, until two consecutive tests pass. ---------- 9 months]
SR 3.6.1.1.2	Perform required ~~Type A~~ leak rate testing in accordance with 10 CFR 50 Appendix J and approved exemptions.	-----NOTE----- ~~Provisions of~~ SR 3.0.2 are ~~is~~ not applicable. ---------- In accordance with 10 CFR 50 Appendix J and approved exemptions
~~SR 3.6.1.1.3~~	~~Perform required Type B leak rate testing except for Containment Air Locks in accordance with 10 CFR 50 Appendix J and approved exemptions.~~	~~-----NOTE----- Provisions of SR 3.0.2 are not applicable. ---------- In accordance with 10 CFR 50 Appendix J and approved exemptions~~

~~Notes: Define 1.a, 1.d, and 1.i in BR.~~

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.1.2 Primary Containment Air Lock(S)

LCO 3.6.1.2 The Primary Containment Air Lock(s) shall be OPERABLE with:

Both doors closed except when an air lock is being used for normal transit entry and exit to containment. Then at least one airlock door shall be closed.

AND

An overall air lock leakage rate less than or equal to 0.05 La at Pa, [56] psig.

5715

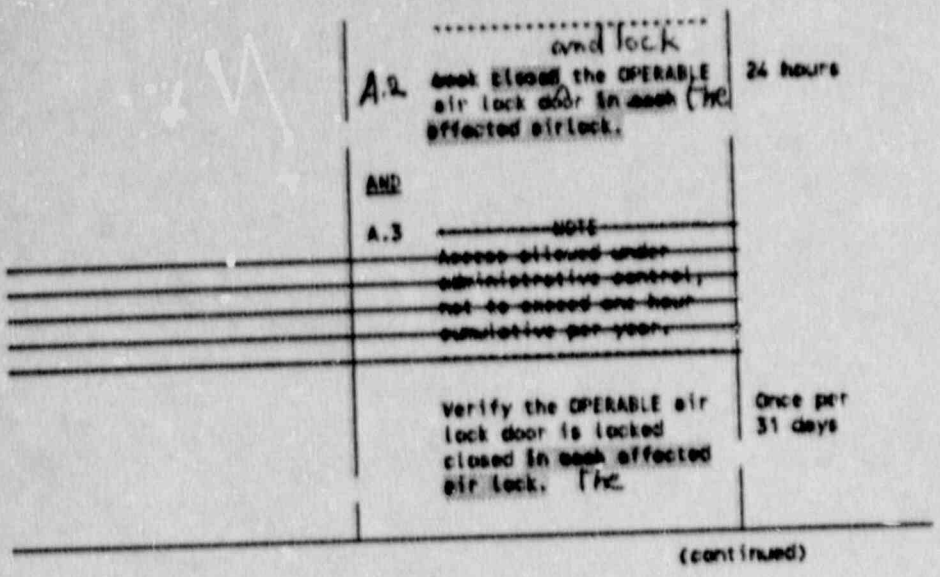
APPLICABILITY: MODES 1, 2, and 3.

----------NOTE----------
Access via an an airlock with an inoperable door or interlock is allowed for air lock repair under administrative control. Cumulative access time is not to exceed one hour per year.

----------NOTE----------
Operation with an inoperable airlock door or interlock may continue only until performance of SR 3.6.1.2.2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Primary Containment Air Lock door inoperable. OR in one primary containment Air Lock ~~One Primary Containment Airlock door and interlock mechanism inoperable.~~ or one primary containment Air Lock interlock mechanism inoperable	----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. --- ~~----------NOTE---------- Access for air lock repair is allowed under administrative control. Cumulative access time is not to exceed one hour per year. ---~~ ~~----------NOTE---------- Operation may continue only until performance of SR 3.6.1.2.2. ---~~	
	A.1 ~~----------NOTE---------- Access allowed under administrative control. ---~~ Close and maintain closed the OPERABLE air lock door in each affected air lock. (the)	Immediately
	AND	
	~~----------NOTE---------- Access allowed under administrative control, not to exceed one hour cumulative per year.~~	



A.2	~~Lock closed~~ and lock the OPERABLE air lock door in ~~each~~ the affected airlock.	24 hours
AND		
A.3	~~NOTE Access allowed under administrative control, not to exceed one hour cumulative per year.~~	
	Verify the OPERABLE air lock door is locked closed in ~~each~~ affected air lock. The	Once per 31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Primary Containment Air Lock interlock mechanism inoperable.	~~NOTES~~ ~~Access allowed under administrative control.~~	
	B.1 Close and maintain closed one OPERABLE air lock door in each affected air lock.	Immediately
	AND	
	B.2 Lock the OPERABLE air lock door closed in each affected air lock.	24 hours
	AND	
	B.3 Verify the OPERABLE air lock door is locked closed.	Once per 31 days
B. One Primary Containment Air Lock inoperable for reasons other than Condition A or B.	B B.1 Close and maintain closed the one air lock door in each affected air lock.	Immediately
	AND	
	B B.2 Restore inoperable air lock to OPERABLE status.	24 hours
~~B. Required Actions and associated Completion Times of Condition A, B, or C not met.~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~
C. ~~One~~ Condition A exists for for more than one Primary Containment Airlock.	C C.1 Perform required actions of Condition A for each affected Airlock	In accordance with Condition A for each affected Air Lock
	AND	
	C C.2 Restore one airlock to OPERABLE status.	7 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.2.1	Demonstrate the Primary Containment Air Lock interlock mechanism is OPERABLE.	-----NOTE----- Only required if not performed within previous 6 months ---------- Prior to entry into Primary Containment when Primary Containment is deinerted
SR 3.6.1.2.2	Perform required Primary Containment Air Lock Type B leak rate testing in accordance with 10 CFR 50 Appendix J and approved exemptions. The acceptance criteria for air lock testing are: A. Overall air lock leakage rate is [0.05 La] when tested at Pa. B. For each door, ~~[no detectable seal leakage when the gap between the door seals is pressurized to 10 psig for at least 15 minutes]~~. ~~Note: insert numerical quantity.~~ → the seal leakage rate is ≤ [0.01 L_a] when the gap between the door seals is pressurized to [10] psig for at least 15 minutes.	-----NOTE----- Provisions of SR 3.0.2 are not applicable. ---------- In accordance with 10 CFR 50 Appendix J and approved exemptions

CROSS-REFERENCES: None

.6 CONTAINMENT SYSTEMS

.6.1.3 Primary Containment Pressure

CO 3.6.1.3 The Primary Containment pressure shall ~~be~~ be ≤ [0.75] psig.

PPLICABILITY: MODES 1, 2, and 3.

CTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary Containment pressure > [0.75] psig.	A.1 Restore pressure to within limits.	1 hour
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~

URVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.1.3.1 Verify Primary Containment pressure is ≤ [0.75] psig.	12 hours

ROSS-REFERENCES: None

.6 CONTAINMENT SYSTEMS

.6.1.4 Drywell Average Air Temperature

CO 3.6.1.4 Drywell average air temperature shall ~~be~~ not exceed ≤ [135]'F.

PPLICABILITY: MODES 1, 2, and 3.

CTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature > [135]'F.	A.1 Restore average air temperature to within limits.	8 hours
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

URVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.4.1	Verify Drywell average air temperature is ≤ [135]'F.	24 hours

ROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.1.5 ~~Primary Containment Purge System (Optional)~~

~~LCO 3.6.1.5 The Drywell and Suppression Chamber (18) inch fast Acting Excess flow Isolation Dampers shall be OPERABLE.~~

APPLICABILITY: ~~MODES 1, 2, and 3.~~

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One or more Drywell and Suppression Chamber (18) inch fast Acting Excess flow Isolation Dampers inoperable.~~	~~A.1 Verify at least one excess flow isolation damper is OPERABLE in the affected open penetration.~~	~~Immediately~~
	~~AND~~	
	~~A.2.1 Restore the inoperable damper to OPERABLE status.~~	~~8 hours~~
	~~OR~~	
	~~A.2.2.1 Close the (18) inch Drywell and Suppression Chamber Purge Exhaust Isolation Valves.~~	~~8 hours~~
	~~OR~~	
	~~A.2.2.2 Isolate each affected penetration by use of at least one closed and deactivated automatic valve, closed manual valve or blind flange.~~	~~8 hours~~
~~B. Required Actions and associated Completion Times of Condition A not met.~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~

Replace with LCO and ACTIONS applicable to plants with primary containment purge system isolation valves. Completion times for condition A should remain at 4 hours.

Staff will consider lead plant specific ~~WOG~~ during lead plant review.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.5.1	Cycle each excess flow isolation damper.	18 months
SR 3.6.1.5.2	Visually examine each excess flow isolation damper externally to ensure there is no evidence of abnormal conditions with the damper.	18 months

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.1.6 Primary Containment (and Pressure) Isolation Valves

LCO 3.6.1.6 The Primary Containment (and Pressure) Isolation Valves* shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 when ~~associated actuation instrumentation is required to be OPERABLE per LCO 3.3.6.1.~~ handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

~~----------MODE----------~~
~~Conditions A through D may be concurrently applicable.~~
~~----------~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ~~required~~ Primary Containment Isolation Valves (or Pressure Isolation Valves) inoperable.	A.1 ----------NOTE---------- Not applicable to those penetrations that have only one isolation valve and a closed ~~system~~ or the second containment isolation barrier. ---------- Verify at least one isolation valve is OPERABLE in each affected open penetration.	Immediately
	AND	
	A.2.1 Restore the inoperable valve(s) to OPERABLE status.	8 6 hours
	OR	
	(continued)	

* Includes excess flow check valves.

Note: 1. APPLICABILITY conditions for the lead plant and in MODES 4 and 5, the corresponding corrective ACTIONS and their completion times will be reviewed during the lead plant review.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2.1 ·····NOTE····· Only applicable to Primary Containment Isolation Valves. ····· Isolate each affected penetration by use of at least one closed and deactivated automatic valve, closed manual valve or blind flange.	8 6 hours
	AND	
Containment	A.2.2.2 ·····NOTE····· 1. Only applicable to Pressure Isolation Valves that are not also Primary Isolation Valves. 2. Check valves used to satisfy this Required Action must have been demonstrated to meet SR 3.6.1.6.10. ····· Isolate the high pressure portion of the affected system from the low pressure portion by use of at least one closed manual or deactivated automatic or check valve.	8 6 hours
	AND	
	A.2.2.3 Verify each affected penetration is isolated.	Once per 31 days

To be reviewed by Reactor Systems Branch

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B. Required Actions and associated Completion Times of Condition A not met in MODE 1, 2, or 3.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~
~~BG. Required Actions and associated Completion Times of Condition A not met in MODE 4 or 5.~~ operations with a potential for draining the reactor vessel.	B BG.1 Suspend CORE ALTERATIONS. AND B2 Suspend operations with a potential for draining the reactor vessel	Immediately Immediately
C. Required Actions and associated Completion Times of Condition A not met for valve(s) required to be OPERABLE when handling irradiated fuel in the ~~primary or~~ Secondary Containment and during CORE ALTERATIONS and	AND B3 Suspend handling of irradiated fuel in the ~~primary or~~ Secondary Containment.	Immediately

~~Note: Provide justification for deleting the qualification that the provisions of Specification 3.0.3 are not applicable.~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.6.1	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. ---------- Verify all manual valves, deactivated automatic isolation valves, and blind flanges which are located outside the Primary Containment and required to be closed during accident conditions are closed.	31 days
SR 3.6.1.6.2	Verify continuity of the Traversing In-Core Probe System isolation valve explosive charge.	31 days
SR 3.6.1.6.3	Verify all manual valves, deactivated automatic isolation valves, and blind flanges which are located inside the Primary Containment and required to be closed during accident conditions are closed.	Only required if not performed in the previous 92 days. ---------- Prior to entering MODE 2 or 3 from MODE 4 if Primary Containment was de-inerted while in MODE 4

(continued)

NOTE

Not applicable to Primary Containment penetrations which have manual valves blind flanges or deactivated automatic valves secured in closed position inside the primary containment. For these penetrations SR 3.6.1.6.3 will apply.

Verify Primary containment penetrations not capable of being closed by OPERABLE Primary Containment isolation valves and required to be closed during accident conditions are closed by manual valves, blind flanges or deactivated automatic valves secured in position.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.6.1.6.4	----------NOTE---------- MSIVs may be excluded. ---------- Demonstrate isolation time of each automatic or power operated Primary Containment Isolation Valve is within limits.	[According to SR 3.0.5 OR 92 days]
SR 3.6.1.6.5	Demonstrate full closure isolation time of each Main Steam Line Isolation Valve is from [3] to [5] seconds.	[According to SR 3.0.5 OR 92 days]
SR 3.6.1.6.6	Demonstrate each automatic Primary Containment Isolation Valve actuates to its isolation position on a simulated automatic isolation signal.	18 months
SR 3.6.1.6.7	Demonstrate each reactor instrumentation line excess flow check valve actuates [on a simulated instrument line break to restrict flow to ≤ 1 gph.]	18 months
SR 3.6.1.6.8	Remove and test the explosive squib from each explosive valve of the Traversing In-Core Probe System ~~isolation valves~~.	[18] months on a STAGGERED TEST BASIS

(continued)

Note: Include in the BASIS for SR 3.6.1.6.8 the criterion that no squib will remain in use beyond the expiration of its shelf-life or operating life whichever is applicable.

SR 3.6.1.6.9	---------- NOTE ---------- In accordance with approved exemption from 10CFR50 Appendix J for test pressure	18 months
	Demonstrate the leakage rate through each Main steam Isolation Valve is ≤ [11.5] scf per hour when tested at [28] psig	

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
~~through each [10 minute~~ ~~main steam line isolation valve to ≤ [11.5] gpm per hour when tested at [28.0] psig.~~	~~SR 3.6.1.6.9 Demonstrate the leakage rate~~
SR 3.6.1.6.10 ----------NOTE---------- Only required in MODE 1 or 2. ---------- Demonstrate the leakage rate for each Reactor Coolant System Pressure Isolation Valve is ≤ [0.5] gpm per nominal inch of valve size up to a maximum of [5] gpm.	18 months
~~SR 3.6.1.6.11~~ ~~Demonstrate the combined leakage rate of ≤ gpm times the total number of Primary Containment Isolation Valves in hydrostatically tested lines which penetrate the Primary Containment, is not exceeded when these isolation valves are tested at [ ] psig.~~ 63.25	~~18 months~~
~~SR 3.6.1.6.12~~ ~~Perform required Type C leak rate testing in accordance with 10 CFR 50 Appendix J and approved exemptions.~~	~~NOTE Provisions of SR 3.0.2 are not applicable.~~ ~~In accordance with 10 CFR 50 Appendix J and approved exemptions~~

Note: ~~SR 3.6.1.6.04 and~~ 3.6.1.6.12 ~~have~~ has been incorporated into SR 3.6.1.1.2.

SR 3.6.1.6.12 Demonstrate measured leakage rate for each primary containment purge supply and exhaust isolation valve with resilient material seals is ≤ [0.01] L_a when pressurized to P_a — 92 days

Not Reviewed by SPLB

In accordance with Appendix J, Type C Test Requirements

CROSS-REFERENCES

TITLE	NUMBER
Primary Containment Isolation Actuation Instrumentation	3.3.6.1
Containment Integrity (Primary)	3.6.1.1

3.6 CONTAINMENT SYSTEMS

3.6.1.7 MSIV Leakage Control System

LCO 3.6.1.7 The MSIV Leakage Control System (LCS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV LCS subsystem inoperable. Provide justification for Note.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	30 days from discovery of inoperable subsystem
~~B. Both MSIV LCS subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~7 days~~ ~~30 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.7.1	Demonstrate each MSIV LCS blower operates for ≥ [15] minutes.	31 days
SR 3.6.1.7.2	Demonstrate electrical continuity of each ~~inboard~~ MSIV LCS subsystem heater element circuitry.	31 days
SR 3.6.1.7.3	Perform a system functional test which includes simulated actuation of each MSIV LCS subsystem throughout its operating sequence.	18 months
SR 3.6.1.7.4	Verify that at rated capacity the blowers develop at least the below required vacuum: [60] inches of water vacuum at [100] scfm for inboard valves AND	18 months

CROSS-REFERENCES

TITLE	NUMBER
MSIV Leakage Control System Instrumentation	3.3.6.3

→ [50] inches of water vacuum at [240] scfm for outboard valves

→ redefine Condition B to cover only the case where one vacuum breaker is inoperable for opening but known to be closed. Completion time should be 3 days. Also, Condition C which allows multiple vacuum breakers to fail should be deleted.

Suppression Chamber-to-Drywell VB 3.6.1.9

3.6.1.9 Suppression Chamber-to-Drywell Vacuum Breakers

LCO 3.6.1.9 [Nine] Suppression Chamber-to-Drywell Vacuum Breakers shall be OPERABLE.

AND

All Suppression Chamber-to-Drywell Vacuum Breakers shall be closed.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Suppression Chamber-to-Drywell Vacuum Breaker open.	A.1 Close the open vacuum breaker.	8 hours from discovery of open vacuum breaker
B. One required Suppression Chamber-to-Drywell Vacuum Breaker inoperable for reasons other than Condition A.	B.1 Restore one inoperable vacuum breaker to OPERABLE status.	[7] days from discovery of inoperable vacuum breaker

(continued)

Note 1. Provide supplementary STS for BWR/4 reactors which have the above vacuum breakers in pairs.

2. Staff will consider the lead plant specific ~~review~~ TS relating to the above vacuum breakers during the lead plant TS review. However, note that the proposed TS are inappropriate for the lead plant. The proposed corrective ACTIONS, their completion times and the SRs need revision. Also, a separate corrective ACTION and its completion time should be identified for a vacuum breaker with inoperable position indicator. Further, there should be SRs for demonstrating OPERABILITY of position indicators.

