Docket File

September 3, 1991

Docket No. 50-206

LICENSEE: SOUTHERN CALIFORNIA EDISON COMPANY

FACILITY: SAN ONOFRE PLANT, UNIT 1

SUBJECT: SUMMARY OF MEETING WITH SOUTHERN CALIFORNIA EDISON COMPANY ON JULY 9-10, 1991, REGARDING ECCS TECHNICAL SPECIFICATION AMENDMENT REQUEST

On July 9-10, 1991, representatives of the Plant Systems Branch, the Technical Specifications Branch, and the Project Manager met with members of the San Onofre Unit 1 Licensing and Operations staffs of the Southern California Edison Company (SCE) in their corporate offices in Irvine, California. The purpose of the meetings was to resolve several open issues regarding the SCE applications to amend the San Onofre, Unit 1, ECCS Technical Specifications. Enclosure 1 is a copy of the list of attendees. Enclosure 2 is a copy of the Plant Systems Branch comments regarding the SCE ECCS submittal, and Enclosure 3 is a copy of the Technical Specifications Branch comments. These two sets of comments provided an agenda for the meeting.

In summary, most of the issues raised by the NRC reviewers were resolved with little difficulty, but the inclusion of a table in the Technical Specifications that lists specific valves and the systems of which they are a part, favored by SCE, was found to be inconsistent with the philosophy of the Standard Technical Specifications and was discouraged by the NRC staff. A modified approach will be undertaken by SCE and presented in a new submittal.

Original signed by:

John O. Bradfute, Project Engineer
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. List of Attendees
2. Plant Systems Comments
3. Technical Specification Comments

cc w/enclosures:
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

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John O. Bradfute, Project Engineer
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See next page

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ENCLOSURE 1

LIST OF ATTENDEES
July 9, 1991 Meeting

Name	Organization
Rick Ornelas	Licensing - SCE
Leon Rafner	Licensing - SCE
Darryl Barney	Unit 1 Operations - SCE
Jack Schramm	Unit 1 Operations - SCE
Ken Brown	Licensing - SCE
John Bradfute	Project Manager - NRC
Tom Dunning	Tech Specs Branch - NRC
James Tatum	Plant System Branch - NRC
Charles Townsend	Resident Inspector (SONGS 1) - NRC
Howard Bentz	Unit One Ops Training
Bill Flournay	Nuclear Fuels Analysis
Steven Root	NEDO/IRPE

STAFF COMMENTS REGARDING TECHNICAL SPECIFICATION AMENDMENT APPLICATION NO. 188 RELATED TO THE EMERGENCY CORE COOLING SYSTEM FOR SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1

(DOCKET NO. 50-206)

Southern California Edison Company (SCE or the licensee) requested NRC review and approval of a proposed change to the Technical Specification (TS) requirements related to the emergency core cooling system (ECCS) for San Onofre Nuclear Station, Unit No. 1 (SONGS-1), by letter of August 31, 1990. Based on a preliminary review of the licensee's request, the staff has identified the following comments and questions which require further consideration. The staff intends to discuss these comments and questions with the licensee during an upcoming meeting in an effort to expedite NRC review of the licensee's request.

Questions and Comments of a Technical Nature:

1. The submittal states that the Westinghouse Standard Technical Specification requirements have been included in the proposed ECCS TS for SONGS-1 to the degree practical. Provide a detailed listing of exceptions that are being taken to the Westinghouse STS and an explanation for why the requirement can not be implemented.

2. TS 3.3.1 would allow the safety injection system (SIS) to be removed from service in mode three with reactor coolant system (RCS) pressure less than 600 psig. This is not consistent with the Westinghouse Standard Technical Specification (STS) requirements. How are the consequences of a loss of coolant accident (LOCA), a steam generator tube rupture (SGTR) and a main steam line break (MSLB) mitigated after the SIS has been removed from service? Describe the worst case scenario and the consequences.

3. The basis for TS 3.1.2 states:

   "One pressurizer safety valve is sufficient to prevent overpressurizing [the reactor vessel] when the reactor is subcritical, since its relieving capacity is greater than that required by the sum of the available heat sources (i.e., residual heat, pump energy and pressurizer heaters)."

   TS 3.1.2 only requires one pressurizer safety valve to be operable or open when not critical. Two pressurizer code safety valves are required for critical operations.

   TS 3.1.5 allows operation in modes one, two and three with both power operated relief valves (PORVs) isolated.

TS 3.20 requires either two operable PORVs with lift settings less than or equal to 500 psig or the RCS must be vented through an opening that is greater than or equal to 1.75 square inches.

Given the existing and proposed requirements, how is the reactor vessel protected from overpressurization by an inadvertent SIS actuatuation when RCS pressure is between 500 psig and 1175 psig (i.e., the shutoff head of the feedwater pumps)? Describe the worst case scenario that could occur. To what extent are the PORVs and the pressurizer code safety valves at SONGS-1 qualified for liquid and two phase flow (i.e., can they be credited for mitigating this event)?

The Westinghouse STS requires that both pressurizer safety valves be operable during modes one, two and three. Why isn't this the case for SONGS-1?

What actions will be taken to address the concerns expressed by GL 90-06 regarding PORV operation?

4. The Final Safety Analysis Report (FSAR), Section 6.3.2.2.6, describes how pressure is equalized across valves HV-853A and HV-853B. Explain why there is a difference for a loss of power (LOP) event.

5. Valves CV-875A, CV-875B, CV-36, CV-37, CV-142, CV-143, and CV-144 are credited for preventing flow diversion from the SI flow path. What confidence is there that these valves do not have excessive seat leakage? Also, valves CV-142, CV-143, and CV-144 have redundant power supplies. What assurance is there that an electical fault on one train will not affect the other electrical train with respect to these valves?

6. TS 3.3.2 would require only one train of recirculation to be operable in mode three with RCS pressure less than 600 psig. This is not consistent with the Westinghouse STS. Explain why this is acceptable for SONGS-1.

