Technical Specifications Task Force
Improved Standard Technical Specifications Change Traveler

Revise Automatic Depressurization System (ADS) Instrumentation Requirements

NUREGs Affected: ☐ 1430 ☐ 1431 ☐ 1432 ☑ 1433 ☑ 1434 ☐ 2194

Classification: 1) Technical Change
Recommended for CLIIP?: Yes

Correction or Improvement: Correction
NRC Fee Status: Not Exempt

Benefit: Avoids a Plant Shutdown
Changes Marked on ISTS Rev 5.0

PWROG RISD & PA (if applicable): None

See attached.

Revision History

OG Revision 0 Revision Status: Active

Revision Proposed by: BWROG

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 10-Mar-22

Owners Group Comments
Original draft distributed on 1/20/2022. BWROG comments resulted in significant revision to the traveler. Redistributed for BWROG review.

Owners Group Resolution: Approved Date: 28-Mar-22

TSTF Review Information

TSTF Received Date: 05-Apr-22 Date Distributed for Review 05-Apr-22

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 19-Apr-22

Affected Technical Specifications

LCO 3.3.5.1	ECCS Instrumentation	
	Change Description:	Table 3.3.5.1-1
Action 3.3.5.1.G	ECCS Instrumentation	
Action 3.3.5.1.G Bases	ECCS Instrumentation	
Action 3.3.5.1.H	ECCS Instrumentation	
	Change Description:	New Action

Action 3.3.5.1.H Bases	ECCS Instrumentation	
	Change Description:	New Action
Action 3.3.5.1.I	ECCS Instrumentation	
	Change Description:	Action H renamed Action I
Action 3.3.5.1.I Bases	ECCS Instrumentation	
	Change Description:	Action H renamed Action I

1. SUMMARY DESCRIPTION

The proposed change revises the Technical Specification (TS) 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," Actions related to the Automatic Depressurization System (ADS) initiation instrumentation to correct several overly restrictive requirements, and to treat less significant channel inoperabilities consistently. The proposed change modifies NUREG-1433, "Standard Technical Specifications - General Electric BWR/4 Plants," and NUREG-1434, "Standard Technical Specifications, General Electric BWR/6 Plants" (the STS).[1]

2. DETAILED DESCRIPTION

2.1. System Descriptions

The ECCS is designed to cool the reactor core following a loss of coolant accident (LOCA). The typical BWR ECCS has low-pressure and high-pressure subsystems. The low pressure ECCS subsystems are designed to mitigate a large break LOCA where reactor vessel pressure rapidly decreases to the point at which the low-pressure ECCS pumps can inject water. There are two redundant divisions for each of the low-pressure ECCS subsystems. For example, BWR/4 plants typically have two Low Pressure Coolant Injection (LPCI) subsystems and two Core Spray (CS) subsystems. BWR/6 plants typically have one Low Pressure Core Spray (LPCS) subsystem and three Low Pressure Coolant Injection subsystems.

There is a single high-pressure ECCS subsystem. For example, BWR/4 plants have High Pressure Coolant Injection (HPCI), and BWR/6 plants have High Pressure Core Spray (HPCS). The high-pressure ECCS subsystem is designed to mitigate small break LOCAs during which reactor vessel pressure remains higher than the ability of the low-pressure ECCS pumps to inject water.

The ADS provides redundancy for the single high-pressure ECCS subsystem. In the event of a failure of the high-pressure ECCS subsystem, the ADS valves open to release reactor vessel pressure to the suppression pool, rapidly reducing the pressure to the point at which a low-pressure ECCS subsystem can inject water.

The ADS relief valves will not open unless at least one low-pressure ECCS pump is operating to provide a source of coolant once the reactor vessel has been depressurized. Any one of the six BWR/4 low pressure pumps or four BWR/6 low pressure pumps is sufficient to permit automatic depressurization. The ADS instrumentation monitors Reactor Vessel Water Level and Drywell Pressure to initiate ADS. These parameters may indicate a failure of the high-pressure ECCS subsystem if reactor vessel water level does not recover following ECCS initiation.

---

[1] NUREG-1433 is based on the boiling water reactor (BWR)/4 plant design, but is also representative of the BWR/2, BWR/3, and, in some cases, BWR/5 designs. NUREG-1434 is based on the BWR/6 plant design, and is representative in some cases of the BWR/5 design.

ADS timers provide sufficient time for a high-pressure ECCS subsystem to recover reactor vessel water level before opening the ADS valves. There are two ADS initiation timers, one in each of the two ADS trip systems.

There are two ADS trip systems, designated as ADS Trip Systems A and B, with one trip system associated with each division of the low-pressure ECCS subsystems. Either trip system can open all the ADS valves if drywell pressure and reactor vessel water level conditions are satisfied, the ADS initiation timer has completed, and one low-pressure ECCS pump associated with the trip system is operating as indicated by pump discharge pressure.

Two channels of discharge pressure monitoring instrumentation are provided for each low-pressure ECCS pump, and both of a pump's associated channels must actuate to satisfy the ADS trip system logic that indicates pump operation. The BWR/4 Core Spray pump A and LPCI Pumps A and D, and the BWR/6 LPCS pump and LPCI Pump A channels input to the ADS Trip System A logic. The BWR/4 Core Spray Pump B and LPCI pumps B and C, and the BWR/6 LPCI Pumps B and C channels input to the ADS Trip System B logic. Only a single low pressure ECCS pump with two operable channels is required for the associated ADS Trip System to respond to design basis events.

One of the signals required for ADS initiation is Drywell Pressure - High. However, if an event requiring ADS initiation occurs outside the drywell (e.g., main steam line break outside containment), a Drywell Pressure - High signal may not be present. In the BWR/4 design, the Automatic Depressurization System Low Water Level Actuation Timer is used to bypass the Drywell Pressure - High Function after a certain time period has elapsed. In the BWR/6 design, the ADS Bypass Timer (High Drywell Pressure) Function is used for the same purpose. There are four of these timers, two in each of the two ADS trip systems. Neither function is assumed in any accident analysis.

There are also ADS manual initiation push buttons which are not credited in any accident analysis.