3. The (to be developed) STS for reactors with vacuum breakers in pairs should ~~split Condition B into two conditions, one for a vacuum breaker inoperable for opening but known to be closed and another for a~~

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One Suppression Chamber-to-Drywell Vacuum Breaker open. AND One required Suppression Chamber-to-Drywell Vacuum Breaker inoperable for reasons other than Condition A.	C.1 Close the open vacuum breaker. AND C.2 Restore one inoperable vacuum breaker to OPERABLE status.	8 hours from discovery of open vacuum breaker [7] days from discovery of inoperable vacuum breaker
D. Required Actions and associated Completion Times of Condition A, B or C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	12 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.9.1	Verify all vacuum breakers are closed.	14 days
SR 3.6.1.9.2	Perform a functional test of each required vacuum breaker.	31 days
SR 3.6.1.9.3	Demonstrate the opening setpoint of each required vacuum breaker is ≤ [0.5] psid.	18 months

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.1.10 Reactor Building-to-Suppression Chamber Vacuum Breakers

LCO 3.6.1.10 All Reactor Building-to-Suppression Chamber Vacuum Breakers ~~and associated isolation valves~~ shall be OPERABLE and closed.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Reactor Building-to-Suppression Chamber Vacuum Breaker ~~or associated isolation valve~~ inoperable for opening but known to be closed.	A.1 Restore the inoperable vacuum breaker ~~isolation valve~~ to OPERABLE status.	~~1 hour~~ ~~hours~~ ~~change from~~ 72 hours
	AND	
	A.2 Verify the other vacuum ~~breaker/isolation valve~~ is closed.	
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~
~~OR~~		
~~More than one Reactor Building-to-Suppression Chamber Vacuum Breaker inoperable.~~		
B. One Reactor Building-to-Suppression Chamber Vacuum Breaker open	B.1 Verify the other vacuum breaker in the line is closed	2 hours
	AND	
	B.2 Restore the inoperable vacuum breaker to OPERABLE status	72 hours
C. Position Indicator of a Reactor Building-to-Suppression Chamber Vacuum breaker inoperable	C.1 Restore inoperable position indicator to OPERABLE status	14 days
	OR	
	Verify affected Vacuum breaker is closed	once per 24 hours

~~Note: LCO as proposed by BWROG is interpreted by staff as requiring actions A.1 and A.2 on position indicator inoperability. This is more restrictive than current STS.~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.10.1	Verify each vacuum breaker is closed.	7 days
SR 3.6.1.10.2	Perform a functional test of each vacuum breaker.	31 ~~92~~ days
SR 3.6.1.10.3	Demonstrate the opening setpoint of each vacuum breaker is ≤ [0.5] psid.	18 months
SR 3.6.1.10.4	Verify (both) (the) position indicator(s) OPERABLE by	
	a) observing expected valve movement during the cycling test	31 days
	AND	
	b) performing CHANNEL CALIBRATION	18 months

CROSS-REFERENCES: None

Note: Read plant specific completion times for corrective ACTIONS A and B specified above will be reviewed during the lead plant TS review.

3.6 CONTAINMENT SYSTEMS

3.6.2.1 Suppression Pool Average Temperature

LCO 3.6.2.1 Suppression Pool average temperature shall be:

A. ≤ [95]oF when any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7 and testing which adds heat to the Suppression Pool is not being performed.

B. ≤ [105]oF when any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7 and testing which adds heat to the Suppression Pool is being performed.

C. ≤ [110]oF when all OPERABLE IRM channels are ≤ [25/40] divisions of full scale on Range 7.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression Pool average temperature > [95]°F but ≤ [110]°F. AND Any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7. AND Not performing testing which adds heat to the Suppression Pool.	A.1 Verify average temperature ≤ [110]°F. AND A.2 Restore average temperature to ≤ [95]°F.	Once per hour 24 hours
B. Required Actions and associated Completion Times of Condition A not met.	B.1 Reduce power until all OPERABLE IRM channels are ≤ [25/40] divisions of full scale on Range 7.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Suppression Pool average temperature > [105]°F. AND Performing testing which adds heat to the Suppression Pool. AND any OPERABLE TRH channel is > [25/40] divisions of full scale on Range 7.	C.1 Suspend all testing which adds heat to the Suppression Pool.	Immediately
D. Suppression Pool average temperature > [110]°F but ≤ [120]°F.	D.1 Place the Reactor Mode Switch in the Shutdown position. AND D.2 Verify average temperature ≤ [120]°F. AND D.3 Operate at least one Residual Heat Removal Loop in the suppression pool cooling mode.	Immediately Once per 30 minutes
E. Suppression Pool average temperature > [120]°F.	E.1 Depressurize the reactor vessel to < [200] psig. AND E.2 Be in MODE 4.	12 hours 36 hours
F. One suppression pool water temperature instrumentation channel in any pair(s) of temperature instrumentation channels in the same sector inoperable	F.1 Restore the inoperable channels to OPERABLE status OR Verify suppression pool water temperature to be within the limits	7 days once per 12 hours
G. Both suppression pool water temperature instrumentation channels in any pair(s) of temperature instrumentation channels in the same sector inoperable	G.1 Restore at least one inoperable water temperature instrumentation channel in each pair of temperature instrumentation channels in the same sector to OPERABLE status	8 hours

BWR/6 3.6.2.1

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify the Suppression Pool average temperature is within the applicable limits.	24 hours AND 5 minutes when performing tests which add heat to the Suppression Pool
SR 3.6.2.1.2	Verify ~~[sixteen]~~ suppression pool water temperature instrumentation channels, at least two channels in each suppression pool sector OPERABLE by performance of a:	
	1. Channel check	once per 24 hours
	2. Channel functional test	once per 31 days
	3: Channel CALIBRATION ~~with high water temperature alarm setpoint set for ≤ [90°F]~~ with high water temperature alarm setpoint set for ≤ [90°F]	once per 18 months

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression Pool water level shall be maintained from [12'2"] to [12'6"].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression Pool water level < [12'2"]. OR Suppression Pool water level > [12'6"].	A.1 Restore water level to within limits.	4 1 hour
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.2.1	Verify Suppression Pool water level is from [12'2"] to [12'6"].	24 hours

CROSS-REFERENCES

TITLE	NUMBER
ECCS - Operating	3.5.1

Acceptable as is.
BWR/4

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3.6 CONTAINMENT SYSTEMS

3.6.2.3 Residual Heat Removal Suppression Pool Cooling

LCO 3.6.2.3 The Residual Heat Removal (RHR) Suppression Pool Cooling system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR Suppression Pool Cooling subsystem inoperable.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	(Justify note) ~~7~~ 3 days from discovery of inoperable subsystem
~~B. Both RHR Suppression Pool Cooling subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~[8] hours~~ ~~7 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

Note: Staff will consider plant specific AOT extention for conditon A.1 as part of the lead plant review.

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.3.1	Verify each manual, automatic, or power operated valve in the flow path that is not locked, sealed or otherwise secured in position, is OPERABLE and in its correct position ~~or can be aligned to its correct position~~.	31 days
SR 3.6.2.3.2	Demonstrate each RHR pump develops a flow rate ≥ [7700] gpm through the associated RHR heat exchanger while operating in the Suppression Pool Cooling mode.	[92 days OR According to SR 3.0.5]

CROSS-REFERENCES

TITLE	NUMBER
Residual Heat Removal System - Shutdown	3.4.6
ECCS - Operating	3.5.1
Residual Heat Removal Suppression Pool Spray	3.6.2.4

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Residual Heat Removal Suppression Pool Spray

LCO 3.6.2.4 The Residual Heat Removal (RHR) Suppression Pool Spray system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR Suppression Pool Spray subsystem inoperable.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	(Justify note) 7 3 days from discovery of inoperable subsystem
~~B. Both RHR Suppression Pool Spray subsystems inoperable.~~ stet	~~B.1 Restore at least one subsystem to OPERABLE status.~~ stet ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~ stet other	~~[8] hours~~ stet ~~3 days from discovery of initial inoperable subsystem~~ stet
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

Note: Corrective ACTIONS B.1 and B.2 and the marked up completion times are permissible for Condition B only with plant specific analysis supporting them.

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.2.4.1	Verify each manual, automatic, or power operated valve in the flow path that is not locked, sealed or otherwise secured in position, is OPERABLE and is in its correct position ~~or can be aligned to its correct position~~.	31 days
SR 3.6.2.4.2	Demonstrate each RHR pump develops a flow rate ≥ [ ] gpm through the associated RHR heat exchanger while operating in the Suppression Pool Spray Mode.	92 days

CROSS-REFERENCES

TITLE	NUMBER
Residual Heat Removal - Shutdown	3.4.6
ECCS - Operating	3.5.1
Residual Heat Removal Suppression Pool Cooling	3.6.2.3

3.6 CONTAINMENT SYSTEMS

3.6.3.1 Hydrogen Recombiner System

LCO 3.6.3.1 The Primary Containment Hydrogen Recombiner System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Primary Containment Hydrogen Recombiner subsystem inoperable.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	(Justify Note) 30 days from discovery of inoperable subsystem
~~B. Both Primary Containment Hydrogen Recombiner subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~7 days~~ ~~30 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~	~~12 hours~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.3.1.1	Demonstrate during a recombiner system functional test, the minimum heater ~~sheath~~ ~~outgass~~ outlet gas temperature increases to [600]°F within [60] minutes and is maintained for [2] hours.	6 months
SR 3.6.3.1.2	Visually examine the recombiner enclosure to ensure there is no evidence of abnormal conditions.	18 months
SR 3.6.3.1.3	Demonstrate during a recombiner system functional test the heater ~~sheath~~ outlet gas ~~outgass~~ temperature increases to > [1150]°F within [90] minutes and temperature is maintained between [1150]°F and [1300]°F for [4] hours.	18 months
SR 3.6.3.1.4	Demonstrate resistance to ground for any heater phase is [1x106] ohms within [~~90~~ 30] minutes following completion of SR 3.6.3.1.3.	18 months

CROSS-REFERENCES

TITLE	NUMBER
Hydrogen Recombiner Instrumentation	3.3.6.4

3.6 CONTAINMENT SYSTEMS

Primary Containment Hydrogen Mixing System

3.6.3.2 ~~Drywell Cooling System Fans~~

sub each consisting of ( ) fans

LCO 3.6.3.2 (Two) ~~Independent~~ Drywell Cooling System~~s~~ ~~fans~~ shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~Less than two independent (one) required Drywell Cooling System Fans OPERABLE inoperable~~ one drywell cooling subsystem inoperable	A.1 Restore ~~one~~ the inoperable ~~fan~~ subsystem to OPERABLE status.	30 days from discovery of inoperable ~~fan~~ subsystem
~~B. (Two) required Drywell Cooling System Fans inoperable.~~	~~B.1 Restore at least one inoperable fan to OPERABLE status.~~	~~7 days~~
	~~AND~~	
	~~B.2 Restore the initial inoperable fan to OPERABLE status.~~	~~30 days from discovery of initial inoperable fan~~
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~	~~12 hours~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.3.2.1	Demonstrate each required Drywell Cooling System Fan operates for ≥ [15] minutes.	92 days
SR 3.6.3.2.2	Demonstrate each required Drywell Cooling System Fan has a flow rate ≥ [ ] scfm.	18 months

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.3.3 Primary Containment Oxygen Concentration

LCO 3.6.3.3 The Primary Containment oxygen concentration shall not exceed ~~≤~~ 4 ~~5~~% by volume.

APPLICABILITY: MODE ~~1~~ with THERMAL POWER [15]% of RATED THERMAL POWER (RTP) for > [~~72~~ 24] hours,
MODE 1 when time remaining with THERMAL POWER > [15]% prior to the next scheduled shutdown is > [~~72~~ 24] hours.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary Containment oxygen concentration > ~~5~~ 4 ~~5~~% by volume.	A.1 Restore oxygen concentration to ~~≤ 5~~ 4 ~~5~~% by volume.	24 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Reduce THERMAL POWER to ~~≤~~ [15]% of ~~RTP~~ RATED THERMAL POWER.	8 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.3.3.1 Verify Primary Containment oxygen concentration is ~~≤ 5~~ 4 ~~5~~% by volume.	7 days thereafter within 24 hours after thermal power is greater than 15 % of RATED THERMAL POWER AND once per

MODE 1 during the time period:
a) Within 24 hours after THERMAL POWER is greater than 15 percent of RATED THERMAL POWER following startup, to
b) Within 24 hours prior to reducing THERMAL* POWER to less than 15 percent of RATED THERMAL POWER, preliminary to the next scheduled reactor shutdown.

CROSS-REFERENCES: None

3.6.4.1.1 through 3.6.4.2.2
Provide Tech Specs appropriate for a single unit plant, or a multi-unit plant that does not have a common secondary containment for the units.
Staff will consider plant specific Technical Specifications during lead plant review.

Note

1. In developing STS for BWR/4 plants that do not share a common secondary containment with another unit, refer to secondary containment integrity rather than its OPERABILITY.
2. Revise the lead plant STS 3.6.4.1.1 through 3.6.4.2.2 such that reference to another unit TS can be avoided. The revised TS will then be common to both the units. ~~For example~~ Also, refer to secondary containment INTEGRITY rather than its OPERABILITY.

NRC Markup 8/25/89

C. NICHOLS SPLB
Comments in red
8/24/89

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment System

LCO 3.6.4.3 ~~Two independent~~ The Standby Gas Treatment Systems (SGTS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When handling irradiated fuel in the [Primary or Secondary Containment],
When handling loads over spent fuel with a potential energy greater than 17,000 ft-lbs,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

----------NOTE----------
Conditions A ~~through D~~ and B may be concurrently applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGTS subsystem inoperable.	A.1 Restore inoperable subsystem to OPERABLE status.	7 days from discovery of inoperable subsystem
~~B. Both SGTS subsystems inoperable in MODE 1, 2, or 3.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~[4] hours~~ ~~7 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met in MODE 1, 2, or 3.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE [ ].~~	~~12 hours~~ ~~36 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~D. One SGTS subsystem inoperable when handling irradiated fuel in the [Spent Fuel Storage Pool], during CORE ALTERATIONS, or during OPDRVs.~~	~~D.1 Restore inoperable subsystem to OPERABLE~~	~~30 days from discovery of inoperable subsystem.~~
B6. Required Action and associated Completion Time of Condition A not met when handling irradiated fuel in the [Primary or Secondary Containment], during CORE ALTERATIONS, or during OPDRVs. OR	B6.1 ----------NOTE---------- Provisions of LCO 3.0.3 are not applicable. ---------- Suspend handling of irradiated fuel in the [Primary or Secondary Containment]. AND	Immediately
	B.2 Reduce potential energy of loads over spent fuel to ≤ 17,000 ft-lbs.	Immediately
	OR	
	Move loads with potential energy > 17,000 ft-lbs from over spent fuel.	Immediately
Both SGTS subsystems inoperable when handling irradiated fuel in the [Primary or Secondary Containment], during CORE ALTERATIONS, or during OPDRVs.	B.23 Suspend CORE ALTERATIONS. AND B.34 Suspend OPDRVs.	Immediately ~~As soon as practicable~~ Immediately

actuates from the control room and

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.4.3.1	Demonstrate each SGTS subsystem operates with flow through the HEPA filters and charcoal adsorbers for ≥ [10] hours [with heaters on].	31 days on a staggered test basis
SR 3.6.4.3.2	Demonstrate < [0.05]% penetration of the SGTS HEPA filters by a DOP test at a system flow rate of [3600] to [4400] cfm.	18 months AND Once within 7 days after painting, fire or chemical release in ~~fifteen~~ which could ~~service area~~ have loaded or deteriorated a High Effeciency Particulate Air (HEPA) filter section to such an extent that the HEPA filter section performance would be unacceptable. AND Prior to declaring subsystem OPERABLE after each complete or partial replacement of filter

(continued)

---- NOTE ----
Insplace dioctyl phthalate (DOP) test in accordance with [ANSI N510-1980]
- - - - - - - - - - -

refrigerant gas

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.3	Demonstrate < [0.05]% bypass leakage through the SGTS charcoal absorber section by a halogenated hydrocarbon test at a system flow rate of [3600] to [4400] cfm.	18 months AND Once within 7 days after painting, fire or chemical release ~~in any~~ which ~~filter~~ could have ~~service area~~ loaded or deteriorated a High Efficiency Particulate Air (HEPA) filter section to such an extent that the HEPA filter section performance would be unacceptable. AND Prior to declaring subsystem OPERABLE after each complete or partial replacement of adsorber bank.

(continued)

NOTE

In-place hydrocarbon refrigerant gas test in accordance with [ANSI N510-1980].

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.4.3.4 ----------NOTES---------- 1. Analysis to be completed within 31 days of sampling. ---------- Remove and perform a laboratory analysis of a SGTS charcoal adsorber sample ~~to~~ verify ~~for~~ methyl iodide penetration is < [ ] %. Test is at [ ]°F and [ ] % RH.	[1440] hours of charcoal adsorber operation AND 18 months AND Once within 7 days after painting, fire or chemical release which could ~~in filter~~ have ~~loaded or deteriorated a High Efficiency Particulate Air (HEPA) filter section to such an extent that the HEPA filter section performance would be unacceptable; service area~~ stet
SR 3.6.4.3.5 Demonstrate < [9.2]* inches water gauge pressure drop across the combined SGTS HEPA filters and charcoal adsorber banks at a flow rate of [3600] to [4400] cfm.	18 months
SR 3.6.4.3.6 Perform a system functional test of each SGTS subsystem which demonstrates filter train startup and isolation dampers opening upon receipt of a simulated automatic initiation signal.	18 months
SR 3.6.4.3.7 Demonstrate each SGTS heater dissipates ~~from~~ [43] ~~to [53]~~ kw at [ ] V.	18 months

(continued)

2. Charcoal adsorber sampling and testing in accordance with [Positions C.6.a and C.6.b of Regulatory Guide 1.52, Rev. 2, or ANSI N510-1980

* This value may be specified in procedures rather than T.S.

---NOTE---
Test in accordance with [ANSI N510-1980]

at a voltage of greater than or equal to [ ] and less than or equal to [ ] volts
---NOTE---
This is the minimum acceptable heater power at a voltage of [ ] volts. For other voltages, the minimum acceptable heater power is equivalent in proportion to the voltage squared

Note: This note may be located in procedures rather than T.S.

---NOTE---
Flow rate testing in accordance with [ANSI] N510-1980]

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
[SR 3.6.4.3.8	Demonstrate each SGTS filter cooler bypass damper can be opened and fan started.	18 months]

CROSS-REFERENCES

TITLE	NUMBER
Secondary Containment Isolation Actuation Instrumentation	3.3.6.2

SR 3.6.4.3.9

Verify each SGTS train produces, [through one] in the secondary containment, a ~~vacuum~~ pressure equal to or more negative than [-0.25]* inch water gauge with respect to atmospheric pressure, within [ ] seconds after initiation and at an air flow rate of ≥ [x] and ≤ [ ] cfm.

* This is the minimum acceptable negative pressure differential for an air flow rate of [x] cfm. For other air flow rates, the minimum acceptable negative pressure differential shall be greater in proportion to the flow rate squared.

[This note may be located in the procedures rather than the TS.]