7. Proposed TS 3.3.2 does not include a requirement regarding recirculation loop leakage. Explain.

8. The alternate cold leg injection flow path (UFSAR Section 6.3.2.1.2, page 6.3-4) is not discussed or credited in the TS amendment request. Explain.

9. The flow paths being credited for hot leg recirculation and for alternate hot leg recirculation are very limiting and may not allow sufficient flow/mixing to prevent boron precipitation. Explain.

10. Excessive seat leakage from recirculation pump discharge valves MOV-866A and MOV-866B could significantly impair the ability of the containment spray system and the recirculation system to function. Although these valves have been equipped with a power lockout feature, what assurance is there that seat tightness will be maintained?

11. The drawings submitted with the amendment application indicate that valves FCV-1115A, B, and C fail open and that valves FCV-1115 D, E, and F fail shut. Explain the basis for this arrangement.

12. Certain normal hot leg recirculation path valves are powered by both electrical trains (FCV-1112 and CV-305). What assurance is there that an electrical fault on one train will not affect the operation of the other train with respect to these valves?

13. Explain why valves CV-413 (excess letdown), MOV-880 (refueling water pump to charging isolation), MOV-883 (RWST isolation), and MOV-18 and MOV-19 (charging isolation) are not considered to be recirculation boundary valves. Additionally, what assurance is there that the seat integrity of the recirculation boundary valves will be maintained?

14. The basis for TS 3.3.2 (page 3.3-10, last paragraph) states "Single failure consideration is not a concern due to the stable reactivity condition of the reactor and the limited core cooling requirements...." There have been a number of loss of shutdown cooling events during shutdown operations and most recently an incident occurred a Vogtle Unit 1 (NUREG-1410) which suggests that additional precautions should be taken during certain sensitive shutdown operations. Provide a technical justification for the statement referred to above based on the specific plant conditions that exist at San Onofre Unit 1 during and following reactor shutdown.

15. The Updated Final Safety Analysis Report (UFSAR), paragraph 6.3.3.4 (page 6.3-21), discusses reflux condensation and states that hot leg recirculation is not needed once reflux condensation has been established. The mechanism of reflux condensation at SONGS-1 has not been reviewed and approved by the staff and therefore, reflux condensation can not be credited as an alternative to hot leg recirculation. In accordance with 10 CFR 50.59 requirements, this change to the UFSAR should not have been made without receiving prior NRC review and approval. Explain.

16. The proposed action statement for TS 3.3.3 may not be adequate for protecting the RCS from inadvertent pressurization (see related comment number 17). The staff will be better able to make a determination on this matter

based on the response to question number two above. However, pending review of that response, the following comments are provided for consideration and evaluation:

a. It may be appropriate to credit an RCS vent path, sized accordingly, for providing overpressure protection for the reactor vessel during periods when two positive barriers can not be established or maintained.

b. Depending on the vulnerability of the RCS to overpressurization, it may not be appropriate to allow no-flow testing of the SIS to be performed when the RCS is not adequately vented. If it is judged that RCS venting is not necessary for the conduct of no-flow testing, then the TS should state the specific requirements that are necessary to protect the RCS from overpressurization (i.e., the specification currently does not specifically require the feedwater pump breakers to be racked out during the conduct of this test). Additionally, it may be appropriate to limit the amount of time that the two positive barrier requirement can be relaxed during the conduct of no-flow testing in order to minimize the risk.

17. The proposed requirements and action statement for TS 3.3.3 may not be adequate for protecting the RCS from inadvertent boron dilution events (see comment number 16 for additional considerations regarding overpressure protection). In this regard, the following comments are provided for consideration and evaluation:

a. What confidence is there that the valves being used as positive barriers are leak tight?

b. It may be appropriate to require that no-flow testing be performed only while the unit is in mode four, five, or six when the shutdown margin is increased, and require that the boron concentration of the SIS piping be restored prior to performing the no-flow test.

c. If one of the two positive barriers should become inoperable and two positive barriers can not be immediately restored, it may be appropriate to place the plant in mode four (assuming the plant is operating in mode three) to take advantage of the higher RCS boron concentration. Also, additional sampling and monitoring of RCS boron concentration may be warranted in addition to the proposed shiftly surveillance of the remaining barrier. It would also be prudent to take immediate action to restore the second positive barrier, rather than initiating action to restore the positive barrier as soon as possible.

18. Page 9 of the description and significant hazards

consideration for the proposed change (second paragraph) states: "....The proposed change, contained in new Specifications 3.3.2 and 3.3.3, permits isolation of the safety injection/feedwater pumps from the RCS at 600 psig to allow the operators sufficient time to establish the two positive barriers required prior to reaching 500 psig." Where is this reflected in TS 3.3.3?

19. Based on the description provided, it would seem that a failure of either valve CV-517 or CV-518 would render the containment spray system and/or the recirculation system inoperable. If this is true, the action proposed by TS 3.3.5 with regard to these valves would not be appropriate. Instead, a one hour action would be consistent with the Westinghouse STS. Explain. Also explain how seat tightness is assured for these valves.

20. Proposed TS 3.3.5, Action E, is a restatement of TS 3.0.3. Including this action in the proposed specification would be redundant and would reduce the sensitivity to entering (and reporting) the TS 3.0.3 action. Explain.

21. Explain how the seat tightness of CV-92 (containment spray to fire protection spray header isolation valve) is assured.

22. With power locked out from valve MOV-883, how is the RWST isolated during the recirculation phase (proposed TS 3.3.5)? Why isn't single failure a problem?

23. The basis section of proposed TS 3.3.5 states: "100 gallons of 15% N2H4 solution satisfies the current analysis assumptions of hydrazine for two hours with both pumps running...." Are the accident assumptions valid (i.e., what if one pump does not start)?

24. The UFSAR description of the spray flow limiter subsystem (UFSAR page 6.2-31) discusses operator actions required to align the system for operation. The UFSAR states "...the operator aligns the system by closing the parallel control valves and verifies that only one refueling water pump is running, thereby preventing flow imbalance." This description relative to potential flow imbalance is not consistent with the description provided for proposed TS 3.3.5. Explain. What affect do these potential flow imbalances have on the ability of the containment spray system to satisfy its safety function?