2.2. Current Technical Specifications Requirements

BWR/4 (NUREG 1433), TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," Table 3.3.5.1-1 provides the requirements for ADS Trip Systems A and B. The following functions reference Action G:

4. ADS Trip System A
   c. ADS Initiation Timer
   e. Core Spray Pump Discharge Pressure – High
   f. Low Pressure Coolant Injection Pump Pressure – High
   g. ADS Low Water Level Actuation Timer
   h. Manual Actuation

5. ADS Trip System B
   c. ADS Initiation Timer
   e. Core Spray Pump Discharge Pressure – High

f. Low Pressure Coolant Injection Pump Pressure – High
g. ADS Low Water Level Actuation Timer
h. Manual Actuation

BWR/6 (NUREG 1434), TS 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," Table 3.3.5.1-1 provides the requirements for ADS Trip Systems A and B. The following functions reference Action G:

4. ADS Trip System A
   c. ADS Initiation Timer
   e. LPCS Pump Discharge Pressure – High
   f. LPCI Pump A Discharge Pressure – High
   g. ADS Bypass Timer (High Drywell Pressure)
   h. Manual Actuation

5. ADS Trip System B
   c. ADS Initiation Timer
   e. LPCI Pumps B & C Discharge Pressure – High
   f. ADS Bypass Timer (High Drywell Pressure)
   g. Manual Actuation

These functions are required to be operable in Mode 1, and in Modes 2 and 3 with reactor steam dome pressure greater than [150] psig.

Condition G states, "As required by Required Action A.1 and referenced in Table 3.3.5.1-1."

Required Action G.1 states, "Declare ADS valves inoperable," with a Completion Time of "1 hour from discovery of loss of ADS initiation capability in both trip systems."

In the BWR/4 TS, a Note to Required Action G.1 states that the Required Action only applies to Functions 4.c, 4.e, 4.f, 4.g, 5.c, 5.e, 5.f, and 5.g.

In the BWR/6 TS, a Note to Required Action G.1 states that the Required Action only applies to Functions 4.c, 4.e, 4.f, 4.g, 5.c, 5.e, and 5.f.

Required Action G.2 states, "Restore Chanel to OPERABLE status." The Completion Time is 8 days unless either BWR/4 HPCI / BWR/6 HPCS, or the Reactor Core Isolation Cooling (RCIC) system are concurrently inoperable, in which case the Completion Time is halved to 96 hours (4 days). Both Completion Times provide the option to use a Risk Informed Completion Time if that program has been implemented.

If the affected channel is not restored to operable status within the specified Completion Time, Required Action H.1 requires immediately declaring the associated supported features (i.e., all ADS valves) inoperable. TS 3.5.1, "ECCS – Operating," Condition H, which addresses inoperability of two or more ADS valves would apply. The NUREG-1433 Actions require the plant to be in Mode 3 within 12 hours, and to reduce reactor steam pressure to ≤ [150] psig within 36 hours. The NUREG-1434 Actions require entry into Mode 3 within 12 hours.

2.3. Reason for the Proposed Change

Action G is currently referenced from NUREG-1433 Functions 4.c, 4.e, 4.f, 4.g, 4.h, 5.c, 5.e, 5.f, 5.g, and 5.h, and NUREG-1434 Functions 4.c, 4.e, 4.f, 4.g, 4.h, 5.c, 5.e, 5.f, and 5.g. Inoperability of a single channel ultimately, if not restored after a maximum of 8 days, results in entry into Condition H, the immediate declaration of the ADS valves as inoperable, and a plant shutdown. These actions are not consistent with the design. Each ADS trip system requires only two pressure channels associated with one low-pressure ECCS pump to be operable to perform the safety function and a single inoperable channel cannot render the ADS initiation capability inoperable. Required Action G.2 applies when any of the low pressure ECCS pump discharge pressure – high channels is inoperable in either ADS trip system. The Completion Time is based on discovery of loss of ADS initiation capability for one trip system. There is not a loss of ADS initiation capability if there are at least two pump discharge pressure – high channels for one low pressure ECCS pump operable in either ADS Trip System.

Required Actions G.1 and G.2 are overly restrictive when applied to BWR/4 Functions 4.g, 4.h, 5.g, and 5.h (ADS System low water level actuation timer and manual initiation), and BWR/6 Functions 4.g, 4.h, 5.f, and 5.g (ADS Bypass Timer – High Drywell Pressure and manual initiation). These functions are not assumed in any accident or transient analysis. Therefore, there is not a loss of credited ADS initiation capability with these functions inoperable, and it is overly restrictive to declare the ADS valves inoperable when these functions are inoperable.

2.4. Description of the Proposed Change

The proposed change revises the TS 3.3.5.1 Action G and adds a new Action H.

NUREG-1433:

- Table 3.3.5.1-1 is revised to reference Action H instead of Action G for Functions 4.e, 4.f, 4.g, 4.h, 5.e, 5.f, 5.g, and 5.h.
- TS 3.3.5.1, Required Action G.1, is revised to delete the Note.
- TS 3.3.5.1 is revised to add a new Condition H.
  - The Condition states, "As required by Required Action A.1 and referenced in Table 3.3.5.1-1."
  - Required Action H.1states, "Declare ADS valves inoperable when ADS Trip Systems A and B lose initiation capability due to Core Spray/LPCI Discharge Pressure - High channels inoperable," with a Completion Time of "1 hour from discovery of loss of ADS initiation capability in both trip systems." It is modified by a Note that states, "Only applicable for Functions 4.e, 4.f, 5.e, and 5.f."
  - Required Action H.2 states, "Restore Core Spray/LPCI Discharge Pressure – High channels to OPERABLE status to enable ADS Trip System A and B initiation capability," with a Completion Time identical to existing Required Action G.2. It is modified by a note that states, "– "Only applicable for Functions 4.e, 4.f, 5.e, and 5.f."
  - Required Action H.3 states, "Restore channel to OPERABLE status," with a Completion Time of "30 days."
- Current Action H is renamed Action I.

