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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

June 12, 1989

MEMORANDUM FOR: Jose J. Calvo, Chief
Technical Specification Branch
Division of Operational Events Assessment

FROM: Jared S. Wermiel, Acting Chief
Plant Systems Branch
Division of Engineering and Systems Technology

SUBJECT: WESTINGHOUSE WCAP-12159, MERITS PROGRAM PHASE II, REVISED STANDARD TECHNICAL SPECIFICATIONS (TAC NO. M71773)

The Plant Systems Branch (SPLB) has reviewed the subject report concerning the proposed revised Westinghouse Standard Technical Specifications (STS). Enclosure 1 identifies those sections of the new STS that have been reviewed by SPLB based on our areas of responsibility. Enclosure 2 provides our draft evaluation and comments on specific TS sections. Enclosure 3 (136 pages) includes marked-up pages of the new STS with our detailed comments annotated.

In addition, SPLB has the following general comments on the new STS:

1. Certain items related to plant system safety functions are not in the revised TS nor in the existing STS, but may meet the Policy Statement criteria and require further scrutiny. The addition of these items would appear to make the TS more operator orientated. These include:

   - CCW maximum temperature
   - Air accumulators for safety-related components
   - Safety-related chilled water systems
   - Safety-related air conditioning systems and room coolers (never tested for heat removal capability)

   The safety-related chilled water system in particular should have its own TS to avoid the confusion of what action statement to enter when a train is inoperable. Presently, this system has no specific testing requirements other than as required by the ASME Code (chillers not included). Also, equipment served by the system is required to be declared inoperable by definition and this may result in operator confusion to determine the most limiting time requirement for action. A separate TS would be much clearer and has been included in some recently licensed plants.

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2. SPLB notes that there has been a significant change in the structure of the STS relating to conditions beyond those defined in the TS. Numerous situations that constitute a loss of safety function are now defined in the individual specifications. A cursory review indicates that this change was adopted generically by all NSSS owners groups in the new STS, however this discussion will focus on the WOG approach.

TS LCO 3.0.3 governs licensee actions when LCOs are not met in MODES 1-4. Exceptions to this LCO are allowed as defined in the individual specifications. Entry into LCO 3.0.3 is not allowed on a voluntary basis. We recognize that exceptions to this prohibition through discretionary enforcement have been allowed in the past provided a licensee receives prior telephone approval from the applicable NRC Regional Administrator. Entry into LCO 3.0.3 is considered a violation of the technical specifications that requires reporting in accordance with 10CFR 50.72 and 50.73 and is enforceable through Appendix C to 10 CFR Part 2, typically as a severity level 2 violation assuming a loss of a safety system function with no accident.

Although there has been some rewording of LCO 3.0.3, the only substantive change appears to be a relaxation in the time required to complete MODE changes. The revised LCO completion times, although retaining the same period between required MODE changes, are measured against the initial entry into the LCO. The existing STS defined time periods following entry into each MODE. In essence the change eliminates a time penalty for early MODE changes. SPLB does not have any specific reservations concerning this relaxation, however we believe that all relaxations should be carefully considered and weighed in an overall context.

However, SPLB is concerned regarding the major change which allow loss of safety function in the individual specifications, thereby no longer requiring entry into LCO 3.0.3. This change represent a significant relaxation and departure in the past staff approach to regulation and enforcement. For example current Westinghouse STS 3.6.2 allows one (of two) redundant containment spray system trains to be inoperable for 72 hours. There are no provisions in the ACTION requirements for operation with two systems out of service, therefore a licensee would have to follow the provisions of LCO 3.0.3 if two trains were inoperable. This condition could not be entered voluntarily by a licensee, would require reporting to the NRC pursuant to 10 CFR 50.72, and constitutes a severity level 2 violation of the TS. New Westinghouse STS 3.6.3.c for the corresponding two train containment spray system inoperability allows one hour to restore a train to service, followed by 6 hours to achieve MODE 3 and 36 hours to achieve MODE 5. Although these time frames parallel those of the current STS, the impact is changed because such operation is now defined by the TS and is thus permitted without special action such as discretionary enforcement. In addition to reportability and enforcement changes, a licensee could now intentionally disable both systems simultaneously for short time periods for maintenance or modifications. Such simultaneous voluntary inoperabilities would be limited to one hour by the new basis for STS LCO 3.0.1, which states that the shutdown required actions are not intended to be used for the voluntary removal of a system from service in lieu of other alternatives that would not result in redundant trains being inoperable.

The service water system LCO provides a further example of this generic relaxation and brings out another point in that some of the time frames for operation with a loss of safety function have been significantly extended beyond those previously required by the current STS. Current Westinghouse STS 3.6.2.1 does not address operation with two service water system trains inoperable. New Westinghouse STS 3.6.9 allows continued operation with two service water system trains inoperable provided MODE 4 is achieved within 12 hours and action is initiated within 13 hours (from the initial determination of inoperability) to achieve MODE 5. An indefinite period is allowed to achieve MODE 5. These time frames would allow a licensee to voluntarily remove both service water trains for up to 12 hours during normal operation. SPLB notes that these time periods are not simple translations of the previously required LCO 3.0.3 time frames.

SPLB considers the implications of these relaxations to be broad and we believe they should be carefully evaluated by all affected organizations within the NRC before being accepted as is. In addition, if a management decision is made to proceed with these changes, the WOG should be requested to provide their rationale for differences from a straightforward adaptation of the current TS 3.0.3 time frames in the new STS individual LCOs when both trains of a safety system are inoperable.

This review was performed by W. LeFave, C. Li and C. Nichols of SPLB.