25. The proposed basis for TS 3.3.6 is incomplete. There is no discussion regarding why the acceptance criteria of Table 3.3.6-1 was selected.

26. Action A for proposed TS 3.3.7 includes a note related to removing a saltwater pump from service. If the conditions specified by the note could not be met, what action would be

taken?

27. Proposed TS 3.3.7 includes a seven day action statement for removing a CCW heat exchanger from service. Define the criteria for determining when a CCW heat exchanger is significantly degraded (i.e., inoperable) and the basis for that criteria.

28. Action B of proposed TS 3.3.7 requires the salt water cross-tie valve (SWC-300) to be opened when a CCW heat exchanger is removed from service. Explain what actions would be taken in the event of a pipe break in the SWC system, and explain what the consequences of this event would be. Was this event considered in the PRA?

29. Regarding the design basis of the CCW system and other systems with a common header arrangement, why isn't a postulated pipe break a problem?

30. If both valves CV-737A and CV-737B (CCW isolation valves for the recirculation heat exchanger) failed open, what would be the effect on the CCW system? Are there any other valves in the CCW system that are powered by Train A which could also fail open on a loss of power and make the situation worse?

31. For the most part, proposed TS 3.3.8 is redundant to the other TS requirements that are being proposed and the specific component specifications are not necessary. It would be more appropriate to include this sort of information in the UFSAR and in the operating procedures which implement the TS requirements for ECCS subsystems. With regard to the amendment request of August 31, 1990, component train alignment and flow path considerations, including anomalies and any special considerations, should be described in detail for staff review and consideration relative to the proposed TS requirements for ECCS subsystems.

    The staff recognizes that the design of ECCS subsystems at SONGS-1 is unique and that certain components such as flow diversion valves and "third of a kind" components may require special consideration in the Technical Specifications when establishing the specific ECCS subsystem operability requirements. It would be appropriate to include requirements of this nature in the Technical Specifications, but only components which require special consideration should be included.

    The results of the staff's preliminary review of the information contained in proposed TS 3.3.8 indicates that additional work is required in developing and presenting the information for staff review, and in establishing appropriate Technical Specification requirements. The following comments are provided to help focus further efforts in this regard:

a. Information should be provided which describes specifically which components are required for flow path operability and which components are not required, focusing principally on those components for which this information is not obvious (i.e., pressure transmitters, pressure indicators, annunciators, control room indication, etc.). The information provided should include the basis for these determinations and the source of power for these components.

b. The format used for the proposed specification is not appropriate. The specification and action statements are redundant to the specifications being proposed for the ECCS subsystems and will cause confusion. The format used typically for the reactor trip system instrumentation (Westinghouse STS 3.3.1) would be more appropriate and easier to understand. By using this alternate format, the specific requirements applicable to each component included in the specification can be stated.

c. The basis of the proposed specification should state why the requirements of TS 3.0.3 are not applicable.

d. The staff does not agree that the provisions of TS 3.0.4 are not applicable. This matter must be addressed seperately for each component based on the specific requirements involved.

e. Based on the stated basis for Action D, it is not clear why the following components have not been included:

FCV-1115D	FCV-1112
FCV-1115E	CV-406B
FCV-1115F	CV-202
MOV-880	CV-203
CV-430C	CV-204
CV-430H	FI-3114A
CV-304	FI-2114B
CV-305	FI-2114C

f. Apparent inconsistencies exist in the methodology used for determining the appropriate component train and flow path designations, and for determining when "DIV" is applicable. The information submitted should make it clear why these designations are appropriate if this information is not obvious. Examples:

Feed water and condensate valves - Why isn't "DIV" applicable?

MOV-880 - Why is "CLR" applicable? Why isn't "DIV" applicable?

MOV-1100B and MOV-1100D - Why isn't "SI" applicable?

MOV-1100C - Why isn't "HLR" applicable?

MOV-18 and MOV-19 - Why isn't "HLR" applicable?

FI-3114A, FI-2114B and FI-2114C - Why isn't "SI" applicable? Also, should "FI-3114A" be "FI-2114A," (i.e., is this a typo)?

CV-202, CV-203 and CV-204 - Why is "CLR" applicable?

CV-406A and CV-406B - Why is "ALT HLR" applicable? Why isn't "HLR" applicable? Why isn't "DIV" applicable?

CV-305 - Why is "CLR" applicable?

CV-304 - Why is "CLR" applicable? Why isn't "DIV" applicable?

CV-410 and CV-411 - Why isn't "SI" applicable?

CV-2145 - Why is "SI" and "CLR" applicable?

MOV-866A and MOV-866B - Why isn't "CS" and "ALT HLR" applicable?

Alternate hot leg recirculation valves - Why isn't the train designation listed?

MOV-833 and MOV-834 - Why isn't "DIV" applicable?

CV-525 and CV-526 - Why isn't "DIV" applicable?

CV-517 and CV-518 - Why is "ALT HLR" and "CLR" applicable?

CV-92 - Why isn't "DIV" applicable?

MOV-720A and MOV-720B - Why is a specific TS reference given?

Why isn't "DIV" applicable to the following valves: (also applicable to the stated basis for proposed TS 3.3.1; also see comment no. 11):

> CV-962 and CV-957 - Hot leg recirculation sample isolation valves.
>
> RV-289 - Relief valve to the VCT from the RCP seal water return line.

CV-334 and BAS-319 - Boric acid transfer isolation valves from charging pump suction.

BAS-348 and FCV-1102A - Boric acid blending tee isolation valves from charging pump suction.

BAS-343 and FCV-1102B - Boric acid blending tee isolation valves from charging pump suction.

SI flow path - Feed water valves MOV-20, MOV-21, MOV-22, FCV-456, FCV-457, FCV-458, CV-142, CV-143 and CV-144 are designated as SI flow path valves. Why?

g. Some of the information is criptic and the meaning is not clear. Examples:

FIT-1112 - What alternate methods are credited for satisfying this requirement?