NUREG-1434:

- Table 3.3.5.1-1 is revised to reference Action H instead of Action G for Functions 4.e, 4.f, 4.g, 4.h, 5.e, 5.f, and 5.g.
- TS 3.3.5.1, Required Action G.1, is revised to delete the Note.
- TS 3.3.5.1 is revised to add a new Condition H.
  - The Condition states, "As required by Required Action A.1 and referenced in Table 3.3.5.1-1."
  - Required Action H.1states, "Declare ADS valves inoperable when ADS Trip Systems A and B lose initiation capability due to LPCS/LPCI Discharge Pressure - High channels inoperable," with a Completion Time of "1 hour from discovery of loss of ADS initiation capability in both trip systems." It is modified by a Note that states, "Only applicable for Functions 4.e, 4.f, and 5.e."
  - Required Action H.2 states, "Restore LPCS/LPCI Discharge Pressure – High channels to OPERABLE status to enable ADS Trip System A and B initiation capability," with a Completion Time identical to existing Required Action G.2. It is modified by a note that states, "– "Only applicable for Functions 4.e, 4.f, and 5.e."
  - Required Action H.3 states, "Restore channel to OPERABLE status," with a Completion Time of "30 days."
- Current Action H is renamed Action I.

The TS Bases are revised to reflect these changes, and in particular to define when ADS trip system initiation capability is lost relative to the ECCS Pump Discharge Pressure – High functions. The regulation at Title 10 of the Code of Federal Regulations (10 CFR), Part 50.36, states, "A summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications." A licensee may make changes to the TS Bases without prior NRC review and approval in accordance with the Technical Specifications Bases Control Program. The proposed TS Bases changes are consistent with the proposed TS changes and provide the purpose for each requirement in the specification consistent with the Commission's Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 22, 1993 (58 FR 39132). Therefore, the Bases changes are provided for information and approval of the Bases is not requested.

A model application is attached. The model may be used by licensees desiring to adopt the traveler following NRC approval.

3. TECHNICAL EVALUATION

The ADS provides redundancy for the single high-pressure ECCS subsystem. In the event of failure of the high-pressure ECCS subsystem, the ADS valves open to rapidly reduce the reactor vessel pressure to the point at which a low-pressure ECCS pump can inject water. One low-pressure ECCS subsystem is needed as a source of coolant once ADS has depressurized the reactor vessel.

There are two ADS trip systems, designated as ADS Trip Systems A and B. A single ADS trip system can initiate opening of the ADS valves constituting "ADS initiation capability." Thus, "ADS initiation capability" is only lost when both trip systems are unable to initiate opening of

the ADS valves. Either trip system can open the ADS relief valves if drywell pressure and reactor vessel water level conditions are satisfied, the ADS initiation timers have completed, and one low-pressure ECCS pump is operating as indicated by pump discharge pressure. Indication that one low-pressure ECCS pump is operating is indicated by two channels of discharge pressure. Both channels must indicate the necessary discharge pressure for the pump to be recognized as operating. Therefore, ADS initiation capability is only lost if one or more pump discharge pressure sensors are inoperable in all low-pressure ECCS pumps in both ADS trip systems.

The proposed change revises the TS Required Actions to recognize this diversity and redundancy and the conditions necessary to lose ADS initiation capability.

Table 3.3.5.1-1 is revised such that Action G is only referenced from Function 4.c and 5.c, ADS Initiation Timer. If this Function is inoperable, the ADS initiation function is unavailable. Therefore, the ADS valves must be declared inoperable if both ADS initiation timers are inoperable. If only one ADS initiation timer is inoperable, the existing Required Action and Completion Time for restoring the inoperable function is unchanged. With the changes to Table 3.3.5.1-1, the existing Required Action G.1 Note is no longer needed, and the Note is deleted.

NUREG-1433 Table 3.3.5.1-1 is revised to reference Condition H from Functions:

4. ADS Trip System A
   - e. Core Spray Pump Discharge Pressure – High
   - f. Low Pressure Coolant Injection Pump Pressure – High
   - g. ADS Low Water Level Actuation Timer
   - h. Manual Actuation
5. ADS Trip System B
   - e. Core Spray Pump Discharge Pressure – High
   - f. Low Pressure Coolant Injection Pump Pressure – High
   - g. ADS Low Water Level Actuation Timer
   - h. Manual Actuation

NUREG-1434 Table 3.3.5.1-1 is revised to reference Condition H from Functions:

4. ADS Trip System A
   - e. LPCS Pump Discharge Pressure – High
   - f. LPCI Pump A Discharge Pressure – High
   - g. ADS Bypass Timer (High Drywell Pressure)
   - h. Manual Actuation
5. ADS Trip System B
   - e. LPCI Pumps B & C Discharge Pressure – High
   - f. ADS Bypass Timer (High Drywell Pressure)
   - g. Manual Actuation

Required Action H.1 is applicable to NUREG-1433 Functions 4.e, 4.f, 5.e, and 5.f, and NUREG-1434 Functions 4.e, 4.f, and 5.e, which are the low pressure pump discharge high pressure signals. These signals indicate that the associated low pressure pump is operating. Any one low

pressure pump with two operable pump discharge pressure high signals can initiate ADS. Therefore, Required Action H.1 states, "Declare ADS valves inoperable when ADS Trip Systems A and B lose initiation capability due to Core Spray/LPCI Discharge Pressure - High channels inoperable," with the details specified in the Bases. The Completion Time is "1 hour from discovery of loss of ADS initiation capability in both trip systems." Therefore, if there are no low pressure ECCS pumps with two operable discharge pressure high channels, an ADS initiation signal cannot be provided from Trip System A or B and the ADS valves must be declared inoperable.

Required Action H.2 is also applicable to NUREG-1433 Functions 4.e, 4.f, 5.e, and 5.f, and NUREG-1434 Functions 4.e, 4.f, and 5.e, the low pressure pump discharge high pressure signals. Required Action H.2 is applicable since the loss of ADS initiation capability is limited to a single trip system and requires restoring all inoperable Discharge Pressure - High channels to operable status within 8 days if HPCI or RCIC is operable, or 4 days if they are not operable. Both Completion Times have the option to apply a Risk Informed Completion Time if approved for the plant. These Completion Times are the same as current Required Action G.2.