CONTAINMENT TS SECTIONS FOR BWR/6 REVIEWED BY THE PLANT SYSTEMS BRANCH

3.6	Containment Systems Definitions of Primary Containment Integrity, Secondary Containment Integrity and Drywell Integrity
3.6.1.1	Primary Containment
3.6.1.2	Containment Air Locks
3.6.1.7	MSIV Leakage Control System
3.3.6.3	MSIV Leakage Control System Instrumentation
3.6.1.3	Containment Pressure
3.6.1.4	Containment Average Air Temperature
3.6.1.5	Containment Purge System
3.6.5.5	Drywell Vent and Purge System
3.6.5.1	Drywell
3.6.5.2	Drywell Air Lock
3.6.5.3	Drywell Pressure
3.6.5.4	Drywell Average Air Temperature
3.6.2.1	Suppression Pool Average Temperature
3.6.2.2	Suppression Pool Water Level
3.6.1.9	Residual Heat Removal Containment Spray
3.6.2.3	Residual Heat Removal Suppression Pool Cooling
3.6.2.4	Suppression Pool Makeup System
3.6.1.6	Primary Containment [and Pressure] Isolation Valves
3.6.5.6	Drywell Vacuum Relief
3.6.4.1	Secondary Containment
3.6.4.2	Secondary Containment Isolation Valves
3.6.3.1	Containment Hydrogen Recombiner Systems
3.3.6.4	Hydrogen Recombiner Instrumentation
3.6.3.2	Containment and Drywell Hydrogen Ignitor System

Regarding the revised Standard Technical Specification (STS) 3.3.6.3 "MSIV Leakage Control System Instrumentation," the staff reviewed only the proposed Surveillance Requirements (SRs) 3.3.6.3.1, 3.3.6.3.2 and 3.3.6.3.3. Regarding revised STS 3.6.5.1 "Drywell" which incorporates the corresponding GE STS 3.6.2.1 "Drywell Integrity," and GE STS 3.6.2.4 "Drywell Structural Integrity," the staff reviewed the revised STS except the adequacy of the proposed SRs dealing with the drywell structural integrity (the Owners Group has deleted the corresponding GE STS SR 4.6.2.4.2 and the SPLB has not reviewed the acceptibility of the deletion). Regarding revised STS 3.6.1.6 "Primary Containment [and Pressure] Isolation Valves," the SPLB did not review the identified ACTION, the associated completion time for the ACTION and the SR 3.6.1.6.10 for primary containment isolation valves that do not have any primary containment isolation function. Regarding Combustible Gas Control Purge System (corresponding GE STS 3.6.7.3 - the lead BWR/6 has a TS for the system) which is not listed above, BWROG states that the TS has been deleted consistent with NRC Interim Policy Statement Criteria to STS. SPLB agrees with the relocation of the subject STS. However, SPLB is concerned with the deletion of the SR 4.6.7.3.C (channel check, channel functional test and channel calibration) in the marked up copy of the BWROG. The concern arises because the modified STS may be relocated in some other document.

Based on its review of the containment systems revised STS, the staff finds the revised STS 3.6.1.4 "Containment Pressure," STS 3.6.5.3 "Drywell Pressure," and 3.6.5.4 "Drywell Average Air Temperature" acceptable. The staff finds the remaining STS unacceptable for the reasons listed in Enclosure 2.

PLANT SYSTEMS BRANCH
DRAFT EVALUATION AND COMMENTS ON BWROG PROPOSED
STANDARD TECHNICAL SPECIFICATIONS FOR BWR/6 CONTAINMENT SYSTEMS

The Plant Systems Branch has reviewed the BWR Owners Group (BWROG) submittals dated May 5, 1989 and June 23, 1989 on improved BWR/6 Standard Technical Specifications (STS) for containment systems. Our evaluation and comments are provided below.

I. Definitions of Primary Containment Integrity, Secondary Containment Integrity and Drywell Integrity

A. Existing GE Standard Technical Specifications (GE STS) for BWR/6 contain definitions of primary containment integrity, drywell integrity and secondary containment integrity in the Definitions Section. These definitions have been deleted in the revised STS by the BWR Owners Group (BWROG). The BWROG justified the deletions stating that they are confusing when they are compared to their respective Limiting Condition for Operations (LCOs) and that further all the requirements identified in the definitions have been specifically addressed in the revised STS LCOs for primary and secondary containments. The staff disagrees with the deletions and the associated justification. The staff believes that summarizing all the requirements in one place in the document, that is, in the Definitions Section, has considerable merit to it since it provides for clarity. Therefore, the staff requires the inclusion of definitions of the primary containment integrity and drywell integrity, secondary containment integrity in the Definitions Section of the revised STS for BWR/6.

B. The staff requires modifications of the definitions currently found in the existing STS for BWR/6, as appropriate. For example, references to tables may be deleted. Also, the identifications for specifications may have to be changed. The existing definition refers only to a single barrier for

providing isolation of a primary containment penetration. However, the applicable GDCs require dual barriers. Therefore, the revised STS definition should incorporate the need to provide dual barriers. ~~The revised STS definition of primary containment integrity should also include reference to specification which covers primary containment purge system.~~

II. Revised STS 3.6.1.1 Primary Containment

A. The revised STS 3.6.1.1 "Primary Containment," and revised STS 3.6.1.6 "Primary Containment [and Pressure] Isolation Valves" combine the current BWR/6 STS 3/4.6.1.1 "Primary Containment Integrity" and 3/4.6.1.2 "Containment Leakage." The caption "Primary Containment" given to revised STS 3.6.1.1 is too broad and vague. It should be changed to "Primary Containment Integrity." Also, the LCO for the revised STS states that the primary containment shall be OPERABLE. The LCO for the corresponding GE STS 3/4.6.1.1 states that the primary containment integrity shall be maintained. The staff believes that the word "OPERABLE" is too broad and that it may include other requirements in addition to maintaining the primary containment integrity. Since other requirements are specifically addressed in separate specifications, the LCO should be limited to maintaining the primary containment integrity. As a follow up, Condition A and the associated ACTION should be reworded so as to refer to primary containment integrity rather than it operability.

B. The Surveillance Requirements (SRs) 3.6.1.1.1, 3.6.1.1.2 and 3.6.1.6.12 should all be combined into a single SR to include all Appendix J, Type A, B and C tests. The current scheme of relocating the SR pertaining to Appendix J, Type C tests alone in a different revised STS (3.6.1.6) is confusing. It is more appropriate to put the above SR under the specification that deals with the containment leaktight integrity than elsewhere.

C. The Bases Section for revised STS 3.6.1.1 must define the parameters L_a, L_d and L_t as required by Appendix J. Also, the writeup should be revised to refer to primary containment integrity instead of primary containment operability. Further the Basis Section should identify the secondary containment bypass leakage limit (i.e., the combined leakage rate for all

primary containment penetrations that bypass the secondary containment) as part of the primary containment integrity maintenance criteria. The SR 3.6.1.6.11 which specifies the combined leakage rate and the associated pressure should be relocated under revised STS 3.6.1.1 (see Item XIV.K for further discussion).

III. 3.6.1.2 Containment Air Locks

A. Section 3.6.1.3.b of the current GE STS for BWR/6 relates overall air lock leakage rate criterion to the OPERABLE requirements of the air lock. BWROG has deleted this criterion from revised STS LCO 3.6.1.2 stating that is covered in the revised STS SR 3.6.1.2.4. The staff disagrees with the Owners Group position that an SR can substitute an LCO. An LCO has to be met at any time during specified operational conditions. Likewise, the associated corrective ACTION has to be performed at any time it is detected that the corresponding LCO has not been met. On the other hand, surveillance requirements stipulate operability demonstration tests or verifications only at specified intervals. Such tests or verifications are intended to provide reasonable assurance that in the interval between tests or verifications, the subject systems, equipment or components will be OPERABLE and perform their intended functions, when required. However, the staff will accept deletion of overall air lock leakage OPERABILITY criterion from the LCO, provided the associated acceptance criterion is explicitly spelled out in the corresponding Basis. This is consistent with current staff position of relocating Appendix J requirements from the STS, except those that Appendix J specifically requires to be put in the TS. The staff finds that the Bases Section does not explicitly spell out the acceptance criterion for the overall air lock leakage rate. Therefore, the staff finds the deletion of the overall air lock leakage rate OPERABILITY criterion from either the revised LCO 3.6.1.2 or its associated Basis, unacceptable.

B. The revised STS LCO 3.6.1.2 deletes Section 3.6.1.3.a of the current GE STS for BWR/6, which requires both the inner and outer doors of each air lock be closed during power operation. The Owners Group has justified the deletion by referring to the provision of an interlock mechanism, and the

revised SR 3.6.1.2.1 covering the demonstration of its operability. The Owners Group contends that such a provision meets the air lock operability requirements. However, BWROG has not explained how the interlock mechanism meets the air lock operability requirements. Presumably, the interlock mechanism in the air lock prevents simultaneous opening of both doors in the air lock. The staff has always applied the single failure criterion for air lock doors. Further, the staff considers the air lock interlock failure and air lock door seal failure as failures of active components. Since the surveillance of interlock is once per 6 months as specified in revised SR 3.6.1.2.2, it is possible that its failure can be unnoticed for a period of 6 months. Therefore, the staff finds that to rely on the closure of a single door instead of two will increase the probability of loss of containment integrity in the event of failure of either a door seal or the interlock. The relaxation of the single failure criterion applied to the air lock will unacceptably reduce the margin of safety for containment integrity. The staff position on the single failure criterion for air lock doors is similar to that for containment isolation valves in a penetration, which requires two barriers. Moreover, there is nothing in the revised ACTION statements or Bases Section which implies that both the doors have to be kept closed during power operation to ensure operability of the air lock. Therefore, the staff finds the deletion of the requirement for both air lock doors to be closed during power operation unacceptable.

C. The required ACTION for Condition A specifies closing one OPERABLE air lock door immediately and locking it within 24 hours. The corresponding GE STS requires maintaining the operable air locked door in a closed condition and either locking it closed within 24 hours or restoring the inoperable air lock door to OPERABLE status within 24 hours. BWROG has left out the second option stating that restoration to OPERABLE status of an inoperable component is always an alternative ACTION and that it need not be explicitly spelled out in the identified corrective ACTIONS. The staff ~~dis~~agrees with the deletion of the alternative option. ~~since the deleted option includes a time limit for fixing the inoperable equipment.~~ However, Also, the word "maintain closed" is more appropriate than "close." ~~Therefore, the corrective ACTION for Condition A must include restoring the inoperable~~

A.1

~~equipment (may be either an inoperable door or the inoperable door and associated inoperable interlock mechanism) to OPERABLE status within 24 hours.~~ ~~Additionally,~~ ACTION A.1 should state clearly that the OPERABLE door has to be closed and maintained closed in the affected air lock immediately. ~~within a specified time. The time must be specified (e.g., 15 minutes). The word "immediately" is vague and subjective.~~ Also A-2 should add the word "closed." It may be noted that the verification once per 31 days is required only when the OPERABLE air lock door is locked closed within 24 hours. ~~For the above reasons, the staff finds the required ACTION and completion time for Condition A unacceptable.~~

D. Condition B represents situations when the interlock mechanism in one or more air locks are inoperable. Condition B.1 should state clearly that an OPERABLE door in each affected air lock has to be closed and maintained closed within a specified time. ~~Condition B.2 must include restoring the inoperable equipment (interlock mechanism) in each affected air lock to OPERABLE status within 24 hours.~~ Also the word "closed" must be added to the locked door. Verification once per 31 days is required only when the OPERABLE door in each affected air lock is locked closed within 24 hours. ~~For the above reasons, the staff finds the required ACTION and completion time for Condition B unacceptable.~~

E. For Condition C, the identified required ACTION C.1 and the associated completion time should be redefined as stated in Items C and D above.

F. For Condition D, the identified required ACTION D.1 and the associated completion time should be redefined as stated in Items C and D above. Additionally, the OPERABLE door in each air lock should be verified to be in a locked closed state, once every 31 days. Restoring one air lock to OPERABLE status within 7 days is not sufficient. The 31-day verification is consistent with ACTION A.3 prescribed for an inoperable air lock. For the above reasons, the staff finds the proposed ACTIONS incomplete and the specified completion time for D.1 vague, and therefore, unacceptable.

G. A single NOTE on permissible access under administrative control into and out of containment to cover all the corrective ACTIONS A.1, A.2 and A.3

instead of three as proposed should be sufficient. The access should be restricted to entry and exit through one air lock door which is otherwise kept closed and that only for performing all the specified ACTIONS. The cumulative total access time for performing all the specified ACTIONS should not exceed 1 hour per year. The above note should be applicable to Conditions B, C, D and E identified in the revised STS. The staff finds the NOTES in their present form unacceptable.

H. The current GE STS 3.8.1.3 ACTION A.2 for BWR/6 allows the operation of the plant under the specified condition (locking closed an operable air lock door within 24 hours) only until the next required overall air lock leakage test. The revised STS does not have such a time limit. The staff finds omission of the time limit unacceptable without exemption, since it allows indefinite operation with one OPERABLE air lock door locked closed and the other in an inoperable state. Likewise, the staff finds omission of the time limit unacceptable when interlock mechanisms for one or more air locks continue to be inoperable beyond 24 hours, ~~The staff also finds omission of the time limit unacceptable for Condition D without exemption. Further, the staff finds omission of the time limit unacceptable for Condition E~~ unless appropriate compensatory measures are implemented for the affected air lock.

J. Revised STS 3.6.1.2 for BWR/6 has deleted GE STS 3.6.1.3, ACTION Item C. The ACTION item specifies the corrective action to be performed for an inoperable pressure instrumentation channel (associated with air lock door inflatable seal system air flask). Since inflatable seal system integrity is essential, the staff finds the deletion unacceptable for BWR/6 reactors that have inflatable seal system for primary containment air locks.

K. SR 4.6.1.3.C.1 of GE STS 3.6.1.3 deals with SR for the air lock door inflatable seal system. Specifically, the SR calls for performance of channel functional test once every 31 days and channel calibration once every 18 months for the seal air flask pressure instrumentation channels, to demonstrate the operability of the seal system. BWROG has deleted the above requirement from the revised STS stating that they are part of routine monitoring and that they do not represent instruments which support operability. The staff disagrees with the above position since operability

of the seal system is vital to ensure proper functioning of the air locks. Therefore, the staff finds the deletion of the subject SR unacceptable.

IV. 3.6.1.7 MSIV Leakage Control System

A. Owners Group states that the provisions of LCO 3.0.4 are not applicable, but has not justified the inapplicability. The staff finds this unacceptable.

B. Owner's Group has added the ACTION CONDITION B to cover the situation when both the MSIV Leakage Control Subsystems (LCS) are inoperable. The required ACTIONS B.1 and B.2 permit continued plant operation provided at least one subsystem is restored to OPERABLE status within 7 days and the initial inoperable subsystem is restored to OPERABLE status within 30 days from discovery of the initial inoperable subsystem. GE STS 3.6.1.4 for BWR/4 ACTION statement does not allow the above required actions when both the subsystems are inoperable. The Owners Group justified the added required ACTIONS B.1 and B.2 stating that the 7 day completion time for one subsystem is consistent with other technical specifications which have a 30 day completion time for a single inoperable subsystem, and that these actions provide an opportunity to restore the subsystem prior to an unnecessary plant shutdown. The staff disagrees with the added ACTION Condition B and the associated REQUIRED ACTIONS B.1 and B2 and the BWROG justification for them. BWROG has not provided a specific justification for the relaxation sought for the MSIV-LCS but rather relies on such flexible provisions permitted in technical specifications for other systems that have two subsystems. Moreover, the MSIV-LCS performs a vital function by processing the fission products which could leak through the closed MSIVs after a design basis LOCA. Therefore, at least one subsystem must be always available during the plant OPERATIONAL CONDITIONS 1, 2 and 3. For the above reasons, the staff finds the added ACTION CONDITION B and the associated REQUIRED ACTIONS B.1 and B.2 and COMPLETION TIMES for them specified in revised STS 3.6.1.7 unacceptable.

C. For the same reasons stated in Item B above, the staff finds the wording of ACTION CONDITION C specified in revised STS 3.6.1.7 unacceptable.

D. The proposed SR 3.6.1.7.2 of revised STS 3.6.1.7 deletes demonstration tests for verifying continuity of MISV-LCS subsystem heater element circuitry once every 31 days for the outboard heater. The corresponding GE SR 4.6.1.4.a.2 for BWR/4 requires such tests both for the inboard and the outboard heaters. Proposed SR 3.6.1.7.3 is not adequate to cover this deletion, since it has to be implemented only once every 18 months. Therefore, the staff finds SR 3.6.1.7.2 unacceptable.

E. SR 3.6.1.7.3 of revised 3.6.1.7 is incomplete when compared with corresponding GE STS 4.6.1.4.C.2 for BWR/6. BWROG states that the details of the system functional test have been relocated in the Bases Section. However, the Basis for SR 3.6.1.7.3 does not contain the details relating to verification of the capacity of the blowers to develop the necessary vacuum. As a minimum, that should be a separate SR that calls for verification of the blower capacity to develop the required vacuum as identified in SR 4.6.1.4.C.2. The required vacuum can be identified in parenthesis. For the reason state above, the staff finds the listed SRs for revised STS 3.6.1.7 incomplete and, therefore, unacceptable.

V. Revised STS 3.6.1.3 Containment Pressure

A. The LCO, Conditions A, Required ACTION A.1 and SR 3.6.1.3.1 contain the words "to Auxiliary Building differential" in parenthesis. BWROG states that the lead BWR/6 uses the terminology "Auxiliary Building" instead of "Secondary Containment." Since "Secondary Containment" is used by the other operating BWR/6 reactors, the staff prefers that terminology for the BWR/6 STS instead of the lead plant terminology.

VI. Revised STS 3.6.1.5 Containment Purge System
Revised STS 3.6.5.5 Drywell Vent and Purge System

A. Staff's position has been to allow opening of the containment or drywell purge system isolation valves with time restriction in plant Operational Modes 1, 2 and 3, only if the valves are qualified to close under accident conditions. Since the lead BWR/6 has such purge system isolation valves, the proposed TS is appropriate for the lead BWR/6. However, it may not

be appropriate for BWR/6 reactors that do not have qualified purge system isolation valves. For such reactors, the valves have to be kept sealed closed. BWROG should provide a supplementary submittal identifying the appropriate TS for containment and drywell purge system isolation valves for such reactors.

B. SR 3.6.1.5.1 requires periodic determination of the cumulative time when [20] inch containment purge subsystem isolation valves are open in MODES 1, 2 and 3, once every 31 days. The lead BWR/6 SR requires such determination once every 7 days. The staff disagrees with the proposed extension. Verifying the sealed closed state of a valve once every 31 days is alright; but application of such a time limit for determination of cumulative time when valves are open is inappropriate. Therefore, the staff finds the proposed SR 3.6.1.5.1 unacceptable.

C. The LCO for revised STS 3.6.5.5 specifies that the drywell purge system isolation valves be closed with specified exceptions. However, the LCO does not explicitly state that the valves have to be OPERABLE. The staff requires the BWROG to include the operability criterion in the LCO. If, however, STS 3.6.1.6 is modified as outlined in Item XIV.F, the LCO for STS 3.6.5.5 need not be changed.

VII. Revised STS 3.6.5.1 Drywell

A. Revised STS 3.6.5.1 "Drywell" combines GE STS 3.6.2.1 "Drywell Integrity", 3.6.2.4 "Drywell Structural Integrity," and 3.6.2.2 "Drywell Bypass Leakage." The staff disagrees with lumping all the three GE STS for BWR/6 under revised STS 3.6.5.1.

As a minimum, a separate STS should be developed for the drywell bypass leakage. The caption should be "Drywell Integrity." It can include both the leak tight integrity and the structural integrity. Covering the drywell bypass leakage by proposed ~~STS~~ SRs 3.6.5.1.3 and 3.6.5.1.4 is not adequate. SRs cannot be a substitute for a LCO or an ACTION statement, since the LCO has to be met at any time during specified operational modes and the specified corrective ACTION has to be implemented at any time, it is

detected that the LCO has not been met. The SRs, on the other hand, are implemented only at specified intervals, and are intended only to provide reasonable assurance that system, equipment or components will perform their intended design functions, when required. For the above reasons, the staff finds the proposed inclusion of GE STS 3.6.2.2 "Drywell Bypass Leakage" under revised STS 3.6.5.1 "Drywell" unacceptable. The staff finds the caption also unacceptable, since it is too broad and vague.