MOV-822A and MOV-822B - Why is Note 1 applicable? Also, what is the purpose of listing:

"MOV-822A and/or 822B"
"MOV-822B and/or 822A"

Note 7 - The meaning is not clear. Also, is this an action statement?

Action D - Why isn't this applicable to MOV-1100C in modes one, two, and three?

h. The basis for proposed TS 3.3.8 (page 3.3-24, first paragraph) states: "Train alignment is based on the flow path requirements, and does not necessarily correspond to the electrical alignment because of the common header arrangement, and the distinction between the alternate hot leg and normal hot leg paths." Information should be provided which identifies specifically which electrical train the ECCS components are powered from (i.e., Train A, Train B, non-1E UPS, non-1E, instrument air with nitrogen backup, instrument air without nitrogen backup, etc.).

i. During the recent Cycle 11 thermal shield repair and refueling outage, some modifications were made to the safety injection system. These modifications are not reflected in the proposed specification. This comment is also applicable to proposed TS 3.3.1.

32. For clarity, ACTION 8 for proposed TS 3.5.5 should state:

"With the number of OPERABLE sequencer subchannels for one sequencer less than the MINIMUM CHANNELS OPERABLE, restore the inoperable sequencer subchannel(s) ..."

33. Some of the Westinghouse STS requirements have not been included in the changes proposed for TS 4.2.1. Explain.

34. It is obvious from the submittal that significant improvements in the TS requirements for ECCS subsystems are warranted. The submittal focuses principally on limiting conditions for operation and action statement requirements, but very little attention was focused on the adequacy of existing TS surveillance requirements. This very critical element of the TS requirements has apparently been overlooked. Explain.

Questions and Comments of an Editorial Nature:

1. The listing for TS 3.3.1 in the Table of Contents included with the proposed TS change should state: "ECCS Subsystems - RCS Pressure $\geq$ 600 psig."

2. The note on page 3.3-1 for proposed TS 3.3.1 should state "at or below 1900 psig pressurizer pressure."

3. Action statements F, G and H on page 3.3-3 of proposed TS 3.3.1 state requirements for placing the unit in hot standby and/or cold shutdown. This is not consistent with the applicability that is stated for proposed TS 3.3.1 (i.e., modes one and two, and mode three when RCS pressure is greater than or equal to 600 psig). Also, action statement G still makes reference to a 36 hour action requirement which is not consistent with the changes being proposed to the TS format.

4. The language used in the basis section of TS 3.3.1 (page 3.3-4, first paragraph) which discusses the recirculation valves for the feedwater pumps is a little confusing since the TS is applicable to the recirculation system. Alternate language, such as "The minimum flow valves for the feedwater pumps..." may be more appropriate.

5. TS 3.3.2 is not well organized (i.e., the format is not consistent with the format that was developed for proposed TS 3.3.1). Specification b for the recirculation system pump train does not include the charging pump. Instead, the charging pump is included in Specification a. Also, the basis section of the TS does not credit boron dilution as a primary consideration for isolating the primary safety injection flow path.

6. Section 6.3.2.2.6 of the Updated Final Safety Analysis Report (UFSAR) (page 6.3-9) is not consistent with the TS submittal. The first paragraph should refer to the recirculation system, not the SIS.

7. The first paragraph of Section 6.3.2.1.2 of the UFSAR (page 6.3-3) should state: "The cold leg recirculation flow path consists of ...."

8. Section 6.3.3.6 of the UFSAR (page 6.3-22) credits a maximum delay time of 30 seconds for SIS initiation. This is not consistent with the accident analysis discussed in Chapter 15 of the UFSAR, which credits 26 seconds delay time during a main steam line break accident (page 15.2-6).

9. Proposed TS 3.3.3, Specification (1), makes reference to Specification 4.2.F.2. The correct reference should be Specification 4.4.F.2.

10. The "and/or" language used in the action statement for MOV-883 and CV-92 by TS 3.3.5 is confusing and perhaps alternate language should be used.

11. Action A of proposed TS 3.3.7 credits the use of the screen wash pumps as a backup source of water for the SWC system. This capability is not included in the discussion in Section 9.2.1 of the UFSAR (page 9.2-1).

12. Change bars were not placed in the margin for some of the proposed changes that were made to the basis section of TS 4.2.1.

COMMENTS ON PROPOSED TECHNICAL SPECIFICATION CHANGES FOR THE SAN ONOFRE ECCS

SPECIFICATION 3.3.1, ECCS SUBSYSTEMS - RCS PRESSURE $\geq$ 600 PSIG

1. The basic ECCS subsystem function for cold leg SI on a train basis includes:

    a. SI + FW pumps (G-50A & -3A typical (typ.)),
    b. SI/FW pump flow path (HV-851A, -853A, -854A, CV-36, & -875A typ.),
    c. Safeguards logic sequencer system (SLSS).

This excludes cold leg recirculation which utilizes charging pumps, excludes hot leg recirculation, which utilizes diverse (normal + alternate) means that each involve redundant (train A & B) components, excludes the RWST low-level logic because redundant (train A & B) means are used to initiate closure of valves MOV-858A, B, and C, and excludes feedwater pump discharge valves HV-852A and B and feedwater isolation, control, and bypass controls valves because redundant means are provided for feedwater isolation.

2. The basic ECCS subsystem function for hot or cold leg recirculation on a train basis includes:

    a. Recirculation pump (G-45A typ.),
    b. Recirc pump flow path (MOV-866A typ.), and
    c. SLSS (train A typ.)

3. The basic ECCS subsystem function for cold leg recirculation on a train basis includes:

    a. Charging pump (G-8A typ.) and
    b. SLSS (train A typ.).

This excludes the charging pump flow path because all flow path valves (MOV-1100B & D and MOV-18 & -19) are in parallel in a common (non-train associated) flow path.