Required Action H.3 is applicable to all Functions that reference Condition H, and is the only Required Action applicable to NUREG-1433 Functions 4.g and 5.g, "Automatic Depressurization System Low Water Level Actuation Timer," and 4.h and 5.h, "Manual Initiation," and NUREG-1434 Functions 4.g and 5.f, "ADS Bypass Timer (High Drywell Pressure)," and 4.h and 5.g, "Manual Initiation." These functions are not credited in any accident analysis and, as a result, an extended Completion Time of 30 days to restore the Function to operable status is appropriate.

Renumbering the default Action H as Action I is an administrative change to reflect the addition of new Action H, as is the inclusion of new Action H in the scope of the Action I Condition.

4. REGULATORY EVALUATION

The regulation at Title 10 of the Code of Federal Regulations (10 CFR) Section 50.36(b) requires:

> Each license authorizing operation of a … utilization facility … will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 ["Contents of applications; technical information"]. The Commission may include such additional technical specifications as the Commission finds appropriate.

Per 10 CFR 50.90, whenever a holder of a license desires to amend the license, application for an amendment must be filed with the Commission, fully describing the changes desired, and following as far as applicable, the form prescribed for original applications.

Per 10 CFR 50.92(a), in determining whether an amendment to a license will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses to the extent applicable and appropriate.

Section IV, "The Commission Policy," of the "Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors" (58 FR 39132), dated July 22, 1993, states in part that improved STS have been developed and will be maintained for each NSSS owners group. The Commission Policy encourages licensees to use the improved STS as the basis for plant-specific Technical Specifications." The industry's proposal of travelers and the NRC's approval of travelers is the method used to maintain the improved STS as described in the Commission's Policy. Following NRC approval, licensees adopt travelers into their plant-specific technical specifications following the requirements of 10 CFR 50.90. Therefore, the traveler process facilitates the Commission's policy while satisfying the requirements of the applicable regulations.

The regulation at 10 CFR 50.36(a)(1) also requires the application to include a "summary statement of the bases or reasons for such specifications, other than those covering administrative controls.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) the approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

5. REFERENCES

1. None

Model Application

[DATE] 10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

DOCKET NO.PLANT NAME
50-[xxx]
SUBJECT: Application to Revise Technical Specifications to Adopt TSTF-592, "Revise Automatic Depressurization System (ADS) Instrumentation Requirements"

Pursuant to 10 CFR 50.90, [LICENSEE] is submitting a request for an amendment to the Technical Specifications (TS) for [PLANT NAME, UNIT NOS.].

[LICENSEE] requests adoption of TSTF-592, "Revise Automatic Depressurization System (ADS) Instrumentation Requirements." The Technical Specifications (TS) 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," Actions are revised to reflect the plant design and the safety significance of inoperable ADS monitoring channels.

The enclosure provides a description and assessment of the proposed changes. Attachment 1 provides the existing TS pages marked to show the proposed changes. Attachment 2 provides revised (clean) TS pages. Attachment 3 provides the existing TS Bases pages marked to show revised text associated with the proposed TS changes and is provided for information only.

[[LICENSEE] requests that the amendment be reviewed under the Consolidated Line Item Improvement Process (CLIIP).] Approval of the proposed amendment is requested within 6 months of acceptance. Once approved, the amendment shall be implemented within [ ] days.

There are no regulatory commitments made in this submittal.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated [STATE] Official.

[In accordance with 10 CFR 50.30(b), a license amendment request must be executed in a signed original under oath or affirmation. This can be accomplished by attaching a notarized affidavit confirming the signature authority of the signatory, or by including the following statement in the cover letter: "I declare under penalty of perjury that the foregoing is true and correct. Executed on (date)." The alternative statement is pursuant to 28 USC 1746. It does not require notarization.]

If you should have any questions regarding this submittal, please contact [NAME, TELEPHONE NUMBER].

Sincerely,

[Name, Title]

Enclosure: Description and Assessment

Attachments:
1. Proposed Technical Specification Changes (Mark-Up)
2. Revised Technical Specification Pages
3. Proposed Technical Specification Bases Changes (Mark-Up) – For Information Only

[The attachments are to be provided by the licensee and are not included in the model application.]

cc: NRC Project Manager
NRC Regional Office
NRC Resident Inspector
State Contact

ENCLOSURE

DESCRIPTION AND ASSESSMENT

1.0 DESCRIPTION

[LICENSEE] requests adoption of TSTF-592, "Revise Automatic Depressurization System (ADS) Instrumentation Requirements." The Technical Specifications (TS) 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," Actions are revised to reflect the plant design and the safety significance of inoperable ADS monitoring channels.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

[LICENSEE] has reviewed the safety evaluation for TSTF-592 provided to the Technical Specifications Task Force in a letter dated [DATE]. This review included a review of the NRC staff's evaluation, as well as the information provided in TSTF-592. [LICENSEE] has concluded that the justifications presented in TSTF-592 and the safety evaluation prepared by the NRC staff are applicable to [PLANT, UNIT NOS.] and justify this amendment for the incorporation of the changes to the [PLANT] TS.

[Discuss differences, if any, between the plant design and the plant design assumed in the Standard Technical Specifications that are related to the proposed change and why those differences do not affect the applicability of the TSTF-592 safety evaluation to the plant.]

2.2 Optional Changes and Variations

[LICENSEE is not proposing any variations from the TS changes described in TSTF-592 or the applicable parts of the NRC staff's safety evaluation dated [DATE].] [LICENSEE is proposing the following variations from the TS changes described in TSTF-592 or the applicable parts of the NRC staff's safety evaluation: describe the variations]

[The [PLANT] TS utilize different [numbering][and][titles] than the Standard Technical Specifications on which TSTF-592 was based. Specifically, [describe differences between the plant-specific TS numbering and/or titles and the TSTF-592 numbering and titles.] These differences are administrative and do not affect the applicability of TSTF-592 to the [PLANT] TS.]

[The [PLANT] TS contain requirements that differ from the Standard Technical Specifications on which TSTF-592 was based but are encompassed in the TSTF-592 justification. Describe differences and why TSTF-592 is still applicable.]

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

[LICENSEE] requests adoption of TSTF-592, "Revise Automatic Depressurization System (ADS) Instrumentation Requirements." The Technical Specifications (TS) 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," Actions are revised to reflect the plant design and the safety significance of inoperable ADS monitoring channels.