B. The proposed LCO 3.6.5.1 is too broad and vague. It should be reworded to refer to maintaining the drywell integrity rather than its operability. The staff finds the LCO in its present form unacceptable.

C. Condition B and its associated ACTION are vague. It will be appropriate to reword the condition by referring to the leak tight integrity of the drywell not being maintained. The ACTION statement B.1 should also be reworded to reflect restoration of the leak tight integrity of the drywell.

C D. The proposed wording for SRs 3.6.5.1.1 and 3.6.5.1.2 is not clear. The corresponding GE STS SR 4.6.2.1.b refers only to penetrations that are not capable of being closed by OPERABLE drywell automatic isolation valves and additionally require to be closed during accident conditions. Therefore, the STs should be reworded to refer to such penetration and the isolation devices that will ensure isolation of the penetrations. The staff finds the SRs 3.6.5.1.1 and 3.6.5.1.2 in their present form unacceptable.

D E. The proposed SR 3.6.5.1.4 is intended to incorporate the corresponding GE SR 4.6.1.4.1, which specifies the SR for verifying the structural integrity of the drywell periodically. BWROG should add the words "prior to the Type A containment leakage rate test" to the proposed SR 3.6.5.1.4. The staff recognizes that for Mark III containment design, the drywell is not part of the Primary Containment boundary. However, the addition of the words given above will clarify when the visual inspection of the applicable surfaces of the drywell has to be performed.

E. SR 3.6.5.1.3 which deals with the periodic demonstration of the bypass leakage should be part of a new revised STS addressing bypass leakage. Also, the current wording "[90]% ft^2" is confusing. The SR should be reworded to be consistent with the (to be developed) LCO criter for drywell bypass leakage. The Basis for the SR should explain how the $A/\sqrt{k}$ will be determined. It should also include information pertaining to leak testing of drywell airlock door. The (to be developed) LCO for drywell bypass leakage must also have an associated ACTION statement consistent with the corresponding ACTION statement for GE STS 3.6.2.2. It may be noted that the proposed completion time of 1 hour in the revised STS differs from the implied completion time in the ACTION statement for the corresponding GE STS 3.6.2.2. For the above reasons, the staff finds the inclusion of SR 3.6.5.1.3 as part of the SRs for revised STS 3.6.5.1 unacceptable.

VIII. Revised STS 3.6.5.2 Drywell Air Lock

A. The single drywell air lock situation may not be applicable to some BWR/6 reactors. The BWROG should cover such a contingency in a supplementary submittal. Such a submittal should also identify the conditions that may arise and the associated ACTIONS and completion times.

B Revised STS 3.6.5.2 does not include the additional LCOs that have to be met during plant Operational Modes 1, 2 and 3 for an OPERABLE drywell air lock. The corresponding LCO for GE STS 3.6.2.3 requires that both the doors have to be kept closed except for normal entry and exit through the drywell, when at least one door has to be kept closed. It also specifies the overall air lock leakage rate acceptance criterion. BWROG has justified the deletions stating that the proposed SR for interlock mechanism (SR 3.6.5.2.4) ensures the air lock operability requirements, and that the proposed SR 3.6.5.2.3 addresses the Appendix J acceptance criterion for overall air lock leakage rate. The staff notes that elsewhere (drywell structural integrity), the BWROG has stated that the drywell for the Mark III design is not part of the primary containment boundary. The staff also notes that Appendix J does not explicitly

address the overall leakage rate criterion for the drywell air lock of Mark III design. For the above reason and other reasons given under Items III.A and III.B of this report, the staff finds the proposed LCO 3.6.5.2 unacceptable.

C. Regarding Conditions A, B and C and the associated ACTIONS and completion times, staff's comments given under Items III.C, III.D and III.E for the primary containment air lock are equally valid for the drywell air lock. Therefore, the staff finds the proposed ACTIONS and completion times for Conditions A, B and C unacceptable.

D. The staff finds the NOTES on permissible access under administrative control identified for Conditions A and B unacceptable for the same reasons as those given under Item III.G for primary containment air lock. Also, BWROG should extend the applicability of the NOTE (to be modified) to Condition C.

E. Revised STS 3.6.5.2 for BWR/6 has deleted corresponding GE STS 3.6.2.3, ACTION Item C. The ACTION item specifies the corrective ACTION to be performed for an inoperable pressure instrumentation channel (associated with air lock door inflatable seal system air flask). Since inflatable seal system integrity is essential, the staff finds the deletion unacceptable for BWR/6 reactors that have inflatable seal system for the drywell air lock doors. However, the deletion of the ACTION is appropriate for BWR/6 reactors that do not have an inflatable seal system for the drywell air lock doors. Therefore, it will be appropriate to put the ACTION in parenthesis.

F. SR 3.6.5.2.3 specifies demonstration test once per cold shutdown for overall drywell air lock test. However, the SR deletes such overall tests following maintenance work on the air lock. BWROG justified this deletion stating that post maintenance testing is appropriate for plant specific controls. Since Appendix J does not deal with drywell air lock, the staff considers it necessary to be identified as a separate SR. Therefore, omission of post maintenance testing for overall drywell air lock leak rate verification is unacceptable.

G. SR 4.6.2.3.d.1 of GE STS 4.6.2.3 calls for performance of channel functional test once every 31 days and channel calibration once every 18 months for the seal air flask pressure instrumentation channels. Such tests are required to demonstrate the operability of the drywell air lock door inflatable seal system. BWROG has deleted the above requirement from the revised STS stating that they are part of routine monitoring and that they do not represent instruments which support operability. The staff disagrees with the above position for BWR/6 reactors that have air lock door inflatable seal system similar to the lead BWR/6. The staff finds the deletion of the subject SR unacceptable, since the operability of the inflatable seal system is vital to ensure proper functioning of the air locks for such reactors. Therefore, the staff requires inclusion of the subject SR in parenthesis (because, it may not be applicable to all BWR/6 reactors).

IX. Revised STS 3.6.2.1 Suppression Pool Average Temperature

A. GE STS 3/4.6.3.1 for BWR/6 reactors which deals with the STS for the operation of the suppression pool is split between BWROG revised STS 3.6.2.1 "Suppression Pool Average Temperature," and STS 3.6.2.2 "Suppression Pool Water Level." Revised LCO Conditions A, B and C relate suppression pool average temperature limits under various conditions to OPERABLE IRM channel readings. The BWROG has identified the relation of the IRM channel readings on Range 7 to the reactor thermal power. The staff finds the above approach acceptable. However, the identified Condition C refers only to the pool temperature exceeding the specified limit of 105°F during testing. It does not refer to the IRM channel reading or Range 7 exceeding the specified limit in LCO 3.6.2.1.B. BWROG should include the above under Condition C to correlate it properly with LCO 3.6.2.1.B.

B. Revised STS ACTION conditions and associated ACTIONS do not include the corresponding GE STS 3.6.3.1, ACTION Statements C and D which specify the ACTIONS to be taken when temperature instrumentation channel(s) is (are) inoperable. BWROG justified the deletion stating that these represent part of routine operational monitoring and that they do not represent instruments which support operability. The staff disagrees with the deletions and the associated justification. The operability of these channels

are essential for monitoring the pool temperature and taking appropriate corrective ACTIONS in a timely manner. Therefore, the staff finds the deletions unacceptable. Also, the staff cannot accept the deletion of the SR relating to channel check, channel functional test and channel calibration for the pool water temperature instrumentation channels. The staff considers that the deleted GE STS SR 4.6.3.1.C provides the needed assurance that at least two channels in each pool sector will be OPERABLE to provide pool monitoring temperature capability.

C. The required ACTION for Condition D (pool average temperature >110°F but ≤120°F) does not include placing one RHR loop in the suppression pool cooling mode. GE STS 3.6.3.1, ACTION Item 2.b requires the above corrective ACTION. BWROG justified the deletion stating that the requirement is covered by plant procedures. The staff finds this unacceptable.

X. Revised STS 3.6.2.2 Suppression Pool Water Level

A. Revised STS 3.6.2.2 specifies a time interval of 4 hours for restoring the suppression pool water level to within the LCO defined range when the water level is outside the range. However, GE STS 3.6.3.1, ACTION Item a specifies a restoration time of 1 hour. BWROG justified the relocation stating that the maximum and the minimum LCO pool water levels are Emergency Procedure entry conditions and that the adverse consequences of excessive water level variations are mitigated by these procedures. The staff finds the reliance solely on emergency procedures to provide relief when LCOs cannot be met, unacceptable. Since the specified range for the water level is based on LOCA and SRV discharge calculations, it is essential that the level is restored to within the LCO specified limits in a very short time. Therefore, unless the Owners Group can demonstrate that the relaxation of restoration time from the current value of 1 hour to 4 hours will have minimal adverse impact from a safety standpoint, the staff cannot accept the proposed relaxation in the revised STS.

XI. 3.6.1.9 Residual Heat Removal Containment Spray

A. Revised STS 3.6 2.4 specifies a completion time of 7 days for restoring one inoperable RHR suppression pool spray subsystem to OPERABLE status. However, the corresponding GE STS 3.6.3.2, ACTION Item "a" specifies <u>two</u> completion times which are 72 hours and 7 days and both of these are put in parenthesis. This means that for some BWR/6 reactors, 7 days allowed outage time (AOT) may be alright while for others only 72 hours AOT will be appropriate. The AOT is plant specific in the sense that some of the components of the inoperable subsystem may be required for performing some other safety function (e.g., ECCS function). Additionally, the AOT may depend upon the scope of the safety function performed by the spray system (mitigate the effects of bypass leakage and low energy line breaks). Therefore, unless the Owners Group addresses the above concerns or alternatively specifies 72 hours, the staff cannot accept the specified completion time. In this context, the staff notes that 3 of the operating BWR/6 reactors have a 72 hour time limit for restoring the inoperable loop to OPERABLE status.

B. The required ACTIONS and completion times for Condition B which deals with the situation when both the subsystems are inoperable allows continued plant operation provided one of them is restored to OPERABLE status within a short time and the other is restored to OPERABLE status within 7 days of discovery of the initial inoperable subsystem.

However, the corresponding GE STS 3.6.3.2, ACTION Item b indicates that bringing the reactor into a shutdown mode will be the only corrective ACTION allowed for some BWR/6 reactors. Therefore, unless the Owners Group identifies the need to bring the reactor into MODE 3 within 12 hours and MODE 4 within 36 hours on discovery of inoperability of both the subsystems for some reactors, the staff cannot accept the proposed required ACTIONS and the associated completion times. Also, for those BWR/6 reactors for which restoration of one inoperable subsystem to OPERABLE status within 8 hours is permissible, required ACTION B.2 should be restoring the <u>other</u> (not initial as stated in the revised STS) inoperable subsystem to OPERABLE status within 72 hours (not 7 days as stated in the revised STS) from discovery of the <u>initial</u> inoperable subsystem.

C. SR 3.6.1.9.1 includes a NOTE which is confusing. Also, the SR words "flow path not locked" should be corrected as "flow path that is not locked." The staff requires the deletion of the NOTE and the correction of the SR.

XII. Revised STS 3.6.2.3 RHR Suppression Pool Cooling

A. BWROG has not explained why the provisions of LCO 3.0.4 are not applicable for the condition when one RHR suppression pool cooling system is inoperable. There is no such statement in GE STS 3.6.3.3 for BWR/6. The staff finds the exception to the provisions of LCO 3.0.4 without justification unacceptable.

B. Revised STS 3.6.2.3 specifies a completion time of 7 days for restoring one inoperable RHR suppression pool cooling subsystem to OPERABLE status instead of 72 hours specified by corresponding GE STS 3.6.3.3, ACTION Item "a." BWROG justified the relaxed limit stating that it is consistent with current requirements for the ECCS which includes RHR in some other mode of operation (LPCI Mode). However, the staff notes that the RHR suppression pool cooling subsystem performs a vital safety function by removing heat from the pool following LOCA so that the temperature inside the containment will remain within the design limits. The staff finds that all the operating BWR/6 reactors have specified 72 hours for restoring a single inoperable RHR suppression pool cooling subsystem to OPERABLE status. Until BWROG can justify that relaxing the current limit to 7 days will have minimal impact on the safety function performed by the system, given the potential for failure of a single active component in the redundant OPERABLE subsystem, the staff cannot accept the 7 days limit specified in the STS.

C. Revised STS 3.6.2.3 has added required ACTIONS B.1 and B.2 and associated completion times to cover the situation when both the cooling subsystems are inoperable. However, GE STS 3.6.3.3, ACTION Item "b" requires shutdown of the reactor in specified times for the above situation. The staff finds the addition and associated justification unacceptable.

D. SR 3.6.2.3.1 words "flow path not locked" should be corrected as "flow path that is not locked." Also, the words "or can be aligned to its

correct position" currently appearing in the SR should be deleted. Aligning each valve to its correct position is a corrective ACTION and the objective of the SR is to verify whether each valve is in its correct position.

XIII. Revised STS 3.6.2.4 Suppression Pool Makeup System

A. Revised STS 3.6.2.4 has added required ACTIONS D.1 and D.2 and associated completion times to cover the condition when both the makeup subsystems are inoperable. However, GE STS 3.6.3.4, does not have any such ACTION statement. The staff finds the addition and associated justification unacceptable.

B. The revised STS 3.6.2.4 NOTE "Conditions A through E may be concurrently applicable" should be reworded to exclude conditions D and E. Since reactor shutdown has to be completed in specified times when the identified corrective ACTION can not be completed within the corresponding specified time for any specified condition (A, B or C), inclusion of Condition E in the NOTE is not proper.

C. The bracket for SR 3.6.2.4.5 should be removed. The prescribed 18 month surveillance intervals for demonstrating that automatic valves activate to their correct positions on simulated automatic initiation signals is a standard requirement and not plant specific. The SR 3.6.2.4.[illegible] words "flow path not locked" should be changed to "flow path that is not locked" for clarity.

XIV. Revised STS 3.6.1.6 Primary Containment [and Pressure] Isolation Valves

A. The LCO for revised STS 3.6.1.6 excludes the OPERABILITY requirement for reactor instrumentation line excess flow check valves. BWROG justified the exclusion stating that it is not applicable to the lead BWR/6. The staff notes that the exclusion may not be valid for some BWR/6 reactors (e.g., Clinton). Therefore, the BWROG should provide a supplementary submittal to cover such reactors.

B. The NOTE "Conditions A through D may be concurrently applicable" is confusing, and so it should be removed.

C. The revised STS 3.6.1.6 allows 8 hours to complete specified corrective ACTIONS when Condition A exists instead of 4 hours specified in corresponding GE STS 3.6.4, ACTION Item "a." BWROG justified the extension stating that it is consistent with other isolation requirements. The staff finds the extension unacceptable, since dual barriers have to be provided for all containment penetrations as quickly as possible to comply with applicable GDC requirements. These barriers ensure containment integrity.

D. It is not clear whether the pressure isolation valves covered by required ACTION A.2.2.2 are also primary containment isolation valves. If they are, then the staff cannot accept a simple check valve (without prior staff approval of plant unique justifications) as an acceptable primary containment isolation valve, unless it is inside the containment and additionally there is another operable automatic valve as outboard containment isolation valve in the penetration. The above position is in accordance with applicable GDCs. The identified corrective ACTION for pressure isolation valves that do not have any primary containment isolation function, the associated completion time for the corrective ACTION, and SR 3.6.1.6.10 are not reviewed under containment systems. These are reviewed separately.

E. The revised STS does not include the plant condition, when the required ACTIONS and associated completion times for Condition A are not met for valve(s) required to be OPERABLE during operations that have a potential for draining the reactor vessel. Also, the associated corrective ACTION (suspending such operations) and the completion time (immediately) have not been identified. BWROG should include the above plant condition and its associated corrective ACTION and completion time. ~~The staff finds that the required ACTIONS G.1 and G.2 which call for suspending core alteration and suspending handling of irradiated fuel in the [primary or secondary containment] do not include the corresponding GE STS ACTION which states that the provisions of Specification 3.0.3 are not applicable. BWROG has not provided any justification for the deletion of the subject ACTION. The staff requires the BWROG to address all the above concerns.~~

F. SR 3.6.1.6.1 limits verification of closure once every 31 days only to manual valves and blind flanges while GW STS SR 4.6.1.1 includes deactivated automatic isolation valves secured in position to the above list. The staff requires inclusion of the automatic isolation valves in the list. Similarly, the staff requires inclusion of the automatic isolation valves in SR 3.6.1.6.3.

G. GE STS 3.6.4, ACTION Item b specifies the corrective ACTION that has to be performed to continue plant operation when one or more of the reactor instrumentation line excess flow check valves is (are) inoperable. The identified corrective ACTION is either restoration of the inoperable valve(s) to OPERABLE status within 4 hours or isolation of the affected instrument line(s) and declaration of the associated instrument(s) as inoperable within 4 hours. BWROG has deleted the entire ACTION item. Since some BWR/6 reactors have instrumentation line excess flow check valves, the staff requires an ACTION item to cover such valves for those reactors. The restoration or isolation time can be 8 hours. Also, there should be a SR to demonstrate the operability of the instrument line excess flow check valves (See GE STS SR 4.6.4.4).

H. Revised STS SR 3.6.1.6.8 specifies a surveillance frequency of 18 months or one in accordance with SR 3.0.5 for the primary containment isolation valves in hydrostatically tested lines. Since such testing is covered by Appendix J, the surveillance frequency for the testing need not be more restrictive than that specified in Appendix J for Type C tests.

I. Revised STS SR 3.6.1.6.9 requires demonstration of blockage of certain purge supply and exhaust isolation valves once every 18 months from opening more than 50°. Since the above requirement is plant specific, the entire SR should be put in a bracket indicating that it may not be applicable to some BWR/6 reactors. Also, revised STS 3.6.1.5 "Containment Purge System," and 3.6.5.5 "Drywell Vent and Purge System" should include corresponding LCOs and ACTION items to cover the BWR/6 reactors that require restriction on valve opening. The staff finds omission of corresponding LCOs and ACTION items for SR 3.6.1.6.9, unacceptable. The corresponding LCOs and ACTION items can be put in parentheses.

K. Revised STS SR 3.6.1.6.11 requires that the combined leakage rate for all primary containment penetrations that bypass the secondary containment be demonstrated to be equal to or less than a specified limit. However, the revised STS does not include any LCO or ACTION item to which the above SR can be related. The above criterion for the secondary containment bypass leakage paths is identified in LCO Item "d" and ACTION Item "d" of GE STS 3.6.1.2 "Containment Leakage." Though the above criterion is not explicitly spelled out in Appendix J, the staff considers it as Appendix J related. The staff requires the above criterion be included as part of primary containment integrity maintenance criteria and so identified in the Basis for the revised STS 3.6.1.1 "Primary Containment." This will be consistent with relocation of Appendix J requirements. The corresponding GE ACTION Item is covered by the specified ACTIONS for not meeting the LCO for revised STS 3.6.1.1. Also, the staff requires the relocation of SR 3.6.1.6.11 under the revised STS 3.6.1.1 "Primary Containment."