Original signed by

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Enclosure 2

PLANT SYSTEMS BRANCH
DRAFT EVALUATION AND COMMENTS
ON PROPOSED WESTINGHOUSE
REVISED STANDARD TECHNICAL SPECIFICATIONS

The Plant Systems has reviewed Westinghouse WCAP-12159, Merits Program Phase II, Technical Specifications and Bases, dated March 1989 provided by the Westinghouse Owners Group (WOG). The staff has not found the revised Standard Technical Specifications (STS) acceptable for the reasons listed below:

I. 1.1 Definition of Containment Integrity

A. Item a.2: The WOG modified the above definition to include "closed system" in a.2 by referring to GDC 57. The staff finds the addition of "or a closed system" not acceptable. If the WOG's definition were adopted, a closed system penetration alone without any operable containment isolation valve could be considered to meet the containment integrity requirement. The staff finds this to be an unacceptable deviation from the requirements of GDC 57. GDC 57 states the following: Each line that penetrates containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation.

B. Item (b) in the new STS states that "all equipment hatches are closed." The current STS definition states that "all...are closed and sealed." This difference has not been justified. Therefore, it is not acceptable.

C. Item (e) in the new STS states that "the containment leakage rates are within their required limits." The "required limits" are not defined. The staff finds that the nonspecific term "within their required limits" is used by the WOG to cover TS requirements on Appendix J testing, air lock leak testing, and leakage from "sealed" and closed purge valves, sealing mechanisms and sealed equipment hatches. Each of these items may have a specific test frequency or acceptance criteria to be addressed in the TS. There are no "required limits" that can be used for specifying leakage from all the above items. At least, the WOG has not specified one. Examples are provided in Items II.F and II.J to explain the reasons why this vague term does not address the leakage requirements on air locks and purge valves.

The WOG eliminated a number of requirements in the current TS by simply referring to Item (e) of the definition without an explanation of the specific requirement. This is a relaxation of current requirements without justification. The staff does not consider simply referring to Item (e) as a valid justification. Therefore, the staff finds the approach used by the WOG not acceptable. Specific discussion for each item should be addressed in the justification.

Since the current TS Section 3.6.1.2 on Appendix J containment leakage rate requirements has been relocated from the new STS, the staff finds it necessary to address Appendix J explicitly in the new definition of containment integrity. Item (e) seems to be the logical place to do this. However, items not covered by Appendix J should still be addressed separately.

D. Item (e) in definition 1.7 of the current STS is deleted in the new STS. This item includes sealing mechanisms e.g., welds, bellows or O-rings in the definition of containment integrity. The new STS refers this item to the new item (e) described above in Item I.C. The staff finds the new STS definition is not as explicit and clear as the current STS on this item. Additional discussion is provided in Item I.C above.

II. 3.5.1 Containment Integrity

A. The WOG combined a number of current specifications (containment integrity, containment air locks, containment ventilation system, containment isolation valves) into one new Specification 3.5.1, Containment Integrity. The approach at consolidation is different from that taken by the other NSSS owners groups such as B&W, CE, and GE (BWR). The approach taken by the B&W Owners Group is to maintain four specifications grouped in consecutive order. The CE and BWR Owners Groups take a similar approach. The two different approaches seem to be only a matter of preference. The staff position is that the final approach should be consistent among all owners groups since the idea of grouping separate items into a combined containment integrity specification is independent of reactor vendor type. Based on review of the above two approaches the staff recommends the approach used by the B&W Owners Group for the following reasons.

In reviewing the WOG approach, the staff noted that the consolidated specification has a long action statement (four pages long) with ten logic connectors (and/or) in it. This has resulted in a more complicated TS than the approach taken by B&W Owners Group. Such a complicated action statement is more likely to create confusion. A specific example is given in Item II.E. Further, the staff finds the consolidated TS is not complete because part of the current requirements on purge and vent valves has been left out. Item II.J describes this concern in detail.

B. A new Note: "Completion times for all required actions of condition A are on a per penetration basis" has been added. However, no justification has been given for this note. This is a change from the current requirements without justification. Therefore, it is not acceptable.

C. A new Note: "A check valve, with flow through the valve secured, is a deactivated automatic valve secured in the closed position" has been added. No justification has been given for this note. This is a relaxation of current requirements without justification. Therefore, it is not acceptable. Additional comments on this subject have been provided by the Mechanical Engineering Branch (EMEB) in a memorandum from L. B. Marsh to J. A. Calvo on the Westinghouse MERITS Program.

D. The change to include "or a closed system" in the required action statement is not appropriate because it is not an alternative compensatory action like the other specified actions (isolate each affected penetration with a locked closed manual valve, a deactivated automatic valve secured in the closed position, a blind flange). Additional discussion is provided in Item I.A.

E. The logic in the Actions statement says "For condition A, the required actions are (A.1 or A.2 or A.3.1) in 1 hour and (A.3.2.1 or A.3.2.2) in 4 hours" where Actions A.1 and A.2 are the same as Actions A.3.2.1 and A.3.2.2 respectively. The staff finds this logic to be redundant. Without A.1 and A.2, the net effect seems to be the same.

F. The WOG changed the current STS LCO 3.6.1.3, Containment Air Locks, to be covered by the new definition and LCO on Containment Integrity. As discussed in Item II.A, the staff believes a separate LCO for air locks is a more appropriate approach.

The WOG justified the elimination of current STS LCO 3.6.1.3.(b) for air locks by referring it to item (e) of the new definition of Containment Integrity, which says that "the containment leakage rates are within their required limits." The staff finds this deletion to be inconsistent with Appendix J, Section III.D.2.(iv) which specifically requires the acceptance criteria for air lock testing to be stated in the TS. Additional discussion is provided in Item I.C on the definition of Containment Integrity.