[LICENSEE] has evaluated if a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   The proposed change revises the TS Actions applicable when one or more ADS monitoring channels are inoperable to be consistent with the plant design and the safety significance of the condition. The actions taken when an ADS monitoring channel is inoperable are not an initiator of any accident previously evaluated. The proposed actions implement the appropriate actions to be taken if automatic initiation of ADS is not available (i.e., declaring the ADS valves inoperable), which ensures the equipment assumed to be available to mitigate the consequences of accidents previously evaluated is available or the plant is placed in a safe condition.

   Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   The proposed change revises the TS Actions applicable when one or more ADS monitoring channels are inoperable to be consistent with the plant design and the safety significance of the condition. The proposed change does not affect the design function or operation of the ADS or the ADS initiation instrumentation. The proposed change does not create a new or different type of failure for the ADS or the ADS initiation instrumentation due to credible new failure mechanisms, malfunctions, or accident initiators not currently considered in the design and licensing bases.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No

   The proposed change revises the TS Actions applicable when one or more ADS monitoring channels are inoperable to be consistent with the plant design and the safety significance of the condition. The proposed change does not affect any controlling values of parameters established in the design or licensing basis, and does not alter any design basis or safety limit.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, [LICENSEE] concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

3.2 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL EVALUATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

Technical Specifications and Bases Changes

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	F.2 Place channel in trip.	96 hours from discovery of inoperable channel concurrent with HPCI or reactor core isolation cooling (RCIC) inoperable [OR In accordance with the Risk Informed Completion Time Program] AND 8 days [OR In accordance with the Risk Informed Completion Time Program]
G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1 ~~NOTE Only applicable for Functions 4.c, 4.e, 4.f, 4.g, 5.c, 5.e, 5.f, and 5.g.~~ Declare ADS valves inoperable. AND	1 hour from discovery of loss of ADS initiation capability in both trip systems

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	G.2 Restore channel to OPERABLE status.	96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable [OR In accordance with the Risk Informed Completion Time Program] AND 8 days [OR In accordance with the Risk Informed Completion Time Program]
H. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	**H.1 ----------NOTE---------- Only applicable for Functions 4.e, 4.f, 5.e, and 5.f. ---------- Declare ADS valves inoperable when ADS Trip Systems A and B lose initiation capability due to Core Spray/LPCI Discharge Pressure - High channels inoperable. AND H.2 ----------NOTE---------- Only applicable for Functions 4.e, 4.f, 5.e, and 5.f.**	**1 hour from discovery of loss of ADS initiation capability in both trip systems**

		Restore Core Spray/LPCI Discharge Pressure – High channels to OPERABLE status to enable ADS Trip System A and B initiation capability.	**96 hours from discovery of inoperable channel concurrent with HPCI or RCIC inoperable** **[OR** **In accordance with the Risk Informed Completion Time Program]** **AND** **8 days** **[OR** **In accordance with the Risk Informed Completion Time Program]**
	AND		
	H.3	**Restore all channels to OPERABLE status.**	**30 days**
~~I~~**H**. Required Action and associated Completion Time of Condition B, C, D, E, F, **G** or ~~G~~**H** not met.	~~I~~**H**.1	Declare associated supported feature(s) inoperable.	Immediately

Table 3.3.5.1-1 (page 6 of 8)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. ADS Trip System A					
c. Automatic Depressurization System Initiation Timer	1, 2[e], 3[e]	[1]	G	[SR 3.3.5.1.5] SR 3.3.5.1.6	≤ [120] seconds
d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	1, 2[e], 3[e]	[1]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][b][c] SR 3.3.5.1.5[b][c] SR 3.3.5.1.6	≥ [10] inches
e. Core Spray Pump Discharge Pressure - High	1, 2[e], 3[e]	[2]	~~H~~G	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3] SR 3.3.5.1.5 SR 3.3.5.1.6	≥ [137] psig and ≤ [ ] psig
f. Low Pressure Coolant Injection Pump Discharge Pressure - High	1, 2[e], 3[e]	[4]	~~H~~G	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3] SR 3.3.5.1.5 SR 3.3.5.1.6	≥ [112] psig and ≤ [ ] psig
g. Automatic Depressurization System Low Water Level Actuation Timer	1, 2[e], 3[e]	[2]	~~H~~G	[SR 3.3.5.1.5] SR 3.3.5.1.6	≤ [13] minutes
[h. Manual Initiation	1, 2[e], 3[e]	[2]	~~H~~G	SR 3.3.5.1.6	N/A]

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (Nominal Trip Setpoint) to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

(e) With reactor steam dome pressure > [150] psig.

Table 3.3.5.1-1 (page 7 of 8)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip System B					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1, 2[(e)], 3[(e)]	[2]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≥ [-113] inches
b. Drywell Pressure - High	1, 2[(e)], 3[(e)]	[2]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≤ [1.92] psig
c. Automatic Depressurization System Initiation Timer	1, 2[(e)], 3[(e)]	[1]	G	[SR 3.3.5.1.5] SR 3.3.5.1.6	≤ [120] seconds
d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	1, 2[(e)], 3[(e)]	[1]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≥ [10] inches
e. Core Spray Pump Discharge Pressure - High	1, 2[(e)], 3[(e)]	[2]	~~H~~G	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3] SR 3.3.5.1.5 SR 3.3.5.1.6	≥ [137] psig and ≤ [ ] psig

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (Nominal Trip Setpoint) to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

(e) With reactor steam dome pressure > [150] psig.

Table 3.3.5.1-1 (page 8 of 8)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip System B					
f. Low Pressure Coolant Injection Pump Discharge Pressure - High	1, 2[(e)], 3[(e)]	[4]	~~H~~G	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3] SR 3.3.5.1.5 SR 3.3.5.1.6	≥ [112] psig and ≤ [ ] psig
g. Automatic Depressurization System Low Water Level Actuation Timer	1, 2[(e)], 3[(e)]	[2]	~~H~~G	[SR 3.3.5.1.5] SR 3.3.5.1.6	≥ [13] minutes
[h. Manual Initiation	1, 2[(e)], 3[(e)]	[2]	~~H~~G	SR 3.3.5.1.6	NA]

(e) With reactor steam dome pressure > [150] psig.