L. The LCO for revised STS 3.6.1.6 excludes the operability requirement for the drywell isolation valves. GE STS 3.6.4 includes the operability requirement for the drywell isolation valves. BWROG has justified the deletion stating that the drywell is not part of the primary containment boundary for Mark III containment designs and that the requirements for drywell isolation valves are covered by other revised STS, such as those for drywell integrity including the bypass leakage and drywell vent and purge system. The staff finds that nowhere in the revised STS, there is an explicit requirement that the drywell isolation valves have to be OPERABLE. BWROG states that the operability of the drywell isolation valves is demonstrated by ASME Section XI requirements. The staff recognizes that the drywell is not part of the primary containment boundary for Mark III containments. However, since the drywell performs the important safety function of pressure suppression in conjunction with the wetwell, it is imperative that all the drywell isolation valves be OPERABLE. Morever, it is not clear whether all the drywell isolation valves will be classified as Category A valves and therefore subject to leakage testing requirements of the ASME code. Therefore, until the caption for STS 3.6.1.6, the LCO, the Condition A, the NOTE to ACTION A.2.2.1, and the SRs 3.6.1.6.4 and 3.6.1.6.6, are modified as appropriate to reflect the inclusion of the

drywell isolation valves in the STS 3.6.1.6, the staff cannot accept the proposed STS.

M. There should be a SR to cover testing of purge system valves with inflatable seals. This can be put in parentheses.

XV. Revised STS 3.6.5.6 Drywell Vacuum Relief (Optional)

A. Revised STS 3.6.5.6 is very different from the corresponding GE STS 3.6.5.3 for BWR/6. This is because it represents the modified version of the corresponding GE STS to be consistent with the lead BWR/6 design. The lead plant has both drywell post-LOCA and drywell purge vacuum relief subsystems. Both of the vacuum relief subsystems are covered by the revised STS. Staff notes that other operating BWR/6 reactors (e.g., Perry, Clinton) do not have similar provisions. Therefore, the BWROG should provide a supplementary submittal to cover the drywell vacuum breakers for such reactors.

B. The LCO for the revised STS 3.6.5.6 does not include the requirement that the associated vacuum breakers and isolation valves should be in a closed condition. The current lead plant STS 3.6.5 has such a requirement. BWROG has not explained why the above requirement has been deleted in the proposed STS 3.6.5.6. The staff notes that the lead BWR/6 has assumed that all the vacuum breakers are in a closed condition during drywell pressurization in all of the LOCA analyses to prevent drywell bypass leakage exceeding its design value during LOCA occurrence in MODES 1, 2 and 3. Therefore, the staff finds the deletion of the closed condition requirement unacceptable.

C. Conditions A, B and C of the revised STS 3.6.5.6 represent various combinations of inoperable drywell vacuum relief subsystems. The proposed required ACTIONS for the conditions imply that the subject vacuum breakers are inoperable and open. Corresponding GE STS 3.6.5.3 and the existing lead BWR/6 TS 3.6.5 both make a distinction between an inoperable vacuum breaker that is known to be closed and a vacuum breaker that is OPERABLE, but open. The required ACTIONS and associated completion times specified in the revised STS are inappropriate since they may represent situations

where multiple vacuum breakers can be inoperable and open (e.g., for Conditions B and C, 4 vacuum breakers may be open - See Letter by L. Kintner to O. D. Kingley dated October 17, 1986 on "Changes to Technical Specifications and Operating License Condition" for Grand Gulf, Unit 1). Both GE STS and the current TS for Grand Gulf allow corrective ACTION only for one vacuum breaker being in open condition and that too only if that vacuum breaker in OPERABLE. BWROG should identify three separate conditions, two for various combinations of inoperable subsystems that are known to be closed and one for a single vacuum breaker that is open. Also, the associated corrective ACTIONS and their completion times should be specified. For the above reason, the staff finds the proposed STS 3.6.5.6 unacceptable.

D. Condition B of the revised STS 3.6.5.6 represents both drywell purge vacuum relief subsystems being inoperable. The associated corrective ACTION B.2 allows restoration of at least one inoperable subsystem to OPERABLE status within 7 days. Even with addition of the words "but known to be closed" to Condition B, and deletion of ACTION B.1, the staff finds the proposed completion time for ACTION B.2, unacceptable. This is because, the condition represents two out of three vacuum relief lines being inoperable and is no different from Condition C (See the above mentioned letter).

E. Revised STS has deleted ACTION Item "c" of corresponding GE STS 3.6.5.3 and the ACTION Item "e" of current lead BWR/6 TS 3.6.5. The deleted ACTION item calls for verification of closure of an operable vacuum breaker or associated isolation valve which has its position indicator inoperable, once per 24 hours. BWROG has justified the deletion stating that verification of closure for vacuum breakers with inoperable position indicators is covered in the Bases Section. However, the staff finds that the Bases for ACTION Items A.1, B.1 and C.1 do not explicitly identify the requirement to verify once every 24 hours. Also, the SR 2.6.5.6.1 covers verification once every 7 days. For the above reasons, the staff finds the deletion of the ACTION item unacceptable.

F. Revised STS has deleted several SR items of the existing TS for the lead BWR/6. These call for verification of operability of position indicators (1) during valve cycling tests once per 31 days, and (2) by performance

of channel calibrations once every 18 months. Additionally, they call for channel check, channel functional test and channel calibration of the isolation valve differential pressure actuation instrumentation at specified frequencies. These are not explicitly covered in the Bases as stated by BWROG. Also, BWROG's justification for deletion of the existing SR for the isolation valve differential pressure actuation instrumentation is inappropriate. The drywell isolation valves are the ones associated with the drywell vacuum relief systems and they must be covered by appropriate SR to ensure proper functioning of the relief subsystems. For the reasons stated above, the staff finds the deletion of the above SRs unacceptable.

XVI. Revised STS 3.6.4.1 Secondary Containment

A. The caption, LCO, Condition A and C, and the required ACTION A.1 are all vague and too broad in the sense that they refer to secondary containment operability rather than its integrity. The staff finds the reference to operability unacceptable for the same reasons as those given for primary containment under Item II.A of this report.

B. Revised STS specifies a completion time of "as soon as practicable" for suspension of operations with a potential for draining the reactor vessel (OPDRVs). The terminology is vague and therefore, unacceptable. The OPDRVs must be suspended immediately.

C. Revised STS SRS 3.6.4.1.2 and 3.6.4.1.3 refer to auxiliary and enclosure buildings rather than secondary containment. This may be valid for the lead BWR/6. However, it may not be appropriate for other BWR/6 reactors. Therefore, in the STS, reference should be made to secondary containment. Also, it is not clear why SR 3.6.4.1.1 which deals with verification of the secondary containment vacuum once per 24 hours is put in brackets. Since the specified value of 0.25 inches of water gauge is a standard value, the SR need not be put in brackets.

XVII. Revised STS 3.6.4.2 Secondary Containment Isolation Valves

A. The captions, LCO, ACTIONS, and SRs of the revised STS 3.6.4.2 do not refer to dampers. Staff notes that some operating BWR/6 reactors have isolation

dampers for the secondary containment (River Bend, Clinton). Therefore, BWROG should include dampers also in the TS. Both "dampers" and "valves" should be put in parentheses in the STS, so that the applicable isolation device or devices can be identified in the plant specific TS.

B. Revised STS 3.6.4.2 for BWR/6 has deleted the requirement for surveillance testing of secondary containment isolation valves and/or dampers following maintenance, repair or replacement work. GE STS SR 4.6.6.2.a requires such tests. BWROG has justified the deletion stating that such testing is appropriate for plant specific controls. Appendix J does not deal with secondary containment isolation devices. However, it does require identification of special testing requirements for the secondary containment leakage barriers either in the plant TS or its associated Bases. The staff considers such testing as essential to ensure the proper functioning of the secondary containment. Therefore, omission of the above SR is unacceptable.

C. SR 3.6.4.2.1 refers to auxiliary building or enclosure building. Though this may be relevant to the lead plant, it is not applicable to other BWR/6 reactors. Therefore, the above references should be replaced by "secondary containment."

XVIII. Revised STS 3.6.3.1 Containment Hydrogen Recombiner Systems

A. BWROG has not explained why the provisions of LCO 3.0.4 are not applicable when one containment hydrogen recombiner subsystem is inoperable. The corresponding GE STS 3.6.7.1 for BWR/6 does not exclude the provisions of LCO 3.0.4 for the above situation. The staff finds the exclusion without justification unacceptable.

B. Revised STS 3.6.3.1 has added a plant condition (Condition B) which represents the inoperability of both recombiner subsystems. The STS identifies the required ACTIONS and their completion times for the above condition. Specifically, the STS allows restoration to OPERABLE status of one subsystem within 7 days and the other within 30 days of discovery of inoperability of the initial subsystem. GE STS 3.6.6.1 does not have any such

ACTION statement. BWROG justified the proposed deletion stating that compliance with other requirements such as those specified in 10 CFR 50.44 provide sufficient overall protection to allow the proposed deviation. The owners group further contends that the proposed relaxation is consistent with AOTs for some other systems which include two subsystems. The staff finds the above justification inappropriate. The need for each system has to be decided on its own merits. Also, 10 CFR 50.44 provisions are part of "defense in depth strategy" and are not to be construed as permitting relaxation of some other requirements established by design basis accident analysis. The Bases Section has identified the recombiner system as performing a vital safety function in limiting hydrogen concentration in the primary containment to within acceptable limits following a design basis LOCA. Unavailability of both the subsystems will put primary containment outside the design basis LOCA envelop analysed, and will therefore represent an unanalyzed situation. Therefore, the staff finds ACTION B and the associated corrective ACTIONS and their completion times unacceptable.

C. SR 3.6.3.1.1 requires demonstration of the heater sheath temperature to at least [100°]F within [90] minutes and maintaining it for at least [2] hours, once every 6 months. BWROG recognizes that the specified temperature is not high enough for hydrogen to recombine with oxygen. BWROG considers that the low temperature demonstration of the system semiannually should be adequate to conclude the system's acceptable performance based on vendor's system design given the need to avoid putting undue strain units lifetime by frequent high temperature demonstration tests. To supplement the above partial tests semiannually, the revised STS has also prescribed SR 3.6.3.1.3, which requires demonstration of the heater sheath temperature increase to at least [1200°]F within [5] hours and maintaining the sheath temperature between [1150° and 1300°]F for at least [4] hours, once every 18 months. The staff agrees with the above approach of requiring partial tests semiannually and full tests once every 18 months. However, the staff considers the words "outlet gas" are more appropriate than the words "sheath" in the SRs 3.6.3.1.1 and 3.6.3.1.3. Also, the SRs should require the above demonstrations during the recombiner system functional tests (the proposed SRs do not call for such demonstrations during the recombiner system functional tests). The staff finds the SRs 3.6.3.1.1 and 3.6.3.1.3 acceptable subject to the above modifications of the SRs.

D. SR 3.6.3.1.4 requires that within [30] minutes following implementation of SR 3.6.3.1.3, the resistance to ground for any heater phase should be demonstrated to be at least equal to [10,000] ohms. However, for BWR/4 reactors, the BWROG has set the ground resistance limit at 10^6 ohms. The staff considers that 10^6 ohms value is more appropriate than the 10^4 ohms value specified for BWR/6 reactors. The staff finds the proposed SR 3.6.3.1.4 for BWR/6 reactors acceptable subject to the above correction.

XIX. Revised STS 3.6.3.2 Containment and Drywell Hydrogen Ignitor System

A. There is no GE STS for BWR/6 reactors covering the containment and drywell ignition system. However, the staff finds that all the BWR/6 operating reactors have such a TS. BWROG states that a new STS (3.6.3.2) has been provided consistent with lead BWR/6 reactors. Staff's examination of the TS for the 4 operating BWR/6 reactors (Grand Gulf, Perry, Clinton, River Bend) indicates that, except for Grand Gulf, for all other BWR/6 operating reactors same TS have been prescribed for the containment and drywell hydrogen ignition system. It is not clear what BWROG means by the statement that the proposed STS for the system is consistent with BWR/6 lead plants, since there is only one lead BWR/6 plant which is Grand Gulf. Also, a comparison of the proposed STS 3.6.3.2 with Grand Gulf TS for the system shows that the two are very different. Further, BWROG has not provided any justification for the substantial differences between the proposed STS 3.6.3.2 and corresponding Grand Gulf TS 3.6.7.2 for the system. BWROG should address the above concerns.

B. The staff does not see much merit in using the word "Ignitor" in the proposed caption and the LCO as opposed to the word "Ignition" used in the existing TS for operating BWR/6 plants. The LCOs for the operating BWR/6 plants very clearly spell out the OPERABILITY requirements. For 3 of these, these are as follows:

(1) Two independent containment and drywell hydrogen ignition subsystems each consisting of ( ) circuits.

(2) No more than 2 ignitor assemblies inoperable per circuit.

(3) No adjacent ignitor assemblies inoperable.

(4) No more than 5 ignitor assembles inoperable per subsystem.

The Grand Gulf LCO is somewhat different from the above with respect to Item 3 above and also it does not include Item 4 above. The LCO for the proposed STS 3.6.3.2 is different from the LCOs for all the operating reactors. BWROG has relocated the OPERABILITY requirements for the system in the corresponding Basis Section, and the requirements are the same as those specified for the lead BWR/6 in the corresponding LCO. The staff considers that it is more appropriate to specify the above OPERABILITY requirements in the LCO rather than in the corresponding Basis. For the reason stated above, the staff finds the proposed LCO for revised STS 3.6.3.2 inadequate and, therefore, unacceptable.

C. The revised SRs are consistent with the lead BWR/6 SRs. However, they are different from the SRs for the other three operating BWR/6 plants. BWROG should develop SRs consistent with the (to be developed) LCO suggested in Item B above.

Enclosure 3

1.0 Definitions

PRIMARY CONTAINMENT INTEGRITY

1.** PRIMARY CONTAINMENT INTEGRITY is ~~established~~ maintained when:

a. All primary containment penetrations required to be closed during accident conditions are either:

1. Capable of being isolated by an OPERABLE primary containment automatic isolation system, or

2. Isolated by locked manual valves, blind flanges, or deactivated power-operated valves secured in their closed positions, or

3. Isolated by a closed system (primary containment isolation barrier) with OPERABLE containment isolation valve.

b. All primary containment equipment hatches are closed and sealed.

c. The sealing mechanism associated with each primary containment penetration (e.g., welds, bellows or O-rings) is OPERABLE.

d. Appendix J primary containment leakage rates are within their required limits.

e. Each primary containment air lock is in compliance with the requirements of Specification 3.6.1.2.

f. The secondary containment bypass leakage is less than or equal to the value specified in ~~Surveillance Requirement (SR)~~ Specification 3.6.1.1.2.

DRYWELL INTEGRITY

1.XX DRYWELL INTEGRITY is maintained when:

a. All drywell penetrations required to be closed during accident conditions are either:

1. Capable of being ~~closed~~ isolated by an OPERABLE drywell automatic isolation system, or

2. Isolated by at least one locked manual valve, blind flange or deactivated power-operated valve secured in its closed position.

b. All drywell equipment hatches are closed and sealed.

c. ~~The~~ Each drywell air lock is in compliance with the requirements of Specification 3.6.5.2.

d. The drywell bypass leakage is within the limits of Specification 3.6.**.

e. The sealing mechanism associated with each drywell penetration (e.g., welds, bellows or O-rings) is OPERABLE.

stet

~~SECONDARY~~ CONTAINMENT INTEGRITY ~~[illegible]~~ is ~~established~~ maintained.

1. ~~3.6.5.2~~ SECONDARY CONTAINMENT INTEGRITY ~~shall exist~~ when:

   a. All secondary containment penetrations required to be closed during accident conditions are either:

      1. Capable of being closed by an OPERABLE secondary containment automatic isolation system, or

      2. Closed by at least one manual valve, blind flange, or deactivated power-operated ~~automatic~~ (valve) (or) (damper) (, as applicable) secured in its closed position, ~~except as provided in Table 3.6.5.2-1 of Specification 3.6.5.2.~~

   b. All secondary containment hatches and blowout panels are closed and sealed.

   c. The standby gas treatment system is in compliance with the requirements of Specification 3.6.4.3

   d. (At least one) (The) door in each access to the secondary containment is closed (except for normal entry and exit).

   e. The sealing mechanism associated with each secondary containment penetration, e.g., welds, bellows or O-rings, is OPERABLE.

   f. The pressure within the secondary containment is less than or equal to the value required by Specification ~~3.6.5.3.2~~ 3.6.4.1.1.

~~ENCLOSURE 3~~

~~Primary Containment~~ Primary Containment Integrity (~~Primary~~)
3.6.1.1

3.6 CONTAINMENT SYSTEMS

3.6.1.1 Primary Containment Integrity (~~Primary~~) ~~Primary Containment~~

LCO 3.6.1.1 The PRIMARY CONTAINMENT INTEGRITY shall be maintained ~~OPERABLE~~.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. PRIMARY CONTAINMENT ~~inoperable~~ INTEGRITY not maintained.	A.1 Restore PRIMARY CONTAINMENT INTEGRITY ~~to OPERABLE status~~	1 hour
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ AND ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

NOTE:
1. Define Appendix J Parameters L_a, L_d and L_t in the corresponding BASIS.
2. Identify in the BASIS secondary containment bypass leakage paths combined leakage limit as one of the requirements to be met for considering that the primary containment INTEGRITY is maintained. Also, specify the combined leakage limit in the BASIS

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.1.1	Perform required ~~Type A~~ leak rate testing in accordance with 10 CFR 50 Appendix J and approved exemptions.	-----NOTE----- Provisions of SR 3.0.2 are not applicable. ----------
Note: Define La, Ld, and Lt in SR.		In accordance with 10 CFR 50 Appendix J and approved exemptions
~~SR 3.6.1.1.2~~	~~Perform required Type B leak rate testing except for Containment air locks in accordance with 10 CFR 50 Appendix J and approved exemptions.~~	~~NOTE Provisions of SR 3.0.2 are not applicable.~~
		~~In accordance with 10 CFR 50 Appendix J and approved exemptions~~
SR 3.6.1.1.2	Demonstrate the combined leakage rate for all secondary containment bypass leakage paths (i.e., leakage paths from the primary containment that bypass the secondary containment) is ≤ [0.0504] L_a when primary containment is pressurized to P_a [11.5] psig	18 months

~~BASES REFERENCES: None~~

CROSS REFERENCES: NONE

and ~~deleted~~ leakage tests for all secondary containment bypass leakage paths,

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1.1 Primary Containment Integrity

BASES

BACKGROUND The function of the Primary Containment is to isolate and contain fission products released from the reactor primary system in the event of a Loss of Coolant Accident (LOCA). The Primary Containment consists of a containment vessel which provides a leak-tight, barrier surrounding the reactor primary system.

Maintaining Primary Containment Integrity ~~OPERABLE~~, which includes 10CFR50 Appendix J leakage tests in this LCO, provides sufficient control of the release of fission products to limit offsite doses to within the requirements of 10 CFR 100. Primary Containment leakage test requirements have been set forth by References 1 and 2. These test requirements provide for periodic verification of the leak-tight integrity of the Primary Containment and systems and components which penetrate the Primary Containment. The purpose of the leak tests are to assure that leakage through the Primary Containment and systems and components penetrating the Primary Containment shall not exceed the allowable leakage rates specified in the technical specification and used in the safety analyses. Additionally the periodic tests performed assure that proper maintenance and repairs are made during the service life of the plant. All leakage rate requirements and surveillance requirements are in conformance with Appendix J of 10 CFR 50 (Ref. 1) and approved exemptions.