G. There is a new Note: "Completion times for all required actions of Condition B are on a per air lock basis." No justification has been given to this change. Therefore, it is not acceptable.

H. The current WOG STS Section 3.6.1.3 Action a.2 allows the operation of the plant under specified conditions until the next required overall air lock leakage test. The new STS does not have such a time limit. This difference is not identified nor justified in the submittal. Therefore, it is not acceptable.

I. The frequency of new STS Surveillance Requirement (SR) 3.5.1.4 for subatmospheric containments is 18 months. This is different from the frequency of 6 months required in the current STS. This difference is not identified nor justified in the submittal. Therefore, it is not acceptable.

J. The current STS Section 3.6.1.10, Containment Ventilation System, has been deleted in the new STS. This TS section specifies the requirements for operation of the purge and vent valves, which are significantly different from other containment isolation valves. The requirements governing operability of these valves were derived through many years of developmental effort as documented in SRP Section 6.2.4, BTP CSB 6-4; TMI Action Plan NUREG-0737, Item II.E.4.2; and Multi-Plant Action (MPA) B-24. The SER for an individual plant under MPA B-24 documented the staff requirements for operability of purge and vent valves and a sample TS for them.

The staff has reviewed the WOG justification for the deletion of this TS and finds that only part of the current TS has been identified as being included within the new STS. The requirement that the 42-inch shutdown purge valve be "closed and sealed" has been changed to "closed." The WOG considered the "sealed" requirement as being addressed in Item (e) of the definition of containment integrity, which states that "the containment leakage rates are within their required limits." The staff finds this change not acceptable because "sealed and closed" purge valves means that the valves must be deactivated and secured in the closed position. Item (e) of the containment integrity definition as stated above does not address "sealed and closed" purge valves.

The current surveillance requirements for periodic testing (more frequent than the Appendix J testing frequency) of purge and vent valves with resilient seals were deleted by the WOG. The WOG treats the mini-purge valves as ordinary containment isolation valves, which can be opened without limitation. There are major deviations from the current staff criteria (NUREG-0737, Item II.E.4.2; BTP CSB 6-4; and MPA B-24). None of the above referenced NRC requirements were addressed in the WOG justification. Moreover, in the earlier split phase of the TS improvement program, it was determined by all the owners groups and the NRC staff to keep this TS section in the STS.

Based on the above, the staff finds the deletion and change in the current STS on containment ventilation systems is not acceptable. Further, the staff believes that the WOG is taking advantage of the TS improvement program to obtain significant relaxation without examining the current criteria in detail and providing proper justification for changes.

III. B.3.5.3C Containment Spray and Cooling Systems (Atmospheric, Dual) (No credit taken for iodine removal by spray system)

The remaining heat removal capacity in Condition C and D should be clarified to be 100% in Bases C.1 and D.1. This is part of the justification for the 72 hour action time.

IV. B.3.5.3D Containment Spray and Cooling Systems (Atmospheric, Dual) (Credit taken for iodine removal by spray system)

The only difference between TS Sections 3.5.3C and 3.5.3D is whether there is a credit taken for iodine removal by the spray system. These two TS actions are very similar. Most of the eleven-pages of information in the bases are repetitive; and the differences between these two TS bases are not identified. These bases would be more useful if the differences between them were identified and discussed.

V. 3.5.11 Containment Recirculation Drains (Ice Condenser)

There is a new note, which states "completion times are on a per drain basis." This change has not been identified nor justified. Therefore, it is not acceptable.

VI. B.3.5.12B Containment Internal Pressure (Subatmospheric)

It is stated in the background section that "The containment internal air partial pressure limits are derived from the input conditions used in the containment Design Basis Accident (DBA) analyses." Explain how the curve (not a point) of pressure limits were derived by the input conditions.

VII. B.3.5.13A Containment Air Temperature (Ice Condenser)

Delete the paragraph as indicated on marked-up page B3.5-121 since it is not applicable for ice condenser containments. In this case, the calculated peak containment temperature is expected to be less than the containment design temperature.

VIII. 3.5.17 Hydrogen Monitors

A. For two hydrogen monitors inoperable, the new STS change the action time from 72 hours to 7 days. The staff has reviewed the WOG's justification and disagrees with it. The WOG justification merely states that NRC recommended 7 days in the TMI action plan document. On the contrary, the staff position identified in Generic Letter No. 83-37, NUREG-0737 Technical Specifications, Item No. 9, Containment Hydrogen Monitor specifically states that "If both monitors are inoperable, at least one monitor should be restored to operable status within 72 hours..."

B. The brackets in SR 3.5.17.3 will allow plant specific numbers to be used. This is a deviation from the current STS where one volume percent and four volume percent hydrogen are specified for sample gas. This deviation can introduce inconsistency between different plants. This change is not identified nor justified. Therefore, it is not acceptable.

IX. 3.5.18A Hydrogen Recombiners (Internal)
3.5.18B Hydrogen Recombiners (External)
3.5.19 Hydrogen Mixing System

For two hydrogen recombiners or hydrogen mixing trains inoperable, the new STS specifies an action time of 7 days. The staff has reviewed the WOG's justification and disagrees that 7 days is appropriate without further justification. Additional discussion is provided in Item VIII.A above.