BASES

ACTIONS (continued)

from 8 days to 96 hours [or in accordance with the Risk Informed Completion Time Program], the 96 hours begins upon discovery of HPCI or RCIC inoperability. However, the total time for an inoperable, untripped channel cannot exceed 8 days. If the status of HPCI or RCIC changes such that the Completion Time changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable, untripped channel. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action F.2. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in an initiation), Condition H must be entered and its Required Action taken.

G.1 and G.2

Required Action G.1 is intended to ensure that appropriate actions are taken if ~~multiple, inoperable channels within similar ADS trip system Functions result in automatic initiation capability being lost for the ADS. Automatic initiation capability is lost if either (a)~~ one Function 4.c channel and one Function 5.c channel are inoperable~~, (b) a combination of Function 4.e, 4.f, 5.e, and 5.f channels are inoperable such that channels associated with five or more low pressure ECCS pumps are inoperable, or (c) one or more Function 4.g channels and one or more Function 5.g channels are inoperable~~.

In this situation (loss of automatic initiation capability), the 96 hour or 8 day allowance, as applicable, of Required Action G.2 is not appropriate, and all ADS valves must be declared inoperable within 1 hour after discovery of loss of ADS initiation capability **in both trip systems**. ~~The Note to Required Action G.1 states that Required Action G.1 is only applicable for Functions 4.c, 4.e, 4.f, 4.g, 5.c, 5.e, 5.f, and 5.g. Required Action G.1 is not applicable to Functions 4.h and 5.h (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of manual initiation capability for 96 hours or 8 days (as allowed by Required Action G.2) is allowed.~~

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the

allowed outage time "clock." For Required Action G.1, the Completion Time only begins upon discovery that the ADS cannot be automatically

BASES

ACTIONS (continued)

initiated due to inoperable channels within similar ADS trip system Functions as described in the paragraph above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 8 days has been shown to be acceptable (Ref. 6) to permit restoration of any inoperable channel to OPERABLE status if both HPCI and RCIC are OPERABLE (Required Action G.2). [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If either HPCI or RCIC is inoperable, the time shortens to 96 hours [or in accordance with the Risk Informed Completion Time Program]. If the status of HPCI or RCIC changes such that the Completion Time changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCI or RCIC inoperability. However, the total time for an inoperable channel cannot exceed 8 days. If the status of HPCI or RCIC changes such that the Completion Time changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable channel. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, Condition ~~I~~**H** must be entered and its Required Action taken. The Required Actions do not allow placing the channel in trip since this action would not necessarily result in a safe state for the channel in all events.

H.1, H.2, and H.3

Required Action H.1 is intended to ensure that appropriate actions are taken if a combination of Function 4.e, 4.f, 5.e, and 5.f channels are inoperable such that neither ADS Trip System A or B has two Operable Discharge Pressure – High channels in one low pressure ECCS pump.

In this situation (loss of automatic initiation capability), the 96 hour or 8 day allowance, as applicable, of Required Action H.2 is not appropriate, and all ADS valves must be declared inoperable within 1 hour after discovery of loss of ADS initiation capability. The Note to Required Action H.1 states that Required Action H.1 is only applicable for Functions 4.e, 4.f, 5.e, and 5.f. Required Action H.1 is not applicable to Functions 4.g, 4.h, 5.g, and 5.h (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the ADS System Low Water Level Actuation Timer and Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of

these functions for 30 days (as allowed by Required Action H.3) is allowed.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action H.1, the Completion Time only begins upon discovery that the ADS cannot be automatically initiated due to inoperable channels within similar ADS trip system Functions as described in the paragraph above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration of channels.

Required Action H.2 is intended to ensure that appropriate actions are taken if there are not two Operable Discharge Pressure – High channels in one low pressure ECCS pump within one ADS trip system, which results in automatic initiation capability being lost for that ADS trip system. Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 8 days has been shown to be acceptable (Ref. 6) to permit restoration of two inoperable Discharge Pressure – High channels associated with one low pressure ECCS Pump to OPERABLE status if both HPCI and RCIC are OPERABLE (Required Action H.2). [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If either HPCI or RCIC is inoperable, the time shortens to 96 hours [or in accordance with the Risk Informed Completion Time Program]. If the status of HPCI or RCIC changes such that the Completion Time changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCI or RCIC inoperability. However, the total time to restore the required inoperable channels to OPERABLE status cannot exceed 8 days. If the status of HPCI or RCIC changes such that the Completion Time changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable channel. If the minimum required inoperable channels cannot be restored to OPERABLE status within the allowable out of service time, Condition I must be entered and its Required Action taken. The Required Actions do not allow placing the channel in trip since this action would not necessarily result in a safe state for the channel in all events. The Note to Required Action H.2 states that Required Action H.2 is only applicable for Functions 4.e, 4.f, 5.e, and 5.f. Required Action H.2 is not applicable to Functions 4.g, 4.h, 5.g, and 5.h (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the ADS System Low Water Level Actuation Timer and Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of these functions for 30 days (as allowed by Required Action H.3) is allowed.

Required Action H.3 is intended to ensure that appropriate actions are taken if inoperable channels within one ADS trip system do not result in loss of automatic initiation capability to respond to a design basis event, but require restoration per Table 3.3.5.1-1. This applies to Functions 4.e, 4.f, 4.g, 4.h, 5.e, 5.f, 5.g, and 5.h.

~~I~~**H**~~.~~.1

With any Required Action and associated Completion Time not met, the associated feature(s) may be incapable of performing the intended function, and the supported feature(s) **(Core Spray, LPCI, HPCI, or ADS)** associated with inoperable untripped channels must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

----------REVIEWER'S NOTE----------
Certain Frequencies are based on approved topical reports. In order for a licensee to use these Frequencies, the licensee must justify the Frequencies as required by the staff SER for the topical report.