The maximum allowable leakage rate, L_a, for the Primary Containment is [0.437]% by weight of the containment air per 24 hours at P_a [11.5] psig (Ref. 2). The maximum allowable leakage rate is based on what is acceptable for nuclear safety considerations per 10 CFR 100. Reactor size, site location and meteorology, as well as the possible mechanisms for radioactivity generation and transport within the containment vessel are all considered in specifying the allowable leakage rate for a given containment system. Generally the lowest leakage rate which is readily obtainable and measurable is specified. ~~even though it may be lower than required by safety considerations.~~

calculated primary containment peak internal pressure

Note: Define L_d and L_t and state where they are used

The maximum allowable leakage rate is used as an input to the safety analysis of References 4 which ensures conformance to the requirements of 10 CFR 100.

Note: Add a paragraph to summarize the conservatism in the prescribed STS (the Appendix J requirement to demonstrate measured overall integrated containment leakage within $0.75L_a$ or $0.75L_t$). (continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

Analytical methods and assumptions involving the primary containment are presented in References 2 and 3. The safety analyses assume a non-mechanistic fission product release following a LOCA which forms the basis for determination of offsite doses. The fission product release is in turn based on an assumed leak rate from the primary containment. ~~OPERABILITY of the~~ Maintaining Primary Containment assures that the leak rate assumed in the safety analyses is not exceeded and that the site boundary radiation doses will not exceed the limits of 10 CFR 100 even if the non-mechanistic release were to occur.

Primary Containment satisfies the requirements of Selection Criterion 3 of the NRC Interim Policy Statement on Technical Specification Improvements as documented in Reference 5.

LCO

The Primary Containment INTEGRITY must be maintained ~~OPERABLE~~ to assure that the containment conditions, passive features, and active features are consistent with those assumed in the safety analyses. In order ~~for the Primary Containment~~ to be considered ~~OPERABLE~~ the primary containment INTEGRITY as being maintained only the SRs listed in this LCO must be met.

APPLICABILITY

Maintenance of Primary Containment OPERABILITY is applicable during MODES 1, 2 and 3 since it is required when sufficient energy is contained in the reactor coolant system to pressurize the containment. Primary Containment is required and is assumed in the LOCA analyses of Reference 2, where pressurization of the primary containment occurs. A LOCA in MODE 4 or 5 will not pressurize primary containment and therefore its OPERABILITY is not required. The analyses of Reference 3 which assume and require primary containment also assume the reactor is pressurized (i.e., MODE 1, 2 or 3).

The refueling accident analysis of Reference 4 occurs in MODE 5, however, it does not assume primary containment is OPERABLE since the equipment hatch is assumed open (i.e., there is no Primary Containment bypass leakage consideration). For this case it is shown that Secondary Containment OPERABILITY ensures compliance with the requirements of 10 CFR 100.

(continued)

or the combined leakage rate for all secondary containment bypass leakage paths may exceed the acceptable limit of $0.0504L_a$ at primary containment pressure P_a [1.5] psig.

BASES (continued)

ACTIONS

A.1 ~~B.1 and B.2~~

INTEGRITY not maintained,

With Primary Containment ~~inoperable~~, the leak rate may exceed that assumed in the design basis accident analyses. A short time is allowed to restore Primary Containment to ~~OPERABLE~~ INTEGRITY ~~status~~ due to the low probability of an event which would pressurize the primary containment. However, if Primary Containment cannot be restored ~~to OPERABLE status~~, the reactor is required to be in MODE 3 and subsequently in MODE 4.

INTEGRITY

Completion Time

for required corrective ACTION is

The ~~All~~ Completion Times ~~are~~ based on industry accepted practice and engineering judgement considering the number of available systems and the time required to reasonably complete the Required Action.

Note. The writeup on completion time needs revision. This write up is ~~now~~ relevant only to system which has more than one subsystem

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1.1, 3.6.1.1.2

INTEGRITY

Maintaining Primary Containment ~~OPERABLE~~ requires compliance with the leak test requirements of 10 CFR 50, Appendix J, and Therefore, these two SRs reflect the leak rate testing requirements ~~with regard to overall~~ containment ~~leakage (Type A and B leak tests)~~. Other specific Appendix J requirements are addressed in the individual containment component Surveillance Requirements. Type A, ~~and~~ B testing must be performed in accordance with 10 CFR 50, Appendix J or NRC approved exemptions to Appendix J. These periodic testing requirements verify that the containment leak rate does not exceed the leak rate assumed in the safety analysis. The surveillance frequency is required by Appendix J, and as such, SR 3.0.2 (which allows surveillance frequency extensions) does not apply.

for Appendix J leak tests

Surveillance Frequencies

In general, surveillance frequencies are based on industry accepted practice and engineering judgement considering the unit's conditions required to perform the test, the ease of performing the test and a likelihood of a change in the system/component status.

(continued)

~~acceptable~~ demonstrating combined leakage rate for all secondary containment bypass leakage paths is ~~within the~~ equal to or less than the limit specified in SR 3.6.1.1.2.

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix J.

2. [Grand Gulf] FSAR, Section [6.2].

3. [Grand Gulf] FSAR, Section [15.6.5].

4. [Grand Gulf] FSAR Section [15.7.6].

5. NEDO-31466, "Technical Specification Screening Criteria Application and Risk Assessment," November 1987.

3.6 CONTAINMENT SYSTEMS

3.6.1.2 Primary Containment Air Lock

LCO 3.6.1.2 The Primary Containment Air Lock(s) shall be OPERABLE with:

Both doors closed except when an air lock is being used for normal transit entry and exit to containment. Then at least one airlock door shall be closed.

AND

An overall air lock leakage rate less than or equal to [2] scfh at Pa, [11.5] psig.

APPLICABILITY: MODES 1, 2, and 3.

NOTE
Access via an airlock with an inoperable door or interlock is allowed for air lock repair under administrative control. Cumulative access time is not to exceed one hour per year.

NOTE
Operation with an inoperable airlock door or interlock may continue only until performance of SR 3.6.1.2.2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Primary Containment Air Lock door inoperable. OR One ~~Primary Containment Air Lock~~ door and interlock mechanism inoperable. OR one primary containment air lock interlock mechanism inoperable	NOTE Provisions of LCO 3.0.4 are not applicable. NOTE ~~Access for air lock repair is allowed under administrative control. Cumulative access time is not to exceed one hour per year.~~ NOTE ~~Operation may continue only until performance of SR 3.6.1.2.2.~~	
	A.1 NOTE ~~Access allowed under administrative control.~~	
	Close and maintain closed the OPERABLE air lock door in each affected air lock.	Immediately
	AND	
	NOTE ~~Access allowed under administrative control, not to exceed one hour cumulative per year.~~	

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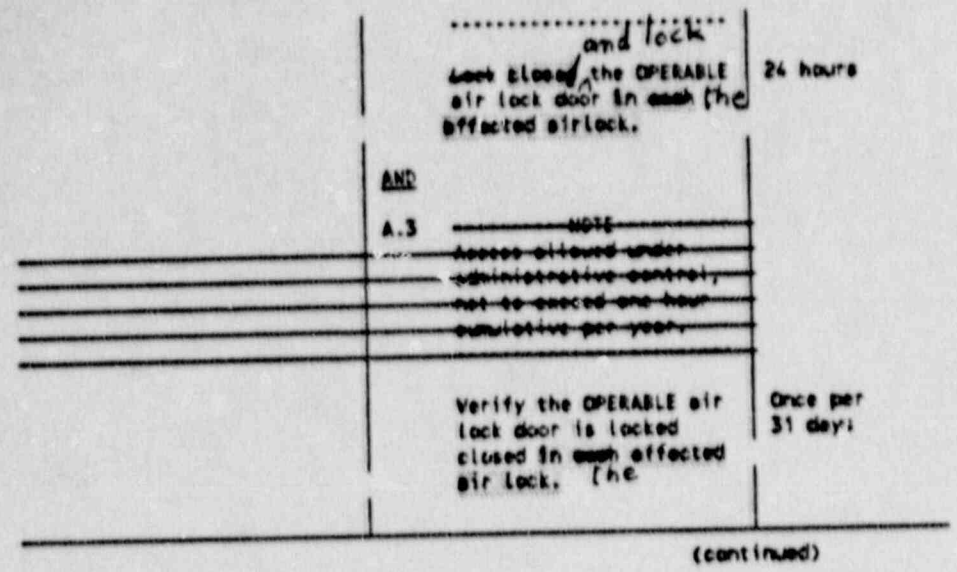

	~~Lock closed~~ and lock the OPERABLE air lock door in ~~each~~ the affected airlock.	24 hours
	AND	
A.3	~~NOTE Access allowed under administrative control, not to exceed one hour cumulative per year.~~	
	Verify the OPERABLE air lock door is locked closed in ~~each~~ the affected air lock.	Once per 31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Primary Containment Air Lock interlock mechanism inoperable.	~~NOTES~~ ~~Access allowed under administrative control.~~	
	B.1 Close and maintain closed one OPERABLE air lock door in each affected air lock.	Immediately
	AND	
	B.2 Lock the OPERABLE air lock door closed in each affected air lock.	24 hours
	AND	
	B.3 Verify the OPERABLE air lock door is locked closed.	Once per 31 days
B. One Primary Containment Air Lock inoperable for reasons other than Condition A. ~~or C.~~	B.1 Close and maintain closed the air lock door in each affected air lock.	Immediately
	AND	
	B.2 Restore inoperable air lock to OPERABLE status.	24 hours
~~B. Required Actions and associated Completion Times of Condition A, B, or C not met~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~
C. ~~B.~~ Condition A exists for for more than one Primary Containment Airlock.	C.1 Perform required actions of Condition A for each affected airlock	In accordance with Condition A, for each affected air lock
	AND	
	C.2 Restore one airlock to OPERABLE status.	7 days
D. One primary containment air lock door inflatable seal system air flask pressure instrumentation channel inoperable	D.1 Restore inoperable channel to OPERABLE status or Verify ~~primary~~ containment air flask pressure to be ≥ [80] psig	7 days once per 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.2.1	Verify primary Containment Air Lock seal air flask pressure ≥ [90] psig.	7 days
SR 3.6.1.2.2	Demonstrate primary Containment Air Lock interlock mechanism is OPERABLE.	6 months
SR 3.6.1.2.3	Demonstrate primary Containment Air Lock seal pneumatic system pressure does not decay at a rate > [2] psig in [48] hours from [90] psig.	18 months
SR 3.6.1.2.4	Perform required Type B primary containment Air Lock leak rate testing in accordance with 10 CFR 50 Appendix J and approved exemptions. The acceptance criteria for air lock testing are: a. Overall air lock leakage rate is ≤ [2] scfh when tested at Pa. b. For each door, the seal leakage rate is ≤ [2] scfh when the gap between the door seals is pressurized to Pa.	-----NOTE----- Provisions of SR 3.0.2 are not applicable. ---------- In accordance with 10 CFR 50 Appendix J and approved exemptions
SR 3.6.1.2.5	Demonstrate each of the [two] inflatable seal pressure instrumentation channels per air lock door OPERABLE by performance of a a) Channel FUNCTIONAL TEST and AND b) CHANNEL CALIBRATION with a low pressure set point of ≥ [60] psig.	~~once per~~ 31 days 18 Months

CROSS-REFERENCES: None

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Acceptable as is.
BWR/6

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Pressure

LCO 3.6.1.3 Containment ~~to Auxiliary Building~~ Secondary Containment differential) pressure shall be maintained from [-0.1 to 1.0) psid.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary Containment ~~to Auxiliary Building~~ Secondary Containment differential) pressure < [-0.1) psid. OR Containment [to ~~Auxiliary Building~~ Secondary Containment differential) pressure > [1.0) psid.	A.1 Restore primary Containment ~~to Auxiliary Building~~ Secondary Containment differential) pressure to within limits.	1 hour
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.1	Verify Primary Containment [to ~~Auxiliary Building~~ Secondary Containment differential] pressure is from [-0.1 to 1.0] psid.	12 hours

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.1.4 Primary Containment Average Air Temperature

LCO 3.6.1.4 Primary Containment average air temperature shall be ≤ [95]°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary Containment average air temperature > [95]°F.	A.1 Restore air temperature to within limits.	8 hours
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ AND ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.4.1	Verify Primary Containment average air temperature is ≤ [95]°F.	24 hours

CROSS-REFERENCES: None

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3.6 CONTAINMENT SYSTEMS

3.6.1.5 Primary Containment Purge System

LCO 3.6.1.5 No more than one Primary Containment Purge subsystem (either the [20] inch line or the [6] inch line) shall be in operation simultaneously and the [20] inch line subsystem shall not be operated for more than [1000] hours per 365 days.

[AND purge system supply and exhaust

Primary Containment isolation valves on the [20] inch lines shall be restricted from opening by more than [50] °.]

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Both subsystems operating simultaneously.	A.1 Isolate one subsystem.	Immediately
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ AND ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~
~~[20] inch line subsystem in operation for more than [1000] hours in the last 365 days.~~		

~~Table spec applicable to reactors with qualified purge system isolation valves.~~

Provide supplemental Tech Spec for those BWR/6 plants that do not have ~~qualified~~ primary containment purge system isolation valves qualified to close under accident conditions.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.5.1	Determine the cumulative time during the past 365 days when the [20] inch supply and/or exhaust isolation valves have been open while in MODE 1, 2 or 3.	[7] 84 days
SR 3.6.1.5.2	Demonstrate each [20] inch purge supply and exhaust isolation valve is blocked to restrict each valve from opening more than [50] °.	18 months

Note: 31 day surveillance interval is appropriate for BWR/6 with sealed closed purge valves.

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.1.6 Primary Containment (and Pressure) Isolation Valves AND DRYWELL Isolation Valves

LCO 3.6.1.6 The Primary Containment (and Pressure) Isolation Valves and Drywell Isolation Valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODES 4 and 5 when ~~associated actuation instrumentation is required to be OPERABLE per LCO 3.3.6.1~~ handling irradiated fuel in the secondary containment and during CORE ALTERATIONS and operations with a potential for draining the reactor vessel.

~~NOTE~~
~~Conditions A through D may be concurrently applicable.~~

ACTIONS		
CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more ~~required~~ Primary Containment Isolation Valves (or Pressure Isolation Valves) ~~inoperable~~ or Drywell Isolation Valves inoperable.	A.1 ----------NOTE---------- Not applicable to those penetrations that have only one isolation valve and a closed system as the second containment isolation barrier Verify at least one isolation valve is OPERABLE in each affected open penetration.	Immediately
	AND	
	A.2.1 Restore the inoperable valve(s) to OPERABLE status.	8 & hours
	OR	
	(continued)	

Note: The specification is applicable only to reactors that have no excess flow check valves.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2.1 ·····NOTE····· Only applicable to Primary Containment and Drywell Isolation Valves. ····· Isolate each affected penetration by use of at least one closed and deactivated automatic valve, closed manual valve or blind flange.	8 6 hours
	AND	
Containment	A.2.2.2 ·····NOTE····· 1. Only applicable to Pressure Isolation Valves that are not also Primary Isolation Valves. 2. Check valves used to satisfy this Required Action must have been demonstrated to meet SR 3.6.1.6.10. ····· Isolate the high pressure portion of the affected system from the low pressure portion by use of at least one closed manual or deactivated automatic or check valve.	8 6 hours
	AND	
	A.2.2.3 Verify each affected penetration is isolated.	Once per 31 days

To be reviewed by Reactor Systems Branch

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B. Required Actions and associated Completion Times of Condition A not met in MODE 1, 2, or 3.~~	~~B.1 Be in MODE 3.~~ AND ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~
~~Bb. Required Actions and associated Completion Times of Condition A not met in MODE 4 or 5.~~ operations with a potential for draining the reactor vessel.	B.1 ~~B.1~~ Suspend CORE ALTERATIONS. AND B.2 Suspend operations with a potential for draining the reactor vessel. AND B.3	Immediately Immediately
B. Required Actions and associated Completion Times of Condition A not met for valve(s) required to be OPERABLE when handling irradiated fuel in the [Primary or Secondary Containment] and during CORE ALTERATIONS and	~~B.4~~ Suspend handling of irradiated fuel in the [Primary or Secondary Containment.]	Immediately

~~Note: Provide justification for deleting the qualification that the provisions of Specification 3.0.3 are not applicable.~~

Also, provide supplementary Tech Spec applying to plants with operability requirements applicable to excess flow check valves.

NOTE Explain why drywell and steam tunnel are added in the proposed SRs 3.6.1.6.1 and 3.6.1.6.3. SRs 3.6.5.1.1 and 3.6.5.1.2 already cover the drywell.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.1	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. ---------- Verify all manual valves, deactivated automatic isolation valves, and blind flanges which are located outside the Primary Containment, Drywell, and Steam Tunnel and required to be closed during accident conditions are closed.	31 days
SR 3.6.1.6.2	Demonstrate measured leakage rate for each purge supply and exhaust isolation valve with resilient material seals is ≤ [0.01] La when pressurized to Pa.	92 days
SR 3.6.1.6.3	Verify all manual valves, deactivated automatic isolation valves, and blind flanges which are located inside the Primary Containment, ~~Drywell, or Steam Tunnel~~ and required to be closed during accident conditions are closed.	-----NOTE----- Only required if not performed in the previous 92 days ---------- Prior to entering MODE 2 or 3 from MODE 4

(continued)

---NOTE---

Not applicable to primary Containment penetrations ~~that~~ which have manual valves, blind flanges or deactivated automatic valves secured in closed position ~~and these are~~ inside the primary Containment. For these penetrations, SR 3.6.1.6.3 will apply.

Verify primary Containment penetrations not capable of being closed by OPERABLE primary Containment isolation valves and required to be closed during accident conditions are closed by manual valves, blind flanges or deactivated automatic valves secured in position.