X. 3.3.16 RCS leakage Detection Instrumentation

The RCS leak detection instrumentation required to be operable in LCO 3.3.16 does not agree with the Action Conditions. The LCO is written to require only two RCS leak detection systems from a list of options. However, the Action statement is written in a way which would not apply to the plant because systems not required are included. It was not intended that the new STS permit licensees to eliminate RCS leakage

control systems provided to meet the guidelines of Regulatory Guide 1.45. This is particularly true in view of the increased importance of leak detection capability in support of leak-before-break. With the added reliance on leak detection systems to support leak-before-break analyses, at least two instruments should remain operable to allow a 30-day operating time. The proposed Actions allow 30-day operation with only one instrument operable.

In addition, Action A.1.1 does not coincide with Bases and original STS requirements to obtain grab samples of containment atmosphere every 12 hours if both the gaseous and particulate radioactivity monitors are inoperable. As written, the containment air cooler condensate flow rate monitoring instrumentation also has to be inoperable before grab samples are required.

XI. 3.6.5 Auxiliary Feedwater System

Surveillance requirements frequency should retain requirement for pumps to be tested on a staggered test basis. While the staff concurs with the relaxation from monthly testing to quarterly testing, because of the importance of AFW, one pump should be tested at least once per month.

The LCO should address the steam supply to the turbine driven pump, since under certain accidents affecting steam generator operability (pipe break) redundant steam supplies are necessary to meet single failure criterion. However, because of the low probability of occurrence, a longer completion time should be considered if only one steam supply to the turbine driven pump is unavailable.

XII. 3.6.8 and 3.6.9 Component Cooling Water System and Service Water System

Most plant designs have three to four one hundred percent capacity pumps. As the TS is written, a single pump inoperability would make a train inoperable and require action within 72 hours. The TS could be expanded to address situations where just a pump is inoperable. This would make the TS less vague and more directly geared toward the operator.

The component cooling water (CCW) system TS should consider a LCO for temperature, the same as is done on the service water system side by the ultimate heat sink TS. CCW temperature is actually the limiting factor when performing the heat transfer analysis following a LOCA.

XIII. 3.6.10 Ultimate Heat Sink

The ultimate heat sink temperature limit TS is no longer optional, but is required for all plants. The question of how and where temperature measurements are taken for the ultimate heat sink have often arisen at operating and new plants. The definition of "average" has also been questioned as to whether it means average (bulk) temperature of the pond or the temperature averaged over a period of time. The Bases section should specify how and where the temperature is measured in a ~~number~~ manner which ensures compliance with the plant design basis.

XIV. 3.6.11 Control Room Emergency Air Cleanup System

1. The proposed TS does not directly address the emergency control room air temperature control (HVAC) safety function. The TS on the normal control room air temperature would be improved by clarifying its purpose and providing more appropriate LCO's and actions. It is suggested that this TS be split into 3 separate TS according to the different safety functions as follows:

   a. emergency protection against radiation and hazardous (toxic) gases
   b. emergency control of temperatures
   c. normal temperatures

2. The title of the TS should reflect the isolation function (isolation dampers, pressurization) as well as the filtration function.

3. The use of the term "hazardous gas" rather than "toxic gas" is more inclusive of the extent of the intent of the TS is specified. The plant-specific TS bases should specifically identify each gas included.

4. Typical control room ESF filters handle intake (outside makeup) air and recirculating air. An 18 month SR should verify each of these flows since each is important for operator protection. Typical control room ESF filters have no safety function regarding protection against hazardous gases.

5. Required actions to go to the emergency mode should specify either the radiation protection mode or the hazardous gas protection mode, as appropriate.

6. Bottled air pressurization systems have two trains. Both should be required operable. Each should be addressed by SRs. An RA should be provided for both trains inoperable. A SR should be provided an actuation of the system after a SI signal.

7. A basis as to need should be included for the 1 hour RA after losing two trains.

8. The affects of painting, etc. include deterioration as well as loading on ESF filters. Unacceptable performance rather than unacceptable loading should trigger SRs.

9. The differential pressure between the area served and the adjacent areas are the important safety parameters for the SR.

10. Background should refer to RG 1.52 as listed in the references.

11. As per RG 1.52: In-place testing applies to HEPA filter sections and an ESF air filtration system satisfying this condition warrants a 99% removal efficiency for particulates. In-place testing also applies to the adsorber section.

12. Charcoal adsorbent sample test conditions and efficiency acceptance criteria should be identified. The rationale for the conservatism afforded should be given for selecting these specific values in relation to the environment in which the adsorber is expected to perform its intended function and the assigned iodine removal efficiency.

13. The statement on residence time should agree with RG 1.52.

14. The TS, Bases and justification should be clarified per the above comments.

15. The following additional suggestions are provided regarding separate TS for emergency control of temperatures and for normal temperatures. In addition, draft TS are provided along with the mark-up comments on 3.6.11 and are described below.

TS 3.6.11.A Control Room Emergency Air Temperature Control (HVAC) System

This is modeled after the typical TS for safety systems, except for the SR. The note provided in the page with the suggested SR explains the rationale for the SR.

TS 3.6.11.B Control Room Air Temperatures for Normal Operation

This would contain the TS on control room temperature relocated from 3.6.11 and expanded to approximately address the safety significance of the control room temperature during normal operations. Four limits and corresponding actions are provided, two for each safety function, as follows:

1. Maintaining the temperature to within a limit compatible with safe control by the operators under normal operations as per GDC 19.

   a. A temperature limit for long term operation is provided for which the required action is to return to within the limit within a specific time.

   b. A higher temperature limit for short term operation (within the above specified time) is provided for which the required action is to return to within the limit within one hour.

2. Maintaining the temperature to within a limit compatible with safe operation of equipment and instrumentation as per GDC 4.

   a. Similar to 1a above
   b. Similar to 1b above

The SR involves determining the control room ambient air temperature for which a suggested definition is provided along with the mark-up of 3.6.11 for inclusion in the definition section of the TS. This definition reflects the concept that the ambient air temperature(s) are to be measured in the SR, however, they are selected as conservative indicators of the limiting air temperatures, which could be based, for example, on air inside of equipment cabinets or elsewhere.