4. Other ECCS subsystem functions are:

    a. Feedwater isolation that on a train basis includes:

        1. Feedpump discharge valve (HV-852A typ.),
        2. Feedwater isolation valve(s) (MOV-20 & -22 typ.),
        3. Feedwater control valve(s) (FCV-456 typ.),
        4. Feedwater bypass control valve(s) (CV-142, -143, & -144 typ. for each train), and
        5. SLSS (train A typ.).

    b. SI pump discharge header/cold leg injection flow paths that on a train basis include:

        1. Loop injection valve (MOV-850A typ.),
        2. SLSS (train A typ.), and
        3. Three RWST low-level channels.

or
1. Loop injection valve (MOV-850C UPS). (Operated by either train of SLSS and either train of RWST low-level channels.)

c. Charging pump suction flow path and flow path boundary isolation valves that on a train basis include:

   1. Suction valve (MOV-1100B typ.) and
   2. VCT bypass valve (CV-410 typ.),
   3. RCP seal water return valve (CV-527 typ.), see TS 3.6.2,
   4. VCT outlet valve (MOV-1100C vs. check valve VCC-301), and
   5. SLSS (train A typ.).

d. Charging pump discharge flow path and flow path boundary isolation valves that on a train basis include:

   1. Discharge valve (MOV-18 typ.),
   2. Refueling pump discharge isolation valve (MOV-880 vs. check valve RCP-337), and
   2. SLSS (train A typ.).

e. Charging pump discharge header/cold leg recirculation flow paths that on a train basis include:

   1. Loop injection valve (MOV-356 typ.),
   2. SLSS (train A typ.),
   3. Associated flow control valve (FCV-1115D typ.), and
   4. Either train of FCV controls.

   or

   1. Loop injection valve (MOV-358 UPS) (Operated by either train of SLSS.),
   2. Associated flow control valve (FCV-1115F), and
   3. Either train of FCV controls.

f. Hot leg recirculation flow paths that include:

   1. Normal path valves (pressurizer level control valve FCV-1112 & pressurizer auxiliary spray control valve CV-305) [train A <u>or</u> B],
   2. Normal path boundary valves* (makeup return valve CV-304, pressurizer spray valves PCV-430C & -430H),
   3. Alternate flow valves (MOV-822A or B and MOV-813 &-814) [train A <u>and</u> B], and
   4. Alternate flow path boundary valves (orifice isolation valves CV-202, -203, & -204, or check valve LDS-023 and letdown containment isolation valves CV-527 & -528, see TS 3.6.2).

(*Assuming charging sample valve CV-2145 is not essential for insuring integrity of the normal path boundary for hot leg recirculation, but include it if it is.)

g. Prevention of inadvertent opening of recirculation pump discharge valves that on a train basis includes:

   1. Power removal interlock (Control switch A typ.)

With the above grouping of SI functional requirements, the following wording for the ECCS LCO is recommended:

3.3 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.3.1 ECCS SUBSYSTEMS - REACTOR COOLANT SYSTEM (RCS) PRESSURE $\geq$ 600 PSIG

APPLICABILITY: MODES 1, 2,
and MODE 3 when RCS pressure is $\geq$ 600 psig.

OBJECTIVE: To define those conditions necessary to ensure the availability of the Safety Injection and Recirculation Systems.

SPECIFICATION: The following ECCS subsystems shall be OPERABLE:

a. Two Safety Injection System (SIS) pump trains, with each train comprised of:

1. One safety injection pump,

2. One feedwater (FW) pump,

3. A flow path capable of taking suction from the Refueling Water Storage Tank (RWST), being isolated from the condensate supply to the feedwater pump, being isolated from the FW miniflow to the condensate storage tank, providing miniflow to the RWST, and providing flow to the cold leg SIS supply header, with each flow path consisting of:

    a. One FW pump injection supply valve,

    b. One condensate supply isolation valve,

    c. One FW pump injection discharge valve,

    d. One condensate miniflow valve, and

    e. One RWST miniflow valve; and

4. The associated train of the Safeguards Logic Sequencer System (SLSS).

b. Two recirculation pump trains, with each train comprised of:

1. One Recirc pump,

2. A flow path capable of taking suction from the containment sump, delivering flow to the refueling water and charging pump suction header, and being isolated from the RWST, with each path consisting of:

a. One recirculation pump discharge valve, and

b. RWST outlet isolation or check valve; and

3. The associated train of the SLSS.

c. Two charging pump trains, with each train comprised of:

1. One charging pump, and

2. The associated train of the SLSS.

d. Three loop flow paths capable of taking flow from the cold leg SIS supply header and providing it to the RCS cold legs, with Loops A and B each comprised of:

1. The loop cold leg SIS isolation valve,

2. The associated train of the SLSS, and

3. The associated train of the RWST low-level channels;

and with Loop C comprised of:

1. The loop injection isolation valve,

2. Either train of the SLSS, and

3. Either train of the RWST low-level channels.

e. Two FW isolation trains for each loop, with each train comprised of:

1. One FW pump discharge isolation valve,

2. The train associated loop FW isolation valve(s),

3. The train associated loop FW control valve(s),

4. The train associated loop FW bypass control valve(s), and

5. The associated train of the SLSS.

(Note: While the FW pump discharge isolation valve could be included under item a instead of item e, it would provide a more rational basis to consider it with the valves included in the latter from the standpoint of redundancy (for either flow diversion or FW isolation) and thus provide a greater degree of freedom from an allowable outage time limit.)

f. Two charging pump suction and discharge flow path trains capable of providing recirculation flow to the charging pumps, being isolated from the normal charging pump suction sources, providing recirculation flow from the charging pumps to the cold leg recirculation supply header, and being isolated from the refueling water pump discharge header, with each train comprised of:

   1. One charging pump suction valve,

   2. One reactor coolant pump (RCP) seal water return isolation valve,

   3. One volume control tank (VCT) bypass isolation valve,

   4. One VCT outlet isolation or check valve,

   5. One refueling pump discharge header isolation or check valve,

   6. One cold leg recirculation supply header isolation valve,

   7. One refueling pump discharge header, normally closed, isolation valve or check valve, and

   8. The associated train of the SLSS.

g. Three loop flow paths capable of providing recirculation flow from the cold leg supply header and delivering it to the loop cold legs, with Loops A and B each comprised of:

   1. One loop cold leg recirculation isolation valve,

   2. One loop cold leg recirculation flow control valve (FCV) and either train of the FCV controls, and

   3. The associated train of the SLSS.

   and with loop C comprised of:

   1. One loop cold leg recirculation isolation valve,

   2. One loop cold leg recirculation FCV and either train of the FCV controls, and

   3. Either train of the SLSS.

h. The hot leg recirculation flow paths consisting of:

   1. The normal flow path capable of providing flow from the charging pump discharge header to the pressurizer

via the auxiliary spray valve, being isolated from the normal charging pump return to the loop A, and being isolated from the auxiliary spray return to the loop A and B cold legs, and

2. The alternative flow path capable of providing flow from the refueling water pump discharge header, to the residual heat removal (RHR) heat exchanges, to the discharge of the RHR pumps via one open heat exchanger inlet valve, bypassing the RHR pumps, and to the loop C hot leg via the RHR letdown isolation valves.

i. The recirculation heat exchanger shall be OPERABLE.

j. Two trains of the recirculation pumps discharge valve power removal interlocks* that on a train basis are comprised of one interlock control switch per valve.

(Proposed TS 3.3.1.e on recirc loop leakage.)

The pH control storage racks in containment shall contain ≥ 5400 lbs of anhydrous trisodium phosphate.

*Interlocks for the RWST outlet valve are addressed by TS 3.3.5.

NOTE: The last two specifications are not numbered as items k and l since they are not subsystems covered by a blanket operability requirement but are definitive statements of the necessary requirement, particularly with respect to the former.

ACTION:

A. With one train inoperable in one or more of the ECCS subsystems in specifications a, b, and c, restore the inoperable train to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

B. With one flow path inoperable in one or more of the ECCS subsystems in specifications d or g, restore the inoperable flow path to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

C. With one train of feedwater isolation inoperable in one or more loops, restore the inoperable train to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

D. With one inoperable valve per redundant valve set in one or more sets of valves in the charging pump recirculation flow path or its boundary, restore each inoperable valve to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

E. With one hot leg recirculation flow path, as defined by specification h, inoperable, restore the inoperable flow path to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

F. With the recirculation heat exchanger inoperable, restore it to operable status within 1 hour or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

G. With one train of the power removal interlocks inoperable per valve for one or more of the recirculation pump discharge valves, restore each inoperable interlock control switch to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

H. With the effective leakage from the recirculation loop outside containment beyond its limit, restore the integrity of the loop to within its limit within 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

I. With the quantity of anhydrous trisodium phosphate in the pH control storage racks less than its limit, restore the quantity to its limit within 72 hours or be in at least HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours.

NOTE: The current proposal for TS 3.3.1 includes the specification on leakage from the recirc system and would appear to be a good candidate for a separate TS. The pH control TS is for a function that is common to all ECCS subsystems and could be combined with the TS on RWST level or retained as separate TS. In any case, the LCO is only applicable when RCS pressure $\geq$ 600 psig and, thus, the requirements for < this value belong under TS 3.3.2. For this reason a separate TS would be desirable.

3.3.2 <u>ECCS SUBSYSTEMS - RCS PRESSURE < 600 PSIG</u>

<u>APPLICABILITY</u>: MODE 3 below 600 psig and MODE 4

<u>OBJECTIVE</u>: To define those conditions necessary to ensure the availability of the Safety Injection and Recirculation Systems.

SPECIFICATION: The following ECCS subsystems shall be OPERABLE:

a. One train of the charging and recirculation pump trains as identified in TS 3.3.1 b and c.

b. One charging pump suction and discharge flow path train as identified in TS 3.3.1 f.

c. Two of three loop flow paths as identified in TS 3.3.1 g.

d. One hot leg recirculation flow path as identified in TS 3.1.1 h.

e. The recirculation heat exchanger.

The provisions of TS 3.3.1 for pH control shall be met.

The provisions of TS 3.3.1 for effective leakage from the recirculation loop outside containment shall be met.

ACTION:

A. With no ECCS subsystem train OPERABLE per specification a, b, d, or f, restore at least one train to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

B. With one or less loop flow paths OPERABLE per specification c, restore at least two flow paths to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours.

C. With the recirculation heat exchanger inoperable, restore it to OPERABLE status within 1 hour, or be in COLD SHUTDOWN within the next 20 hours.

D. With the effective leakage from the recirculation loop outside containment beyond its limit, restore the integrity of the loop to within its limit within 72 hours, of the time that it was determined to exceed its limit, or be in at least COLD SHUTDOWN within the 36 hours thereafter.

E. With the quantity of anhydrous trisodium phosphate in the pH control storage racks less than its limit, restore the quantity to within its limit within 72 hours, of the time that it was determined to be less than its limit, or be in at least COLD SHUTDOWN within 36 hours thereafter.

The following wording for TS 3.3.3 is recommended:

3.3.3 ISOLATION OF THE REACTOR COOLANT SYSTEM (RCS) FROM THE FEEDWATER/ SAFETY INJECTION SYSTEM

APPLICABILITY: MODE 3 when RCS pressure is < 500 psig,

MODES 4 and 5,
MODE 6 when fuel assemblies are in, and the head is on, the reactor vessel.

OBJECTIVE: To preclude the potential to overpressurize the RCS via the feedwater/safety injection system or to dilute the boron concentration in the RCS by the addition of condensate.

SPECIFICATION: The RCS shall be isolated from the feedwater/condensate system by two positive barriers between these systems. When the reactor is in a water solid condition, the RCS shall be isolated from the safety injection system by two positive barriers. A positive barrier includes the following:

1. A closed and tagged motor-operated valve with its supply breaker open, except that power may be restored to one of the redundant set of the barriers at a time during no-flow tests of the safety injection system per TS 4.4.II.D.(3).

2. A closed and tagged pneumatic- or hydraulic-operated valve with its pneumatic or hydraulic source isolated or the valve otherwise blocked closed, except that the pneumatic or hydraulic source may be restored to one of the redundant set of barriers at a time during no-flow tests of the safety injection system per TS 4.4.II.D.(3).