----------REVIEWER'S NOTE----------
Notes b and c are applied to the setpoint verification Surveillances for each ECCS Instrumentation Functions in Table 3.3.5.1-1 unless one or more of the following exclusions apply:

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	F.2 Place channel in trip.	96 hours [or in accordance with the Risk Informed Completion Time Program] from discovery of inoperable channel concurrent with HPCS or reactor core isolation cooling (RCIC) inoperable AND 8 days [OR In accordance with the Risk Informed Completion Time Program]
G. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1 ~~NOTE Only applicable for Functions 4.c, 4.e, 4.f, 4.g, 5.c, 5.e, and 5.f.~~ Declare ADS valves inoperable. AND	1 hour from discovery of loss of ADS initiation capability in both trip systems

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	G.2 Restore channel to OPERABLE status.	96 hours [or in accordance with the Risk Informed Completion Time Program] from discovery of inoperable channel concurrent with HPCS or RCIC inoperable AND 8 days [OR In accordance with the Risk Informed Completion Time Program]
H. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	**H.1 ----------NOTE---------- Only applicable for Functions 4.e, 4.f, and 5.e. ---------- Declare ADS valves inoperable when ADS Trip Systems A and B lose initiation capability due to LPCS/LPCI Discharge Pressure - High channels inoperable. AND H.2 ----------NOTE---------- Only applicable for Functions 4.e, 4.f, and 5.e. ----------**	**1 hour from discovery of loss of ADS initiation capability in both trip systems**

		Restore LPCS/LPCI Discharge Pressure – High channels to OPERABLE status to enable ADS Trip System A and B initiation capability.	**96 hours [or in accordance with the Risk Informed Completion Time Program] from discovery of inoperable channel concurrent with HPCS or RCIC inoperable** **AND** **8 days** **[OR** **In accordance with the Risk Informed Completion Time Program]**
	AND		
	H.3	**Restore all channels to OPERABLE status.**	**30 days**
~~I~~**H**. Required Action and associated Completion Time of Condition B, C, D, E, F, **G** or ~~G~~**H** not met.	~~I~~**H**.1	Declare associated supported feature(s) inoperable.	Immediately

Table 3.3.5.1-1 (page 6 of 8)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. HPCS System					
[h. Manual Initiation	1, 2, 3	[1]	C	SR 3.3.5.1.6	NA]
4. ADS Trip System A					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1, 2[(e)], 3[(e)]	[2]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≥ [-152.5] inches
b. Drywell Pressure - High	1, 2[(e)], 3[(e)]	[2]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≤ [1.44] psig
c. ADS Initiation Timer	1, 2[(e)], 3[(e)]	[1]	G	SR 3.3.5.1.2 [SR 3.3.5.1.4] SR 3.3.5.1.6	≤ [117] seconds
d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	1, 2[(e)], 3[(e)]	[1]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≥ [10.8] inches
e. LPCS Pump Discharge Pressure - High	1, 2[(e)], 3[(e)]	[2]	~~HG~~	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≥ [125] psig and ≤ [165] psig

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures [Nominal Trip Setpoint] to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

(e) With reactor steam dome pressure > [150] psig.

Table 3.3.5.1-1 (page 7 of 8)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4. ADS Trip System A					
f. LPCI Pump A Discharge Pressure - High	1, 2[(e)], 3[(e)]	[2]	~~H~~G	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3] SR 3.3.5.1.5 SR 3.3.5.1.6	≥ [115] psig and ≤ [135] psig
g. [ADS Bypass Timer (High Drywell Pressure)]	1, 2[(e)], 3[(e)]	[2]	~~H~~G	SR 3.3.5.1.2 [SR 3.3.5.1.4] SR 3.3.5.1.6	≤ [9.4] minutes
[h. Manual Initiation	1, 2[(e)], 3[(e)]	[2]	~~H~~G	SR 3.3.5.1.6	NA]
5. ADS Trip System B					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1, 2[(e)], 3[(e)]	[2]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≥ [-152.5] inches
b. Drywell Pressure - High	1, 2[(e)], 3[(e)]	[2]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3][(b)(c)] SR 3.3.5.1.5[(b)(c)] SR 3.3.5.1.6	≤ [1.44] psig
c. ADS Initiation Timer	1, 2[(e)], 3[(e)]	[1]	G	SR 3.3.5.1.2 [SR 3.3.5.1.4] SR 3.3.5.1.6	≤ [117] seconds

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures [Nominal Trip Setpoint] to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

(e) With reactor steam dome pressure > [150] psig.

Table 3.3.5.1-1 (page 8 of 8)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip System B					
d. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	1, 2(e), 3(e)	[1]	F	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3](b)(c) SR 3.3.5.1.5(b)(c) SR 3.3.5.1.6	≥ [10.8] inches
e. LPCI Pumps B & C Discharge Pressure - High	1, 2(e), 3(e)	[4 in 2 Pumps]	~~H~~G	SR 3.3.5.1.1 SR 3.3.5.1.2 [SR 3.3.5.1.3] SR 3.3.5.1.5 SR 3.3.5.1.6	≥ [115] psig and ≤ [135] psig
f. [ADS Bypass Timer (High Drywell Pressure)]	1, 2(e), 3(e)	[2]	~~H~~G	SR 3.3.5.1.2 [SR 3.3.5.1.4] SR 3.3.5.1.6	≤ [9.4] minutes
[g. Manual Initiation	1, 2(e), 3(e)	[2]	~~H~~G	SR 3.3.5.1.6	NA]

(b) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(c) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Limiting Trip Setpoint (LTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures [Nominal Trip Setpoint] to confirm channel performance. The LTSP and the methodologies used to determine the as-found and as-left tolerances are specified in [insert the facility FSAR reference or the name of any document incorporated into the facility FSAR by reference].

(e) With reactor steam dome pressure > [150] psig.

BASES

ACTIONS (continued)

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action F.1, the Completion Time only begins upon discovery that the ADS cannot be automatically initiated due to inoperable, untripped channels within similar ADS trip system Functions as described in the paragraph above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 8 days has been shown to be acceptable (Ref. 5) to permit restoration of any inoperable channel to OPERABLE status if both HPCS and RCIC are OPERABLE. [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If either HPCS or RCIC is inoperable, the time is shortened to 96 hours. [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If the status of HPCS or RCIC changes such that the Completion Time changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCS or RCIC inoperability. However, total time for an inoperable, untripped channel cannot exceed 8 days. If the status of HPCS or RCIC changes such that the Completion Time changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable, untripped channel. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, the channel must be placed in the tripped condition per Required Action F.2. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in an initiation), Condition H must be entered and its Required Action taken.