XV. 3.5.15 "Penetration Room Exhaust Air Cleanup System"
3.5.16 "Shield Building Air Cleanup System"
3.6.12 "ECCS Pump Room Exhaust Air Cleanup System"
3.6.14 "Fuel Building Air Cleanup System"

Refer to comments Nos. 8 through 14 provided for TS 3.6.11 as they apply equally to these four specifications.

9-11-89

Enclosure 2

PLANT SYSTEMS BRANCH
DRAFT EVALUATION AND COMMENTS ON
REVISED B&W STANDARD TECHNICAL SPECIFICATIONS
CONTAINMENT SYSTEMS SECTION

The Plant Systems Branch has reviewed B&W BAW-2076, B&W Owners Group (B&WOG) Revised Standard Technical Specifications (STS) dated April, 1989. Our evaluation and comments on the proposed containment systems section are provided below.

1. Definition 1.1, Containment Integrity

Item (e) in Definition 1.8 of the current B&W STS is not included in the new STS. The new STS refers this deletion to 10 CFR 50 Appendix J, which has 5 pages with emphasis on Type A, Type B and Type C leak rate testing. The current STS has one sentence specifically stating that an operable sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is one of the elements in containment integrity. The staff finds that the new STS is trying to tell the operator to do nothing with regard to sealing failure, and lets the operator wait until the next leak rate test which may not be required until several years later. This is not acceptable. The Plant Systems Branch addressed this concern twice in memoranda from John Craig to Edward Butcher dated December 28, 1988, and April 3, 1989 and in a conference call to the Owners Group on April 11, 1989. No additional information or justification has been provided by the Owners Group since the staff raised the concern.

The definition of containment integrity contained in the letter from M. Reinhart to W. Hall, "NRC Staff Mark-up of the Owners Groups' Proposed New Standard Technical Specifications (STS)," dated July 28, 1989, is acceptable as marked up on the enclosed copy. However, additional staff discussions are needed to resolve generically several issues that have been raised concerning this definition and the TSs for containment integrity and containment isolation. For example, if a GDC 57 penetration (closed system inside containment with only one isolation valve outside containment) should have its isolation valve become inoperable, the staff position is that it is not sufficient to depend on the closed system alone to maintain containment integrity indefinitely. However, immediate plant shutdown is probably not warranted, and the staff has not yet developed an alternative. The staff plans to resolve this and other related questions as part of the ongoing review.

2. Section 3.5.1, Containment Integrity

SR 3.5.1.1 states "Perform required Type A and B leak rate testing in accordance with 10 CFR 50, Appendix J ..." The words "Type A and B" should be deleted in the above sentence; the required leak rate testing should not be limited to Type A and B.

3. Section 3.5.2, Containment Air Locks

a. Section 3.6.1.3.b of the current B&W STS relates the air lock leakage rate criterion to the OPERABLE requirements of the air lock. The criterion was relocated in the revised STS to Design Features (4.x). However, in the revised TS 3.5.2, there is nothing to relate the LCO or ACTION conditions to the above design features. Therefore, it is not clear in the revised STS that a leaking air lock will be considered to be inoperable while the current TS 3.6.1.3.b clearly indicates this is so. It becomes vague in the new STS as to what an operator should do when the air lock seals are deteriorated to an unacceptable level. The staff finds this change unacceptable unless the ACTION conditions explicitly include one that specifies the course of actions when the air lock leakage rate fails to meet the specified criterion.

b. The new STS deletes Section 3.6.1.3.a of the current B&W STS, which requires both the inner and outer doors of each air lock to be closed during power operations. This issue was discussed previously in a memorandum from John W. Craig to Edward J. Butcher dated April 3, 1989 and in a telecon with the B&WOG on April 11, 1989. No additional information has been provided by the B&WOG since then.

The justification provided by the Owners Group for this change is the following: 1) closure of a single air lock door is sufficient to maintain full containment integrity; 2) the air lock door interlock in each air lock is designed to prevent simultaneous opening of both doors in a single air lock; 3) the single failure criterion is not applicable to the air locks since they fulfill their design safety function in a passive manner and are not subject to an active failure. Further, compliance with the single failure criterion for the air locks was not required at the time the Crystal River, Unit 3 (CR-3) containment was designed and approved.

The staff finds that the single failure criterion has been applied to the air locks at most plants. Further, the staff finds that the requirement for closure of both air lock doors of each air lock is included in the current CR-3 TS. Thus the B&WOG justification appears to be incorrect. Even if the existing CR-3 TS are not based on the current STS for this item, this would not be a sufficient justification to change current STS to a plant specific TS.

Additionally, the staff disagrees with the Owners Group on categorizing the air lock failure as strictly passive. The air lock interlock feature and air lock door seal are considered active components. Since surveillance of the interlock occurs once per 6 months, 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 significantly increase

the probability of loss of containment integrity in the case of failure of either a door seal or the interlock. The relaxation of the single failure criterion applied to the air locks 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. Therefore, the staff concludes that the deletion of the requirement for both air lock doors to be closed during power operation is unacceptable.

c. The staff finds ACTION conditions D and E are not in the current STS, and it appears to the staff that those conditions may be relaxations without justifications. Provide justifications for this addition.

d. The current B&W STS Section 3.6.1.3 ACTION a.2 allows the operation of the plant under the specified condition until the next required overall air lock leakage test. The new TS does not have such a time limit. This difference is identified as new action statements A3, B3, and D3, which, however, are missing in the April, 1989 version of new STS. Provide action statements A3, B3, and D3. This item was also addressed in our comments before.

e. Appendix J requires that the following quantities be stated in the TS: (1) Test pressure for the "every 3 days" test if such pressure is less than P_a (which it usually is), and (2) acceptance criteria for the air lock tests. These quantities must be added to the TS.