(continued)

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.6.4	----------NOTE---------- MSIV may be excluded. ---------- Demonstrate isolation time of each automatic or power operated Primary Containment Automatic Isolation Valve is within limits.	[According to SR 3.0.5 OR 92 days]
SR 3.6.1.6.5	Demonstrate full closure isolation time of each Main Steam Line Isolation Valve is from [3] to [5] seconds.	[According to SR 3.0.5 OR 92 days]
SR 3.6.1.6.6	Demonstrate each Primary Containment Automatic Isolation Valve actuates to its isolated position on a simulated automatic isolation signal.	18 months
SR 3.6.1.6.7	Demonstrate leakage rate through the Main Steam Line Isolation Valves for all four main steam lines is ≤ [100] scf per hour when tested at [11.5] psig.	18 months
~~SR 3.6.1.6.8~~	STET ~~Demonstrate combined leakage rate of 1 gpm since the total number of Primary Containment Isolation Valves in hydrostatically tested lines which penetrate the primary containment, is not exceeded when these isolation valves are tested at [12.65] psig.~~	~~[According to SR 3.0.5 OR 18 months]~~
~~Note: 3.6.1.6.8 has been incorporated into SR 3.6.1.6.5~~		

In accordance with Appendix J, Type C Test Requirements

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
~~SR 3.6.1.6.9 Demonstrate each [20] inch purge supply and exhaust isolation valve is blocked to restrict each valve from opening more than 50°.~~	~~18 months~~
Relocated to SR 3.6.1.5.2	
SR 3.6.1.6.~~10~~9 NOTE Only required in MODE 1 or 2. Demonstrate the leakage rate for each Reactor Coolant System Pressure Isolation Valve is ≤ [0.5] gpm per nominal inch of valve size up to a maximum of [5] gpm.	According to SR 3.0.5 OR 18 months
~~SR 3.6.1.6.11 Demonstrate the combined leakage rate is ≤ [0.050] La when pressurized to [15.0] psig for all Secondary Containment bypass leakage paths.~~	~~18 months~~
~~SR 3.6.1.6.12 Perform required Type C leak rate testing in accordance with 10 CFR 50 Appendix J and approved exemptions.~~	~~NOTE Provisions of SR 3.0.2 are not applicable. In accordance with 10 CFR 50 Appendix J and approved exemptions~~

To be Reviewed by Reactor Systems Branch

Note: SRs 3.6.1.6.11 and 3.6.1.6.12 have been incorporated under STS 3.6.1.1

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CROSS-REFERENCES

TITLE	NUMBER
Primary Containment Isolation Actuation Instrumentation	3.3.6.1
Drywell	3.6.5.1

3.6 CONTAINMENT SYSTEMS

3.6.1.7 MSIV Leakage Control System

LCO 3.6.1.7 The MSIV Leakage Control System (LCS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One MSIV LCS subsystem inoperable. Provide justification for note.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	30 days from discovery of inoperable subsystem
~~B. Both MSIV LCS subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~7 days~~ ~~30 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

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BWR/6

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.1.7.1	Demonstrate each MSIV LCS blower operates for ≥ [15] minutes.	31 days
SR 3.6.1.7.2	Demonstrate electrical continuity of each ~~inboard~~ MSIV LCS subsystem heater element circuitry.	31 days
SR 3.6.1.7.3	Perform a system functional test which includes simulated actuation of each MSIV LCS subsystem throughout its operating sequence.	18 months
SR 3.6.1.7.4	Verify that at rated capacity ~~the blowers~~ the blowers develop at least the below required vacuums: 15 [60] inches of water vacuum at [100] scfm, inboard valves, AND 15 [60] inches of water vacuum at [200] scfm, outboard valves.	18 months

CROSS-REFERENCES

TITLE	NUMBER
MSIV Leakage Control System Instrumentation	3.3.6.3
Penetration Valve Leakage Control System	3.6.1.10

3.6 CONTAINMENT SYSTEMS

3.6.1.9 Residual Heat Removal Containment Spray

LCO 3.6.1.9 The Residual Heat Removal (RHR) Containment Spray system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One RHR Containment Spray subsystem inoperable.	A.1 Restore inoperable subsystem to OPERABLE status.	3 ~~30~~ days from discovery of inoperable subsystem
B. Both RHR containment spray subsystems inoperable.	B.1 Restore at least one subsystem to OPERABLE status. AND B.2 Restore the ~~initial~~ other inoperable subsystem to OPERABLE status.	8 hours 3 ~~7~~ days from discovery of initial inoperable subsystem
C. Required Actions and associated Completion Times of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours

NOTE Corrective ACTIONS B.1 and B.2 and their completion times are permissible for Condition B only with plant specific analysis supporting them.

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.1.9.1	----------NOTE---------- RHR Containment Spray subsystems may be considered OPERABLE during alignment to and operation in the RHR Shutdown Cooling mode when below [the RHR cut-in permissive pressure in MODE 3] if capable of being manually realigned and not otherwise inoperable. ---------- Verify each manual, automatic, or power operated valve in the flow path that is not locked, sealed or otherwise secured in position, is in its correct position.	31 days
SR 3.6.1.9.2	Demonstrate each of the RHR pumps develop a flow rate of ≥ [5650] gpm on recirculation flow through the heat exchanger to the suppression pool.	[According to SR 3.0.5 OR 92 days]
SR 3.6.1.9.3	Demonstrate each automatic valve in the RHR Containment Spray flow path actuates to its correct position on a simulated automatic initiation signal.	18 months
SR 3.6.1.9.4	Demonstrate each spray nozzle is unobstructed.	5 years

CROSS-REFERENCES

TITLE	NUMBER
Containment Spray System Instrumentation	3.3.6.5
ECCS - Operating	3.5.1

3.6 CONTAINMENT SYSTEMS

3.6.2.1 Suppression Pool Average Temperature

LCO 3.6.2.1 Suppression Pool average temperature shall be:

A. ≤ [95]oF when any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7 and testing which adds heat to the Suppression Pool is not being performed.

B. ≤ [105]oF when any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7 and testing which adds heat to the Suppression Pool is being performed.

C. ≤ [110]oF when all OPERABLE IRM channels are ≤ [25/40] divisions of full scale on Range 7.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression Pool average temperature > [95]°F but ≤ [110]°F. AND Any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7. AND Not performing testing which adds heat to the Suppression Pool.	A.1 Verify average temperature ≤ [110]°F. AND A.2 Restore average temperature to ≤ [95]°F.	Once per hour 24 hours
B. Required Actions and associated Completion Times of Condition A not met.	B.1 Reduce power until all OPERABLE IRM channels are ≤ [25/40] divisions of full scale on Range 7.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Suppression Pool average temperature > [105]°. AND Performing testing which adds heat to the Suppression Pool. AND any OPERABLE IRM channel is > [25/40] divisions of full scale on Range 7.	C.1 Suspend all testing which adds heat to the Suppression Pool.	Immediately
D. Suppression Pool average temperature > [110]°F but ≤ [120]°F.	D.1 Place the Reactor Mode Switch in the Shutdown position. AND	Immediately
	D.2 Verify average temperature ≤ [120]°F. AND	Once per 30 minutes
	D.3 Operate at least one Residual Heat Removal loop in the suppression pool cooling mode.	
E. Suppression Pool average temperature > [120]°F.	E.1 Depressurize the reactor vessel to < [200] psig. AND	12 hours
	E.2 Be in MODE 4.	36 hours
F. One suppression pool water temperature instrumentation channel in any pair(s) of temperature instrumentation channels in the same sector inoperable	F.1 Restore the inoperable channels to OPERABLE status OR Verify suppression pool water temperature to be within the limits	7 days Once per 12 hours
G. Both Suppression pool water temperature instrumentation channels in any pair(s) of temperature instrumentation channels in the same sector inoperable	G.1 Restore at least one inoperable water temperature instrumentation channel in each pair of temperature instrumentation channels in the same sector to OPERABLE status	8 hours

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1.1	Verify the suppression pool average temperature is within the applicable limits.	24 hours AND 5 minutes when performing tests which add heat to the suppression pool
SR 3.6.2.1.2	Verify ~~Sixteen~~ suppression pool water temperature instrumentation channels, at least two channels in each suppression pool sector OPERABLE by performance of a:	
	1. Channel check	once per 24 hours
	2. Channel functional test	once per 31 days
	3. Channel CALIBRATION ~~with high water temperature alarm setpoint set for ≤ [90°F]~~ with high water temperature alarm setpoint set for ≤ [90°F]	once per 18 months

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.2.2 Suppression Pool Water Level

LCO 3.6.2.2 Suppression Pool water level shall be maintained from [18' 4-1/2"] to [18' 9-3/4"].

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Suppression Pool water level < [18' 4-1/2"]. OR Suppression Pool water level > [18' 9-3/4"].	A.1 Restore water level to within limits.	~~8~~ 8 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

Allowed outage time (AOT)

Note: Increasing the AOT for action A.1 will require additional justification.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.2.1	Verify Suppression Pool water level is from [18' 4-1/2"] to [18' 9-3/4"].	24 hours

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CROSS-REFERENCES

TITLE	NUMBER
ECCS - Operating	3.5.1

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CONTAINMENT SYSTEMS

2.3 **Residual Heat Removal Suppression Pool Cooling**

3.6.2.3 The Residual Heat Removal (RHR) Suppression Pool Cooling system shall be OPERABLE.

LICABILITY: MODES 1, 2, and 3.

IONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
One RHR Suppression Pool Cooling subsystem inoperable.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	(Justify note) 7 days from discovery of inoperable subsystem
~~Both RHR Suppression Pool Cooling subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~	~~{ 8 } hours~~
	~~AND~~	
	~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~7 days from discovery of initial inoperable subsystem~~
~~Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~C.2 Be in MODE 4.~~	~~36 hours~~

ote: Staff will consider plant specific AOT extention for conditon A.1 as part of the lead plant review.

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WR/6

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.3.1	Verify each manual, automatic or power operated valve in the flow path that is not locked, sealed or otherwise secured in position, is OPERABLE and in its correct position ~~or can be aligned to its correct position.~~	31 days
SR 3.6.2.3.2	Demonstrate each RHR pump develops a flow rate ≥ [7450] gpm through the associated RHR heat exchangers while operating in the Suppression Pool Cooling mode.	[According to SR 3.0.5 OR 92 days]

CROSS-REFERENCES

TITLE	NUMBER
Residual Heat Removal System - Shutdown	3.4.7
ECCS - Operating	3.5.1
Residual Heat Removal Containment Spray	3.6.1.9

3.6 CONTAINMENT SYSTEMS

3.6.2.4 Suppression Pool Makeup System

LCO 3.6.2.4 The Suppression Pool Makeup System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

----------NOTE----------
Conditions A through E may be concurrently applicable.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Upper Containment Pool water level < [23'3"] above pool bottom.	A.1 Restore water level to within limits.	4 hours
B. Upper Containment Pool water temperature > [125]°F.	B.1 Restore water temperature to within limits.	24 hours
C. One Suppression Pool Makeup subsystem inoperable for reasons other than Condition A or B.	C.1 Restore the inoperable subsystem to OPERABLE status.	7 days from discovery of inoperable subsystem
~~D. Both Suppression Pool Makeup subsystems inoperable for reasons other than Condition A or B.~~	~~D.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~D.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~8 hours~~ ~~7 days from discovery of initial inoperable subsystem~~

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E. Required Actions and associated Completion Times of Condition A, B, C, or D not met.~~	~~E.1 Be in MODE 3.~~ ~~AND~~ ~~E.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.4.1	Verify Upper Containment Pool water level is ≥ [23'3"] above the pool bottom.	24 hours
SR 3.6.2.4.2	Verify Upper Containment Pool water temperature is ≤ [125]°F.	24 hours
SR 3.6.2.4.3	Verify each manual, power operated or automatic valve in the flow path that is not locked, sealed or otherwise secured in correct position, is OPERABLE and is in its correct position.	31 days
[SR 3.6.2.4.4	Verify all Upper Containment Pool gates are in the stored position or are otherwise removed from the upper containment pool.	31 days]
[SR 3.6.2.4.5	Demonstrate each automatic valve in the Suppression Pool Makeup flow path actuates to its correct position on a simulated automatic initiation signal.	18 months]

CROSS-REFERENCES: None

.6 CONTAINMENT SYSTEMS

.6.3.1 Hydrogen Recombiner System

CO 3.6.3.1 The Primary Containment Hydrogen Recombiner System shall be OPERABLE.

PPLICABILITY: MODES 1 and 2.

CTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Primary Containment Hydrogen Recombiner subsystem inoperable.	A.1 ----------NOTE---------- Provisions of LCO 3.0.4 are not applicable. ---------- Restore inoperable subsystem to OPERABLE status.	(Justify Note) 30 days from discovery of inoperable subsystem
~~B. Both Primary Containment Hydrogen Recombiner subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~ ~~AND~~ ~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~7 days~~ ~~30 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~	~~12 hours~~

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RVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.3.1.1	Demonstrate, during a recombiner system functional test, the minimum heater ~~sheath~~ ~~outgass~~ outlet gas temperature increases to ≥ [600]°F within [60] minutes and is maintained for ≥ [2] hours.	6 months
SR 3.6.3.1.2	Visually examine the recombiner enclosure to ensure there is no evidence of abnormal conditions.	18 months
SR 3.6.3.1.3	Demonstrate, during a recombiner system functional test, the heater ~~sheath~~ ~~outgass~~ the outlet gas temperature increases to > [1150]°F within [90] minutes and temperature is maintained between [1150]°F and [1300]°F for ≥ [4] hours.	18 months
SR 3.6.3.1.4	Demonstrate resistance to ground for any heater phase is ≥ [2x106] ohms within [~~90~~ 30] minutes following completion of SR 3.6.3.1.3.	18 months

ROSS-REFERENCES

TITLE	NUMBER
Hydrogen Recombiner Instrumentation	3.3.6.4

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3.6 CONTAINMENT SYSTEMS

3.6.3.2 Primary Containment and Drywell Hydrogen Ignition System

each consisting of ( ) circuits

LCO 3.6.3.2 Two independent the Primary Containment and Drywell Hydrogen Ignition systems shall be OPERABLE with:

- No more than two ignitor assemblies inoperable per circuit,
- AND
- No adjacent ignitor assemblies inoperable,
- AND
- No more than five ignitor assemblies inoperable per subsystem.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Primary Containment and Drywell Hydrogen Ignition subsystem inoperable.	A.1 Restore the inoperable subsystem to OPERABLE status.	30 days from discovery of inoperable subsystem
stet	stet	stet
~~B. Both Containment and Drywell Hydrogen Ignition subsystems inoperable.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~	~~7 days~~
	~~AND~~ stet other	stet
	~~B.2 Restore the inoperable subsystem to OPERABLE status.~~	~~30 days from discovery of initial inoperable subsystem~~ the
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3~~	~~12 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.3.2.1	Verify each accessible glow plug is energized.	92 days
SR 3.6.3.2.2	Demonstrate each ignitor circuit is OPERABLE.	92 days
SR 3.6.3.2.3	Visually examine each glow plug to assure cleanliness.	18 months
SR 3.6.3.2.4	Verify each normally inaccessible glow plug is energized.	18 months
SR 3.6.3.2.5	Demonstrate surface temperature of each glow plug is ≥ [1700]°F.	18 mont.

CROSS-REFERENCES

TITLE	NUMBER
Hydrogen Recombiner Instrumentation	3.3.6.6

NOTE: The above SRs are ~~more~~ consistant with lead BWR/6 SRs. However, they are not consistent with SRs for other operating ~~BWR~~, BWR/6 reactors. ~~Develop~~ Provide SRs consistent with the marked up LCO and ACTIONS. ~~The~~ Provide also lead plant specific LCO. The above SRs and the lead plant specific LCO (to be provided) will be reviewed as part of lead plant review.

3.6 CONTAINMENT SYSTEMS

3.6.4.1 ~~Containment Integrity (Secondary) Secondary Containment~~

LCO 3.6.4.1 ~~The~~ SECONDARY CONTAINMENT INTEGRITY shall be ~~OPERABLE~~ maintained.

APPLICABILITY: MODES 1, 2, and 3,
When handling irradiated fuel in the (Primary or Secondary Containment),
~~When handling loads over spent fuels with a potential energy greater than 10,000 ft-lbs,~~
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

.....~~NOTE~~.....
~~Conditions A, B and C may be concurrently applicable.~~ ← Justify the Note
.....

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SECONDARY CONTAINMENT INTEGRITY not maintained ~~inoperable in~~ ; or MODE 1, 2, or 3.	A.1 Restore SECONDARY CONTAINMENT INTEGRITY ~~to OPERABLE~~ ~~status~~.	4 hours
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B6. SECONDARY CONTAINMENT INTEGRITY not maintained [capable when handling irradiated fuel in the [Primary or Secondary Containment], when handling loads over spent fuel with a potential energy greater than 17,000 ft-lbs., during CORE ALTERATIONS, or during OPDRVs.	B6.1 .....NOTE..... Provisions of LCO 3.0.3 are not applicable.	
	Suspend handling of irradiated fuel in the [Primary or Secondary Containment].	Immediately
	AND	
	B.2 Reduce potential energy of loads over spent fuel to ≤ 17,000 ft-lbs.	Immediately
	OR	
	Move loads with potential energy > 17,000 ft-lbs from over spent fuel.	
	AND	
	B.3 Suspend CORE ALTERATIONS.	Immediately
	AND	
	B.4 Suspend OPDRVs.	Immediately As soon as practicable

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.4.1.1	Verify [Secondary Containment] vacuum is ≥ [0.25] inches of vacuum water gauge.	24 hours
SR 3.6.4.1.2	Verify all ~~Auxiliary Building and Enclosure Building~~ [Secondary Containment] equipment hatches and blowout panels are closed and sealed.	31 days
SR 3.6.4.1.3	Verify each ~~Auxiliary Building and Enclosure Building~~ [Secondary Containment] access door is closed, except for routine entry and exit.	31 days
SR 3.6.4.1.4	Demonstrate one Standby Gas Treatment Subsystem will draw down the Secondary Containment to ≥ [0.25] inches of vacuum water gauge in ≤ [120] seconds.	18 months on a STAGGERED TEST BASIS
SR 3.6.4.1.5	Demonstrate one Standby Gas Treatment Subsystem can maintain ≥ [0.266] inches of vacuum water gauge in the Secondary Containment for one hour at a flow rate ≤ [4000] cfm.	18 months on a STAGGERED TEST BASIS

CROSS-REFERENCES

TITLE	NUMBER
Secondary Containment Isolation Actuation Instrumentation	3.3.6.2
Secondary Containment Isolation Valves	3.6.4.2
Standby Gas Treatment System	3.6.4.3

3.6 CONTAINMENT SYSTEMS

3.6.4.2 Secondary Containment Isolation [Valves / Dampers]

LCO 3.6.4.2 The Secondary Containment Isolation [Valves / Dampers] shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When handling irradiated fuel in the [Primary or Secondary Containment],
~~When handling loads over spent fuel with a potential energy greater than 17,000 ft-lbs.~~,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

.....NOTE.....
~~Conditions A, B and C may be concurrently applicable.~~ ← Justify the Note
.....

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Secondary Containment Isolation [Valves / Dampers] inoperable.	A.1 .....NOTE..... Not applicable to those penetrations that have only one isolation [valve / damper]. ..... Verify at least one isolation [valve / damper] is OPERABLE in each affected open penetration.	Immediately
	AND	
	A.2.1 Restore the inoperable [valve / damper](s) to OPERABLE status.	8 hours
	OR (continued)	

→ Identify the corresponding Action for an open penetration that has only one (valve/damper) and which is inoperable. Note that A.2.1 is not sufficient.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.2.1 Isolate each affected penetration by use of at least one closed and deactivated automatic valve / damper), ~~or~~ closed manual ~~&~~ valve ~~or~~ or blind flange.	8 hours
	AND	
	A.2.2.2 Verify each affected penetration is isolated.	Once per 31 days
~~B. Required Actions and associated Completion Times of Condition A not met in MODE 1, 2, or 3.~~	~~B.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~B.2 Be in MODE 4.~~	~~36 hours~~
B. B6. Required Actions and associated Completion Times of Condition A not met when handling irradiated fuel in the [Primary or Secondary Containment], during CORE ALTERATIONS, or during OPDRVs.	B. B6.1 ----------NOTE---------- Provisions of LCO 3.0.3 are not applicable. ----------	
	B Suspend handling of irradiated fuel in the [Primary or Secondary Containment].	Immediately
	AND	
	C.1 Reduce potential energy of load over spent fuel to < 17,000 ft-lbs.	Immediately
	OR	
	Move loads with potential energy > 17,000 ft-lbs. from over spent fuel.	Immediately
	B. AND B6.2 Suspend CORE ALTERATIONS.	Immediately
	AND B6.3 Suspend OPDRVs.	Immediately ~~As soon as practicable~~

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.4.2.1	Verify all ~~Auxiliary Building and Enclosure~~ Building (Secondary Containment) ~~"drip" flanges or equivalent~~ ~~which are required to be closed during~~ ~~accident conditions are closed.~~	31 days
SR 3.6.4.2.2	Demonstrate the isolation time of each Secondary Containment Isolation [valve / damper] is within limits.	[According to SR 3.0.5 OR 92 days]
SR 3.6.4.2.3	Demonstrate each Secondary Containment Isolation [Valve / Damper] actuates to its isolation position on a simulated automatic isolation signal.	18 months

AND
Prior to returning to service after maintenance, repair or replacement work on the (valve / damper) or its associated actuator, control or power circuit.