G.1 and G.2

Required Action G.1 is intended to ensure that appropriate actions are taken if ~~multiple, inoperable channels within similar ADS trip system Functions result in automatic initiation capability being lost for the ADS. Automatic initiation capability is lost if either (a)~~ one Function 4.c channel and one Function 5.c channel are inoperable~~, (b) one or more channels Functions 4.e channels and one or more Function 5.e channels are~~

BASES

ACTIONS (continued)

~~inoperable, (c) one or more Function 4.f channels and one or more Function 5.e channels are inoperable, or (d) one or more Function 4.g channels and one or more Function 5.f channels are inoperable~~.

In this situation (loss of automatic initiation capability), the 96 hour or 8 day allowance, as applicable, of Required Action G.2 is not appropriate, and all ADS valves must be declared inoperable within 1 hour after discovery of loss of ADS initiation capability in both trip systems. ~~The Note to Required Action G.1 states that Required Action G.1 is only applicable for Functions 4.c, 4.e, 4.f, 4.g, 5.c, 5.e, and 5.f. Required Action G.1 is not applicable to Functions 4.h and 5.g (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of manual initiation capability for 96 hours or 8 days (as allowed by Required Action G.2) is allowed.~~

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action G.1, the Completion Time only begins upon discovery that the ADS cannot be automatically initiated due to inoperable channels within similar ADS trip system Functions, as described in the paragraph above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 8 days has been shown to be acceptable (Ref. 5) to permit restoration to OPERABLE status if both HPCS and RCIC are OPERABLE (Required Action G.2). [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If either HPCS or RCIC is inoperable, the time is reduced to 96 hours. [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If the status of HCPS or RCIC changes such that the Completion Time changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCS or RCIC inoperability. However, total time for an inoperable channel cannot exceed 8 days. If the status of HPCS or RCIC changes such that the Completion Time changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable channel. If the inoperable channel cannot be restored to OPERABLE status within the allowable out of service time, Condition ~~IH~~ must be

BASES

ACTIONS (continued)

entered and its Required Action taken. The Required Actions do not allow placing the channel in trip since this action would not necessarily result in a safe state for the channel in all events.

H.1, H.2, and H.3

Required Action H.1 is intended to ensure that appropriate actions are taken if one or more Functions 4.e and 4.f channels, and one or more Function 5.e channels are inoperable.

In this situation (loss of automatic initiation capability), the 96 hour or 8 day allowance, as applicable, of Required Action H.2 is not appropriate, and all ADS valves must be declared inoperable within 1 hour after discovery of loss of ADS initiation capability in both trip systems. The Note to Required Action H.1 states that Required Action H.1 is only applicable for Functions 4.e, 4.f, and 5.e. Required Action H.1 is not applicable to Functions 4.g, 4.h, 5.f, and 5.g (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the ADS Bypass Timer – High Drywell Pressure and Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of these functions for 30 days (as allowed by Required Action H.3) is allowed.

The Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." For Required Action H.1, the Completion Time only begins upon discovery that the ADS cannot be automatically initiated due to inoperable channels within similar ADS trip system Functions, as described in the paragraph above. The 1 hour Completion Time from discovery of loss of initiation capability is acceptable because it minimizes risk while allowing time for restoration or tripping of channels.

Required Action H.2 is intended to ensure that appropriate actions are taken if there are not two Operable Discharge Pressure – High channels in one low pressure ECCS pump within one ADS trip system, which results in automatic initiation capability being lost for that ADS trip system. Because of the diversity of sensors available to provide initiation signals and the redundancy of the ECCS design, an allowable out of service time of 8 days has been shown to be acceptable (Ref. 5) to permit restoration of two inoperable Discharge Pressure – High channels associated with one low pressure ECCS Pump to OPERABLE status if both HPCS and RCIC are OPERABLE

(Required Action H.2). [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If either HPCS or RCIC is inoperable, the time is reduced to 96 hours. [Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.] If the status of HCPS or RCIC changes such that the Completion Time changes from 8 days to 96 hours, the 96 hours begins upon discovery of HPCS or RCIC inoperability. However, the total time to restore the required inoperable channels to OPERABLE status cannot exceed 8 days. If the status of HPCS or RCIC changes such that the Completion Time changes from 96 hours to 8 days, the "time zero" for beginning the 8 day "clock" begins upon discovery of the inoperable channel. If the minimum required inoperable channels cannot be restored to OPERABLE status within the allowable out of service time, Condition I must be entered and its Required Action taken. The Required Actions do not allow placing the channel in trip since this action would not necessarily result in a safe state for the channel in all events. The Note to Required Action H.2 states that Required Action H.2 is only applicable for Functions 4.e, 4.f, and 5.e. Required Action H.2 is not applicable to Functions 4.g, 4.h, 5.f, and 5.g (which also require entry into this Condition if a channel in these Functions is inoperable), since they are the ADS Bypass Timer – High Drywell Pressure and Manual Initiation Functions and are not assumed in any accident or transient analysis. Thus, a total loss of these functions for 30 days (as allowed by Required Action H.3) is allowed.

Required Action H.3 is intended to ensure that appropriate actions are taken if inoperable channels within one ADS trip system do not result in loss of automatic initiation capability to respond to a design basis event, but require restoration per Table 3.3.5.1-1. This applies to Functions 4.e, 4.f, 4.g, 4.h, 5.e, 5.f, and 5.g.

~~H~~.1

With any Required Action and associated Completion Time not met, the associated feature(s) **(LPCS, LPCI, HPCS, or ADS)** may be incapable of performing the intended function and the supported feature(s) associated with the inoperable untripped channels must be declared inoperable immediately.

SURVEILLANCE REQUIREMENTS

----------REVIEWER'S NOTE----------
Certain Frequencies are based on approved topical reports. In order for a licensee to use these Frequencies, the licensee must justify the Frequencies as required by the staff SER for the topical report.

----------REVIEWER'S NOTE----------