4. TS Section 3.5.3, Containment Isolation Valves

a. The ACTION statement in the current STS requires that "With one or more of the isolation valve(s) specified inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either..." The new TS deletes this requirement without even mentioning the change. This is not acceptable.

b. New STS 3.5.3 ACTION A.2 states that with one containment isolation valve inoperable in a penetration, isolate each affected penetration by use of one deactivated automatic valve secured in the isolation position, one closed manual valve, one blind flange, or one check valve with its source of forward flow isolated. Allowing one check valve to isolate the affected penetration is a change from the current STS. In this condition, the plant can keep operating indefinitely. The B&WOG's justification is that a check valve may function as an isolation device.

The staff finds this justification to be insufficient since a single check valve is not reliable enough to be the only containment isolation device in a penetration. SRP Section 6.2.4 states that a simple check valve is not normally an acceptable automatic isolation valve. A check valve may be used as an acceptable isolation valve inside containment provided there is another operable automatic valve as an outboard containment isolation valve in the penetration. A check valve is less reliable as an isolation valve because it leaks more frequently and it is more difficult (and sometimes impossible) to tell positively whether the valve is fully closed. Therefore, the staff finds this change not acceptable.

c. In many cases (see attached marked-up pages), the word "automatic" should be replaced with "power-operated," because a remote-manual valve, which is not automatically isolated, may be closed and deactivated just as effectively as an automatic valve.

d. Section 4.6.4.1 of the B&W STS has been deleted in the new STS by referring to SR 3.5.3.3 with frequency in accordance with SR 3.0.5. We do not find the current STS Section 4.6.4.1 being included in the new STS SR 3.5.3.3. Additional clarification is needed in this regard.

e. Section 4.6.3.1.2.b of the current STS, which requires a verification of closure of each purge and exhaust automatic valve on a containment radiation-high test signal, was deleted in the new STS because the purge valves for CR-3 are required to be closed in MODES 1 through 4. The staff is aware from a recent licensing action for CR-3 that although the large purge valves are required to be closed, the 8-inch hydrogen vent valves are occasionally used for containment venting during plant operation. Therefore, this requirement should be applied to the 8-inch vent valves instead of the large purge valves. A simple deletion of the requirement is not acceptable.

It's not clear whether other B&W plants follow the same practice as CR-3 by venting containment using smaller vent valves. The deletion of this requirement may be justifiable on a plant specific basis after a careful review but not in the STS. A deletion from the STS would let plants like CR-3 use alternative vent valves without periodic testing of the required automatic isolation signal on high radiation.

5. Section 3.5.4 Containment Purge Valves

a. New TS LCO 3.5.4 states that "each containment purge valve shall be OPERABLE and secured in the isolation position." Based on SRP Section 6.2.4 and NUREG-0737, Item II.E.4.2, Position (6), the staff

requires the purge valves that do not satisfy the operability criteria must be "sealed closed". The term "sealed closed" is defined in SRP Section 6.2.4 and ANS-56.2, and has been adopted by the nuclear industry and the staff for many years. The term locked closed sometimes has been used in lieu of the term sealed closed. Locked closed isolation valves are defined as sealed closed barriers in SRP Section 6.2.4. It is stated in SRP Section 6.2.4 that sealed closed isolation valves should be under administrative control to assure that they cannot be inadvertently opened. Administrative control includes mechanical devices to seal or lock the valve closed, or to prevent power from being supplied to the valve operator.

The B&WOG used the term "secured in the isolation position" but did not identify nor justify the difference from "sealed closed." It appears to be a matter of their preference since this wording has not been adopted by the other owners groups. The staff prefers the existing term "sealed closed" because it is well defined both in the industry standard and NRC guidelines and is consistent with the requirement of administrative control for the closed purge valves.

b. New TS SR 3.5.4.2 states: "Perform required Type C leak rate testing in accordance with 10 CFR 50, Appendix J or approved exemptions." Appendix J specifies a maximum test interval of two years. The staff finds the proposed test frequency to be inadequate for purge/vent line isolation valves. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration," was established specifically to study the issue of valve seal leakage. As a result of this study, it was recommended that the following provision be added to the Technical Specifications for the leak testing of purge/vent line isolation valves:

"Leakage integrity tests shall be performed on the containment isolation valves with resilient material seals in (a) active purge/vent systems (i.e., those which may be operated during plant operating Modes 1 through 4) at least once every three months; and (b) passive purge systems (i.e., those which must be administratively controlled closed during reactor operating Modes 1 through 4) at least once every six months."

The proposed B&W STS should be revised to incorporate this guidance which has been incorporated in the current Westinghouse STS for many years. This comment was made previously but no additional information has been provided by the B&WOG since then.

6. Plant specific data such as containment pressure in LCO 3.5.6 and containment temperature in LCO 3.5.7 should be put in a bracket to allow for plant specific differences.