SR 3.6.4.2.4

CROSS-REFERENCES

TITLE	NUMBER
Secondary Containment Isolation Actuation Instrumentation	3.3.6.2

penetrations not capable of being closed by OPERABLE secondary containment automatic isolation (dampers/valves) and required to be closed during accident conditions are closed by valves, blind flanges or deactivated automatic (dampers/valves) secured in position.

Note For SR 3.6.4.2.2, the BASIS should state that the post-repair maintenance or replacement ~~work~~ verification of isolation time for the subject valves will involve cycling the subject valves through at least one complete cycle of full travel.

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C. NICHOLS SPLB comments 8/29/89

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Standby Gas Treatment [illegible]

LCO 3.6.4.3 Two independent ~~the~~ Standby Gas Treatment Systems (SGTS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When handling irradiated fuel in the [Primary or Secondary Containment],
When handling loads over spent fuel with a potential energy greater than 17,000 ft-lbs,
During CORE ALTERATIONS,
During operations with a potential for draining the reactor vessel (OPDRVs).

.....NOTE.....
Conditions A ~~through G~~ and B may be concurrently applicable.
.....

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SGTS subsystem inoperable.	A.1 Restore inoperable subsystem to OPERABLE status.	7 days from discovery of inoperable subsystem
~~B. Both SGTS subsystems inoperable in MODE 1, 2, or 3.~~	~~B.1 Restore at least one subsystem to OPERABLE status.~~	~~[4 3 hours~~
	~~AND~~	
	~~B.2 Restore the initial inoperable subsystem to OPERABLE status.~~	~~7 days from discovery of initial inoperable subsystem~~
~~C. Required Actions and associated Completion Times of Condition A or B not met in MODE 1, 2, or 3.~~	~~C.1 Be in MODE 3.~~	~~12 hours~~
	~~AND~~	
	~~C.2 Be in MODE 4~~	~~36 hours~~

(continued)

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BWR/6

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met when handling irradiated fuel in the [Primary or Secondary Containment], during CORE ALTERATIONS, or during OPDRVs.	B.1 NOTE Provisions of LCO 3.0.3 are not applicable. Suspend handling of irradiated fuel in the [Primary or Secondary Containment].	Immediately
OR	AND	
	B.2 Reduce potential energy of loads over spent fuel to < 17,000 ft-lbs.	Immediately
	OR	
	Move loads with potential energy > 17,000 ft-lbs from over spent fuel.	Immediately
Both SGTS subsystems inoperable when handling irradiated fuel in the [Primary or Secondary Containment], during CORE ALTERATIONS, or during OPDRVs.	B.3 Suspend CORE ALTERATIONS.	Immediately
	AND	
	B.4 Suspend OPDRVs.	As soon as practicable Immediately

JR's see BWR/4 markup

See ↑

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3.6 CONTAINMENT SYSTEMS

3.6.5.1 Drywell Integrity

LCO 3.6.5.1 The Drywell Integrity shall be maintained ~~ONGANCE~~.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell structural integrity not maintained.	A.1 Restore Drywell structural integrity.	24 hours
B. Drywell Integrity not maintained ~~inoperable~~ for reasons other than Condition A.	B.1 Restore Drywell Integrity ~~to OPERABLE status~~.	1 hour
~~C. Required Actions and associated Completion Times of Condition A or B not met.~~	~~C.1 Be in MODE 3.~~ AND ~~C.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

a separate

Note: 1. Provide Tech Spec. for Drywell bypass leakage.

2. Identify the corrective ACTION for failing to meet the LCO for acceptable drywell bypass leakage.

3. The LCO should be worded as follows:

"Drywell bypass leakage shall be less than or equal to 10 % of the minimum acceptable A/$\sqrt{k}$ design value of [0.90] ft^2."

4. Delete proposed SR ~~3.6.5.1.3~~ 3.6.5.1.3, reword it to be consistent with ~~GE STS SR 4.6.2.2~~ SR 4.6.2.2 for operating BWR/6 plants (e.g. Perry) and relocate it under the LCS to be developed for drywell bypass leakage.

5. Revise the corresponding BASIS for the TS explaining how A/$\sqrt{k}$ will be determined.

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.1	----------NOTE---------- Valves and blind flanges in high radiation areas may be verified by use of administrative controls. ---------- NOTE not applicable for Drywell Verify that all valves, blind flanges or deactivated automatic valves secured in position which are located outside the Drywell and required to be closed during accident conditions are closed. Penetrations which have manual valves, blind flanges or deactivated	31 days
SR 3.6.5.1.2	Verify that all valves, blind flanges or deactivated automatic valves which are located inside the Drywell and required to be closed during accident conditions are closed.	-----NOTE----- Only required if not performed in the previous 92 days ---------- Prior to entering MODE 2 or 3 from MODE 4
~~SR 3.6.5.1.3~~	~~Demonstrate bypass leakage is < 10% of [illegible]~~	~~18 months~~ AND
	Automatic valves secured in closed position inside the containment for these penetrations SR 3.6.5.1.2 will apply	~~NOTE Only required otherwise consecutive tests will be unacceptable~~
	Verify Drywell penetrations not capable of being closed by OPERABLE Drywell isolation valves and required to be closed during accident conditions are closed by manual valves, blind flanges or deactivated automatic valves secured in position	~~consecutive tests~~

Note: Relocate deleted SR 3.6.5.1.3 to new tech spec on Drywell bypass leakage, and express leak rate in rational units.

		~~6 months~~
SR 3.6.5.1.3	Demonstrate each Drywell Automatic Isolation Valve actuates to its isolated position on a simulated automatic isolation signal.	18 months

(continued)

NOTE: Explain why proposed SRs 3.6.5.1.1 and 3.6.5.1.2 have been repeated in SRs 3.6.1.6.1 and 3.6.1.6.3 in so far as they relate to Drywell isolation valves.

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.5.1.4	Visually inspect the exposed accessible interior and exterior surfaces of the drywell prior to the Type A containment leak rate test.	60 months

CROSS-REFERENCES: None

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3.6 CONTAINMENT SYSTEMS

3.6.5.2 Drywell Air Lock

LCO 3.6.5.2 The Drywell Air Lock(s) shall be OPERABLE with:

Both doors closed except when an air lock is being used for normal transit entry and exit to containment. Then at least one airlock door shall be closed.

AND

2 SCF per hour

An overall air lock leakage rate less than or equal to [illegible] La at Pa, [illegible] psig.

11.5

APPLICABILITY: MODES 1, 2, and 3.

NOTE
Access via an an airlock with an inoperable door or interlock is allowed for air lock repair under administrative control. Cumulative access time is not to exceed one hour per year.

NOTE: Identify the same conditions, required CORRECTIVE ACTIONS and their completion times as those identified for Primary Containment Air Lock (STS 3.6.1.2).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One Drywell Air Lock door inoperable. OR One Drywell Air Lock door and interlock mechanism inoperable.	NOTE Provisions of LCO 3.0.4 are not applicable.	
	~~NOTE~~ ~~Access for air lock repair is allowed under administrative control. Cumulative access time is not to exceed one hour per year.~~	
	A.1 ~~NOTE~~ ~~Access allowed under administrative control.~~ Close and maintain closed the OPERABLE air lock door in each affected air lock.	Immediately
	AND	
	~~NOTE~~ ~~Access allowed under administrative control, not to exceed one hour cumulative per year.~~	
	A.2 Lock closed the OPERABLE air lock door in each affected airlock.	24 hours

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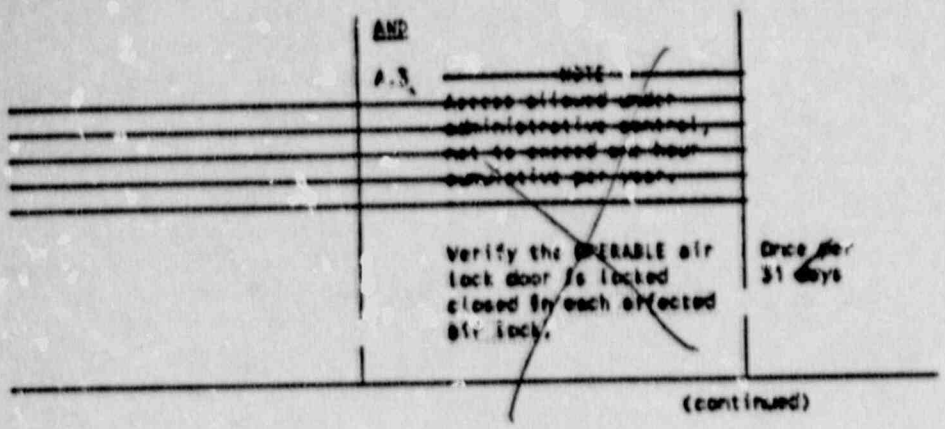
ANP
A.3
Verify the OPERABLE air lock door is locked closed for each affected air lock.
Once per 31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Drywell Air Lock interlock mechanism inoperable.	~~NOTES~~ ~~Access allowed under administrative controls~~	
	B.1 Close and maintain closed one OPERABLE air lock door in each affected air lock.	Immediately
	AND	
	B.2 Lock the OPERABLE air lock door closed in each affected air lock.	24 hours
	AND	
	B.3 Verify the OPERABLE air lock door is locked closed.	Once per 31 days
C. Drywell Air Lock inoperable for reasons other than Condition A or B.	C.1 Close and maintain closed one air lock door in each affected air lock.	Immediately
	AND	
	C.2 Restore inoperable air lock to OPERABLE status.	24 hours
~~D. Required Actions and associated Completion Times of Condition A, B, or C not met.~~	~~D.1 Be in MODE 3.~~ ~~AND~~ ~~D.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~
D. Condition A exists for one or more than one Drywell Airlock.	D.1 Perform required actions of Condition A. AND	In accordance with Condition A.
	D.2 Restore one airlock to OPERABLE status.	7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.2.1	Demonstrate seal leakage rate is ≤ [2] scf/hr when the gap between the Drywell Air Lock door seals is pressurized to [11.5] psig.	Once within 72 hours after each closing.
SR 3.6.5.2.2	Verify the Drywell Air Lock seal air flask pressure is ≥ [90] psig.	7 days
SR 3.6.5.2.3	Demonstrate overall Drywell Air Lock leak rate is ≤ [2] scf/hr by performing an overall air lock leakage test at [11.5] psig.	~~-----NOTE-----~~ ~~Only required if not performed within previous 6 months.~~ ~~Prior to entering MODE 2 or 3 from MODE 4~~ --- NOTE --- Provisions of SR 3.0.2 are not applicable. --- 6 months AND Prior to establishing Drywell integrity after maintenance which could affect air lock sealing capability
SR 3.6.5.2.4	Demonstrate the Drywell Air Lock interlock mechanism is OPERABLE.	18 months
SR 3.6.5.2.5	Demonstrate Drywell Air Lock seal system pressure does not decay at a rate of > [2] psig in [48] hours from [90] psig.	18 months
~~SR 3.6.5.2.6~~	~~Conduct an overall Drywell Air Lock leakage test at Pa, [15.0] psig to verify overall leakage rate is within [ ].~~	6 months AND Prior to establishing Drywell integrity after maintenance which could affect air lock sealing capability.
[SR 3.6.5.2.6	Demonstrate each of the [two] inflatable seal pressure instrumentation channels per air lock door OPERABLE by performance of a a) CHANNEL FUNCTIONAL TEST AND b) CHANNEL CALIBRATION With a low pressure setpoint [ ]	31 days 18 months

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.5.3 Drywell Pressure

LCO 3.6.5.3 Drywell-to-Containment differential pressure shall be maintained from [-0.26] to [+2.0] psid.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell-to-Containment differential pressure > [2.0] psid. OR Drywell-to-Containment differential pressure < [-0.26] psid.	A.1 Restore differential pressure to within limits.	1 hour
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.5.3.1	Verify Drywell-to-Containment differential pressure is from [-0.26] to [+2.0] psid.	12 hours

CROSS-REFERENCES: None

3.6 CONTAINMENT SYSTEMS

3.6.5.4 Drywell Average Air Temperature

LCO 3.6.5.4 Drywell average air temperature shall be ≤ [135]°F.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell average air temperature > [135]°F.	A.1 Restore air temperature to within limits	8 hours
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ AND ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.5.4.1 Verify Drywell average air temperature is ≤ [135]°F.	24 hours

CROSS-REFERENCES: None

CJ

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3.6 CONTAINMENT SYSTEMS

3.6.5.5 Drywell Vent and Purge System

LCO 3.6.5.5 All Drywell Vent and Purge supply and exhaust isolation valves shall be OPERABLE and closed [except when the following is met:

A. The supply or exhaust isolation valves in both the [6] inch and [20] inch lines may not be open simultaneously.

B. In MODES 1 and 2 the Drywell Vent and Purge [20] inch supply or exhaust isolation valves may be open s [5] hours per 365 days.

C. In MODE 3 the Drywell Vent and Purge [20] inch supply and exhaust isolation valves may be open s [90] hours per 365 days.]

D. The Drywell Vent and Purge [20] inch supply and exhaust isolation valves shall be restricted from opening by more than [50]° when they are allowed to be open.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Drywell Vent and Purge system supply or exhaust line isolation valves open [when not allowed.] or open by more than 50° when allowed to be open	A.1 Close the open supply or exhaust line isolation valves.	Immediately
~~B. Required Action and associated Completion Time of Condition A not met.~~	~~B.1 Be in MODE 3.~~ AND ~~B.2 Be in MODE 4.~~	~~12 hours~~ ~~36 hours~~

Note: 1. Provide supplemental Tech spec for plants that do not have qualified drywell purge system isolation valves, qualified to close under accident conditions.

2. Provide supplemental Tech. spec for those BWR/6 plants that have restriction on opening angle for drywell purge system isolation valves. Also, provide the associated SR.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.5.5.1	Determine the cumulative time during the past 365 days when the [20] inch Drywell Vent and Purge drywell isolation valves in either the supply or exhaust lines have been open while in MODES 1 and 2.	7 days
SR 3.6.5.5.2	Determine the cumulative time during the past 365 days when the [20] inch Drywell Vent and Purge drywell isolation valves in the supply and exhaust lines have been open while in MODE 3.	7 days
SR 3.6.5.5.3	Verify each [20] inch Drywell Vent and Purge supply and exhaust isolation valve is closed.	31 days
SR 3.6.5.5.4 Demonstrate each [20] inch drywell purge supply and exhaust isolation valve is locked to restrict each valve from opening more than [50] degrees.		18 months

CROSS-REFERENCES	NUMBER
Primary Containment Isolation Valves	3.6.1.6

Acceptable as is.
BWR/6

3.6-65

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3.6 CONTAINMENT SYSTEMS

3.6.5.6 Drywell Vacuum Relief (Optional)

LCO 3.6.5.6 ~~All Both Drywell Post-LOCA and both Purge vacuum relief subsystems~~ breakers shall be OPERABLE, and closed.

APPLICABILITY: MODES 1, 2, and 3.

Note
Conditions A and B may be concurrently applicable. ← Justify

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~One Drywell Post-LOCA vacuum relief subsystem inoperable.~~ breaker open. OR ~~One Drywell Purge vacuum relief subsystem inoperable.~~ OR ~~One Drywell Post-LOCA and one Drywell Purge vacuum relief subsystem inoperable.~~ OR ~~Two Drywell Post-LOCA vacuum relief subsystems inoperable.~~	A.1 ~~Ensure the inoperable vacuum relief subsystem(s) are closed.~~ Restore the open vacuum breaker to closed position. AND A.2 ~~Restore the inoperable subsystem(s) to OPERABLE status.~~	1 hour ~~30 days~~
B. One Drywell ~~Purge~~ post-LOCA vacuum ~~relief subsystem~~ breaker inoperable, for opening but known to be closed	B.1 Restore the Vacuum breaker inoperable ~~subsystem(s)~~ to OPERABLE status.	~~30 days~~ 72 hours
~~B. Two Drywell Purge vacuum relief subsystems inoperable.~~	~~B.1 Ensure the inoperable vacuum relief subsystems are closed.~~ AND ~~B.2 Restore at least one inoperable subsystem to OPERABLE status.~~	~~1 hour~~ ~~7 days~~
C. Position indicator of an OPERABLE Drywell post-LOCA vacuum breaker inoperable	C.1 Verify affected vacuum breaker is closed (continued)	once per 24 hours

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two Drywell Post-LOCA vacuum relief subsystems inoperable.	C.1 Ensure the inoperable vacuum relief subsystems are closed.	1 hour
AND	AND	
One Drywell Purge vacuum relief subsystem inoperable.	C.2 Restore at least one inoperable subsystem to OPERABLE status.	72 hours
D. Required Actions and associated Completion Times of Condition A, B or C not met.	D.1 Be in MODE 3.	12 hours
	AND	
	D.2 Be in MODE 4.	36 hours

~~Note: Plant specific task spec for lead plant will be considered during lead plant review.~~

Note: Currently proposed TS ~~for lead plant~~ by BWROG for the lead plant needs significant revision of Conditions B and C (Both B and C represent the same degraded mode of operation of drywell vacuum relief subsystems) & their associated corrective ACTIONS and the completion times. Also, the condition statements need rewording. Provide the lead plant specific TS addressing the above comments. It will be reviewed during the lead plant review.

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.5.6.1	Verify each vacuum breaker and its associated isolation valve is closed.	7 days
SR 3.6.5.6.2	Perform a functional test of each vacuum breaker and its associated isolation valve.	31 days
SR 3.6.5.6.3	Demonstrate opening setpoint of each vacuum breaker is ≤ [0.5] psid.	18 months
SR 3.6.5.6.4	Verify (both X the) position indicator(s) OPERABLE by a) observing expected valve movement during the cycling test AND b) performing CHANNEL CALIBRATION	31 days 18 months
SR 3.6.5.6.5	Verify OPERABILITY of the vacuum breaker isolation valve differential pressure actuation instrumentation by performance of a a. CHANNEL CHECK b. CHANNEL FUNCTIONAL TEST c. CHANNEL CALIBRATION with the opening set point ≤(0.5) psig	24 hours 31 days 18 months

CROSS-REFERENCES: None

Acceptable as is.

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