3. A closed and tagged manual-operated valve.

4. A racked-out or placed-in-the-test-position breaker, also tagged, for the feedwater pump, and its associated safety injection pump if the latter is not isolated from its associated feedwater pump by an additional tagged, closed, and deactivated valve.

ACTION: With only one positive barrier between the RCS and the feedwater/condensate system or between the RCS and safety injection system, immediately terminate all testing involving the safety injection system, initiate action as soon as practical to restore the second positive barrier, and verify the status of the remaining barrier once per shift.

It is recommended that TS 3.3.4 be reworded as follows:

3.3.4 REFUELING WATER STORAGE TANK (RWST)

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

OBJECTIVE: To ensure the availability of sufficient borated water from the RWST for safety injection, containment spray, or emergency boration.

SPECIFICATION: a. The RWST boron concentration shall be ≥ 3750 ppm but

≤ 4300 ppm and the RWST water level shall be ≥ plant elevation 50 feet.

b. The safety injection (SI) lines from the RWST to FW pump SI suction valves and from the FW pump SI discharge valve to the loop SI isolation valves shall have a boron concentration of ≥ 1500 ppm and ≤ 4300 ppm except when the SI lines are isolated from the RCS per specification 3.3.3.

ACTION:

A. With the RWST boron concentration or level outside its limits, restore the boron concentration and level to within its limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

B. With the boron concentration in one or more SI lines outside its limits, restore the boron concentration to within its limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3.3.x RECIRCULATION LOOP OUTSIDE CONTAINMENT EFFECTIVE LEAKAGE

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

OBJECTIVE: To ensure that offsite dose limits will not exceed 10 CFR Part 100.

SPECIFICATION: (Proposed TS 3.1.1.e)

ACTION: With the effective leakage from the recirculation loop outside containment beyond its limit, restore the integrity of the loop to within its limit within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

Note that the objective of this TS is not the same as TS 3.3.1 and eliminates the necessity to address it in TS 3.3.1 and 3.3.2.

3.3.y pH CONTROL FOR ECCS

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

OBJECTIVE: To ensure the availability of pH control for ECCS.

SPECIFICATION: The pH control storage racks in containment shall contain ≥ 5400 lbs of anhydrous trisodium phosphate.

ACTION: With the quantity of anhydrous trisodium phosphate in the pH control storage racks less than its limit, restore the quantity to within its limit within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

Note that this TS eliminates the necessity to address this subject in TS 3.3.1 and 3.3.2.

It is recommended that TS 3.3.5 be reworded as follows:

<u>SPECIFICATION</u>: The following Containment Spray subsystems shall be OPERABLE:

a. Two containment spray pump trains, with each train comprised of:

   1. One refueling water pump,

   2. A flow path capable of taking suction from the Refueling Water Storage Tank (RWST) and providing flow to the containment spray pump discharge header, and

   3. The associated train of the Containment Spray Actuation Logic. (CSAL).

b. A containment spray flow path capable of taking flow from the containment spray pump discharge header and providing it to the containment spray supply header, with train components comprised of:

   1. One flow limiting (orifice bypass) control valve, and

   2. The associated train of the CSAL.

c. A containment spray flow path isolated from the containment fire water spray header and capable of taking flow from the containment spray supply header and providing it to the containment spray nozzles, with train components comprised of:

   1. One containment spray isolation control valve, and

   2. The associated train of the CSAL.

d. Two trains of Containment Spray Additive pump trains, with each train comprised of:

   1. One hydrazine additive pump,

   2. One pump discharge isolation valve,

   3. A flow path capable of taking flow from the hydrazine storage tank and providing it to the discharge of the refueling water pumps, and

   4. The associated train of the CSAL.

e. The hydrazine storage tank shall contain $\geq$ 150 gallons of aqueous solution of with a N_2H_4 concentation of ≥ 21 weight %.

f. Two trains of the containment fire water spray header isolation valve and the RWST outlet valve power removal interlocks that on a train basis are comprised of one interlock control switch per valve.

ACTION:

A. With one train inoperable in one or more of the ECCS subsystems in specifications a and d, restore the inoperable train to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

B. With one containment spray flow path inoperable, for other than an open containment fire water spray header isolation valve, in one or more of the ECCS subsystems in specifications b or c, restore the inoperable flow path to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

C. With the containment spray flow path inoperable because of an open containment fire water spray isolation valve, close the isolation valve within 1 hour or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

D. With the hydrazine storage tank volume or N_2H_4 concentation less than its limit, restore the volume and concentration to within their limits within 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

E. With one train of the power removal interlocks inoperable per valve for the containment fire water spray header isolation or the RWST outlet valve, restore each inoperable interlock control switch to OPERABLE status in 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

Recommended rewording for TS 3.3.6:

3.3.6 REACTOR COOLANT SYSTEM (RCS) PRESSURE ISOLATION VALVES

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

OBJECTIVE: To assure the leaktightness of the RCS pressure isolation valves and thereby reduce the potential of an inter-system loss of coolant accident.

SPECIFICATION: The leakage of the RCS pressure isolation valve shall not exceed the limits specified in Table 3.3.6-1.

ACTION: With the leakage of any RCS pressure isolation valve in excess of its limits, restore the leaktightness of the valve to within its limit within 1 hour or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN in the following 30 hours.

TABLE 3.3..6-1

Revise heading of second column to just: "Allowable Leakage"

Replace "≤5.0 GPM" in second column with footnotes "(1), (2), & (3)"

revise footnotes as follows:

1. Leakage ≤ 1.0 gpm is acceptable.

2. Leakage > 1.0 gpm but ≤ 5.0 gpm is acceptable if the current measured leakage does not exceed the previous test leakage by more than 50% of the difference between the previous test leakage and 5.0 gpm.

3. leakage > 5.0 gpm or > 1.0 gpm where the current measured leakage exceeds the previous test leakage by ≥ 50% of the difference between the previous test leakage and 5.0 gpm is unacceptable.