7. SR 3.5.8.1 under Section 3.5.7 should be read as SR 3.5.7.1 for consistency in the numbering system.

8. Section 3.5.8 Hydrogen Analyzers

   a. For two hydrogen analyzers inoperable, the new STS allow the action (B.1) to be completed in 7 days. The staff has reviewed the B&WOG's justification and disagrees with it. The main justification is that the staff recommended 7 days in the TMI Action Plan document. However, contrary to the owners group's statement, the staff indicated in Generic Letter 83-37, NUREG-0737 Technical Specifications, Item No. 9, Containment Hydrogen Monitor that "If both monitors are inoperable, at least one monitor should be restored to operable status within 72 hours..."

   b. The LCO should be applicable in Modes 1, 2, 3 and 4, even though the current STS LCO has applicability only in Modes 1 and 2. The staff postulates that a LOCA can occur in Modes 1 to 4, and so hydrogen can be generated in those modes. Other containment safety systems have LCOs that are applicable in Modes 1 to 4, so this system should too (the same comment applies to other hydrogen TS, i.e., recombiners, hydrogen purge, and hydrogen mixing).

9. Section 3.5.9 Containment Spray Additive System

   The new STS left this section blank because the B&WOG has developed justification to delete this system. This TS will only be applicable to those plants which choose to retain this system. The B&WOG indicates that the system may be applicable to CR-3 and Rancho Seco. It is not clear whether the deletion of the system for other B&W plants has been found acceptable by the NRC.

   The current B&W STS includes Section 3.6.2.2, Spray Additive System, as an optional section. The new STS would permit those plants which choose to retain this system to provide their plant specific TS in the implementation phase. The staff believes the approach in the current STS to be better. Unless all B&W plants have chosen to delete this system and the staff finds the deletion acceptable, the STS should provide TS for the containment spray additive system as an optional section. Since this TS section is applicable for the lead plant, CR-3, the TS should be proposed at this time rather than in the future.

10. TS sections for Hydrogen Recombiners are not included in the current revision of the submittal, but are identified for inclusion in the future. Furthermore, it is also stated that the TS for this system are only applicable to Arkansas, Rancho Seco, and TMI. Therefore, this TS section should be included in the STS as optional in a manner similar to that for the containment spray additive system.

    Further, it is stated that CR-3 has the capability to install an external recombiner, and that a recombiner is jointly owned and stored by a group of utilities, including CR-3. Thus, since recombiners are not installed at CR-3, it is stated that a CR-3 TS is inappropriate. However, this

implies that CR-3 depends in its safety analysis on a hydrogen purge system, but this is also not covered by a TS (although such a TS is in the current B&W STS). It seems that at least one system or the other (recombiners or purge) should be included in the CR-3 TS, and, in fact, in any B&W plant specific TS, since hydrogen control is credited in most (if not all) plant safety analyses.

11. Additional comments are given as mark-ups on the TS pages in Enclosure 3.

12. In many cases the staff has not commented directly on the associated STS Bases sections. The staff review of the Bases is continuing. Nevertheless, staff disagreement with the content of a TS implies, of course, disagreement with the Basis that supports the TS, and appropriate changes to the Bases are necessary.

13. The "Split Report" stated that any LCO not specifically identified in its Table 1 (to be retained in the STS) or Table 2 (may be relocated) should be retained in the STS until the Owners Group proposes and the staff makes a specific determination that it can be relocated to a licensee-controlled document. Contrary to this provision, the following LCOs fall into this category but are not addressed in the submittal:

3.6.1.4 -	Containment Isolation Valve and Channel Weld Pressurization Systems (Optional)
3.6.5.3 -	Hydrogen Purge Cleanup System (if less than 2 hydrogen recombiners available)
3.6.5.4 -	Hydrogen Mixing System (Optional)
3.6.7 -	Vacuum Relief Valves (Optional)
3.6.8.1 -	Shield Building Air Cleanup System (dual containment only)
3.6.8.2 -	Shield Building Integrity (dual containment only)
3.6.8.3 -	Shield Building Structural Integrity (dual containment only)

9-6-89

Enclosure 2

PLANT SYSTEMS BRANCH
DRAFT EVALUATION AND COMMENTS
ON REVISED CE STANDARD TECHNICAL SPECIFICATIONS
CONTAINMENT SYSTEMS SECTION

The Plant Systems Branch has reviewed CEN-355, CE Owners Group (CEOG) Restructured Standard Technical Specifications (STS), dated May, 1989. Our evaluation and comments on the proposed containment systems section are provided.

1. Definition 1.1. Containment Integrity

The definition of containment integrity contained in the letter from M. Reinhart to W. Hall, "NRC Staff Mark-up of the Owners Groups' Proposed New Standard Technical Specifications (STS)," dated July 28, 1989, is acceptable as marked-up on the enclosed copy. However, additional staff discussions are needed to resolve generically some issues that have been raised concerning this definition and the TSs for containment integrity and containment isolation. For example, if a GDC 57 penetration (closed system inside containment with only one isolation valve outside containment) should have its isolation valve become inoperable, the staff is saying that it is not sufficient to depend on the closed system alone to maintain containment integrity indefinitely. However, immediate plant shutdown is probably not warranted and the staff has not yet developed an alternative. The staff plans to resolve this and other related questions as part of the ongoing review.

2. Section 3.5.1. Containment Integrity

SR 3.5.1.1 states: "Perform required Type A and B leak rate testing in accordance with 10 CFR 50, Appendix J ..." Delete "Type A and B" in the above sentence; the required leak rate testing should not be limited to Type A and B.

3. Section 3.5.2, Containment Air Locks

a. The staff finds ACTION condition C is not in the current STS, and it appears to the staff that this condition may be a relaxation without justification. Provide justification for this addition.

b. The current CE STS Section 3.6.1.3 ACTION a.2 allows the operation of the plant under the specified condition until the next required overall air lock leakage test. The new TS does not have such a time limit. This difference is identified, but the justification, that the requirement is "administrative", is incorrect. Provide ACTION statements as in current STS.

c. Appendix J requires that the following quantities be stated in the TS: (1) test pressure for the "every 3 days" test if such pressure is less than Pa (which it usually is), and (2) acceptance criteria for the air lock tests. These quantities must be added to the TS.

4. TS Section 3.5.7, Containment Isolation Valves

   a. The ACTION statement in the current STS requires that "With one or more of the isolation valve(s)...inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either..." The new TS deletes this requirement without even mentioning the change. This is not acceptable.

   b. New STS 3.5.7 ACTION A.2 states that when one containment isolation valve is inoperable in a penetration, isolate each affected penetration by use of one deactivated automatic valve secured in the isolation position, one closed manual valve, one blind flange, or one check valve with its source of forward flow isolated. Allowing one check valve to isolate the affected penetration is a change from current STS. In this condition, the plant can keep operating indefinitely. The CEOG's justification is that a check valve may function as an isolation device.

      The staff finds this justification to be insufficient since a single check valve is not reliable enough to be the only containment isolation device in a penetration. SRP 6.2.4 states that a simple check valve is not normally an acceptable automatic isolation valve. A check valve may be used as an acceptable isolation valve inside containment provided there is another operable automatic valve as outboard containment isolation valve in the penetration. A check valve is less reliable to be an isolation valve because it leaks more frequently and it is more difficult (and sometimes impossible) to tell positively whether the valve is fully closed. Therefore, the staff finds this change not acceptable.

   c. In many cases (see attached marked-up pages), the work "automatic" should be replaced with "power-operated," because a remote manual valve, which is not automatically isolated, may be closed and deactivated just as effectively as an automatic valve.

   d. Section 4.6.4.1 of the CE STS has been deleted in the new TS without justification. Therefore, it is not acceptable.

5. Section 3.5.5, Containment Purge Valves

   a. New STS LCO 3.5.5 states that "each 42-inch containment purge supply and exhaust isolation valve shall be closed by a deactivated isolation valve or a blind flange." Based on SRP 6.2.4 and NUREG-0737, Item II.E.4.2. Position (6), the staff requires the purge valves that do not satisfy the operability criteria must be "sealed closed." The term "sealed closed" is defined in SRP 6.2.4 and ANS-56.2 and has been adopted by the nuclear industry and NRC for many years. The term locked closed sometimes has been used in lieu of the term sealed closed. The locked closed isolation valves are defined as sealed closed barriers in SRP 6.2.4. It is stated in SRP 6.2.4 that sealed closed isolation valves should be under administrative control to assure that they cannot be inadvertently opened. Administrative control includes mechanical devices to seal or lock the valve closed, or to prevent power from being supplied to the valve operator.

The CEOG used the term "closed by a deactivated isolation valve or a blind flange" but did not justify the difference; it appears to be a matter of their preference since it has not been adopted by the other owners groups. The staff prefers the existing term "sealed closed" because it is well defined both in the industry standard and NRC guidelines and consistent with the requirement for administrative control of the closed purge valves.

b. New STS SR 3.5.5.5 states: "Perform required Type C leak rate testing in accordance with 10 CFR 50, Appendix J or approved exemptions."

Appendix J specifies a maximum test interval of two years. The staff finds the proposed test frequency to be inadequate for purge/vent line isolation valves. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration," was established specifically to study the issue of valve seal leakage. As a result of this study, it was recommended that the following provisions be added to the Technical Specifications for the leak testing of purge/vent line isolation valves:

"Leakage integrity tests shall be performed on the containment isolation valves with resilient material seals in (a) active purge/vent systems (i.e., those which may be operated during plant operating Modes 1 through 4) at least once every three months; and (b) passive purge systems (i.e., those which must be administratively controlled closed during reactor operating Modes 1 through 4) at least once every six months."

The proposed CE STS should be revised to incorporate this guidance which has been incorporated in the current CE and Westinghouse STS for many years.

6. Section 3.5.10, Hydrogen Analyzers

a. For two hydrogen analyzers inoperable, the new STS allow the action (B.1) to be completed in 7 days. The staff has reviewed the CEOG's justification and disagrees with it. The main justification is that NRC recommended 7 days in the TMI Action Plan document. Contrary to the owners group's statements, the staff identified that Generic Letter No. 83-37, NUREG-0737 Technical Specifications, Item No. 9, Containment Hydrogen Monitor specifically states that "if both monitors are inoperable, at least one monitor should be restored to operable status within <u>72 hours</u> ..."

b. The LCO should be applicable in Modes 1, 2, 3 and 4, even though the current STS LCO has applicability only in Modes 1 and 2. The staff postulates that a LOCA can occur in Modes 1 to 4, and so hydrogen can be generated in those modes. Other containment safety systems have LCOs that are applicable in Modes 1 to 4, so why not this system (the same comment applies to other hydrogen TS, i.e., recombiners, hydrogen purge, and hydrogen mixing).

c. The deletion of specified sample gas concentration in SR 3.5.10.2 will allow plant-specific numbers to be used. This is a deviation from the current STS where one volume percent and four volume percent hydrogen are specified for sample gas. This deviation can introduce inconsistency between different plants. Additional justification is required.

7. In many cases the staff has not commented directly on the associated Bases sections. Because of the tight review schedule, the Bases reviews are not yet complete. Nevertheless, staff disagreement with the content of a TS implies, of course, disagreement with a Basis that supports the TS.

8. Additional comments are given as mark-ups on the TS pages in Enclosure 3.

9. All of these comments apply equally to the "Atmospheric" or the "Dual" sections of the CEOG STS, except of course to 3.5.14, Shield Building Integrity, which is unique to "Dual" Containment plants.