It is recommended that TS 3.3.7 be renumbered and relocated to Section 3.1 of the TS. The recommended rewording for TS 3.3.7 is as follows:

3.3.7 COMPONENT COOLING WATER (CCW) SYSTEM

APPLICABILITY: MODES 1, 2, 3, 4, AND 5.

OBJECTIVE: To ensure the availability of the CCW System as a heat sink for the ECCS and, when in MODES 4 or 5, for the RHR System.

SPECIFICATION: The following CCW subsystems shall be OPERABLE:

a. Two CCW pump trains, with one pump in operation and each train comprised of at least one CCW pump.

b. Two CCW heat exchanger trains, with one train in operation and each train comprised of:

   1. One CCW heat exchanger,

   2. One CCW heat exchanger discharge valve,

   3. A flow path capable of taking flow from the discharge of the OPERABLE CCW pump(s), through the CCW heat exchanger, and providing flow to the recirculation heat exchanger, in MODES 1 through 4, and providing flow to the RHR heat exchanger, in MODES 4 and 5, and returning it the suction of the OPERABLE CCW pump(s); and

4. The associated train of the Safeguards Logic Sequencer System (SLSS).

c. Two saltwater cooling pump trains, with one train in operation and each pump train comprised of:

1. One saltwater cooling pump, and

2. A flow path capable of taking flow from the intake structure, via the pump, providing flow to both CCW heat exchangers, and returning it to the discharge structure, and

3. The associated train of the SLSS.

<u>ACTION</u>:

A. With the standby CCW pump train inoperable, restore the CCW pump train to OPERABLE status with 72 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN in the following 30 hours.

B. With the standby CCW heat exchanger train inoperable, within 1 hour close the CCW valve at the discharge of the inoperable heat exchanger, open the saltwater cooling pump discharge cross-tie valve, close the saltwater inlet and outlet valves for the inoperable heat exchanger, remove power from the CCW valve at the discharge of the OPERABLE heat exchanger, restore the CCW heat exchanger train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

C. With the standby saltwater cooling pump train inoperable, within 1 hour verify the OPERABILITY of either the auxiliary saltwater pump or two screen wash pumps as an available backup pump, restore the saltwater cooling pump train to OPERABLE status within 72 hours or be in HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

D. With both CCW pump trains or both CCW heat exchanger trains inoperable, restore each train to OPERABLE status within 1 hour or be in HOT STANDBY within the next 6 hours and reduce RCS pressure to less than 600 psig within the following 6 hours. Thereafter, establish backup cooling to both RHR heat exchangers, as soon as practicable, and then proceed to COLD SHUTDOWN.

Delete proposed TS 3.3.8 Status of ECCS Components.

Rename TS 3.3.5 ENGINEERED SAFETY FEATURE (ESF) INSTRUMENTATION and reword as follows:

3.3.5 <u>ENGINEERED SAFETY FEATURE (ESF) INSTRUMENTATION</u>

<u>APPLICABILITY</u>: MODES 1, 2, 3, and 4.

<u>OBJECTIVE</u>: To ensure the availability of the ESF instrumentation [illegible] to initiate the ESF Systems.

<u>SPECIFICATION</u>: The instrumentation channels and trains shown [illegible] shall be OPERABLE with trip setpoints set consistent [illegible] values shown in the Trip Setpoint column of [illegible]

<u>ACTION</u>:

A. With one instrument channel or train inoperable [illegible] ACTION specified in Table 3.5.5-1 and, for [illegible] actuation train, verify that there is no [illegible] function for the actuated system.

B. With an instrument channel trip setpoint less conservative [illegible] than the Allowable Values column of Table 3.5.5-2, declare [illegible] the channel inoperable. With an instrument channel trip [illegible] setpoint less conservative than the Trip Setpoint column [illegible] of Table 3.5.5-2, adjust the trip setpoint consistent [illegible] the Trip Setpoint value.

Change the title of TABLE 3.5.5-1 to: "ESF INSTRUMENTATION"
Change the entries in table 3.5.5-1 to:

FUNCTIONAL UNIT	NO OF CHANNELS	CHANNELS TO TRIP	MINIMUM OPERABLE CHANNELS	APPL MODES	ACTION
1. Containment Isolation					
a) Manual	2	1	2	1,2,3,4	11
b) Containment Pressure-High	3/train	2/train	2/train	1,2,3	9
c) Sequencer Subchannel SIS (Input)	2/seqnr	2/seqnr	2/seqnr	1,2,3,4	8
2. Safety Injection					
a) Manual	2	1	2	1,2,3	11
b) Containment Pressure-High	3/train	2/train	2/train	1,2,3	9*
c) Pressurizer Pressure-Low	3/train	2/train	2/train	1,2,3	9*
d) Pressurizer Pressure Unblock	3/train	2/train	2/train	1,2,3	12
e) Safeguards Logic Sequence	2 trains	N.A.	2 trains	1,2,3	**
3. Loss of Bus/Loss of Power					
a) Bus Undervoltage	1/Bus	1/Bus	1/Bus	All	8
b) Safeguards Logic Sequence	2 trains	N.A.	2 trains	1,2,3	*
4. Purge and Exhaust Isolation (POV-9 & -10, CV-10, -40, -116)					
a) Manual	1	1	1	1,2,3,4	10
b) Containment Radioactivity-High	1	1	1	1,2,3,4	10
5. Containment Spray					
a) Manual	1/train	1	2 trains	1,2,3,4	11
b) Containment Pressure-High-High	3	3	3	1,2,3,4	9*
c) Actuation Logic	2 trains	N.A.	2 trains	1,2,3,4	**

** See actuated systems for ACTION.

Add to Table Notation:

ACTION 12 - With the number of OPERABLE channels one less than the Total Number of Channels, operation may proceed until performance of the next required CHANNEL FUNCTIONAL TEST provided the inoperable channel is placed in the untripped condition within 8 hours.

(Trip Setpoints and Allowable Values should be added to Table 3.5.5-2 for the new channels noted above.)