Industry/TSTF Standard Technical Specification Change Traveler

Revise 3.5.1 for one LCPI pump inoperable in each of two ECCS divisions

Classification: 3) Improve Specifications

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

Description:

Revise ISTS 3.5.1 to include in Condition A, one LPCI pump inoperable in each of the two ECCS divisions.

Justification:

The standard BWR configuration consists of 2 LPCI pumps in each of two LPCI (ECCS injection) subsystems, for a total of 4 LPCI pumps. ISTS 3.5.1 Condition A allows one low pressure ECCS injection/spray subsystem (e.g., one or both LPCI pumps in one subsystem; total of 2 LPCI pumps) to be inoperable for 7 days. The proposed change to add a new entry into Condition A would also allow two inoperable LPCI pumps (one in each of the subsystems) for 7 days.

When compared to plant operation in Condition A (one LPCI subsystem inoperable), the proposed addition to Condition A with one LPCI pump inoperable in both subsystems, reflects an enhanced reliability of at least one LPCI pump being available for post-LOCA injection. With one subsystem inoperable the LOCA can eliminate the availability of the remaining subsystem for injection; while a LOCA during operation with only one LPCI pump in each ECCS division will only remove the availability of one of the two remaining LPCI pumps. Additionally, during an event that does not impact LPCI availability and requires LPCI injection, one pump in each LPCI subsystem provides more injection flow than two pumps in a single subsystem.

This change was approved in the Susquehanna and Peach Bottom ITS.

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Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by: BWROG

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 11-Feb-98

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 11-Feb-98

TSTF Review Information

TSTF Received Date: 11-Feb-98 Date Distributed for Review 28-May-98

OG Review Completed: ☐ BWOG ☐ WOG ☐ CEOG ☑ BWROG

TSTF Comments:

7/10/98 - BWROG to reevaluate and discuss at next meeting.

TSTF Resolution: Superceeded Date: 28-May-98

OG Revision 0 **Revision Status: Closed**

OG Revision 1 **Revision Status: Active** **Next Action: NRC**

Revision Proposed by: BWROG

Revision Description:
Revised to include in the justification that Susquehanna and Peach Bottom each have the change - the old BWR STS had this allowance but it was not transferred over to the ITS NUREG. Modified to combine the Conditions A and B into Condition A; only change D and F to include the working of the new Condition A and for reasons other than Condition A in Condition H.

Owners Group Review Information

Date Originated by OG: 19-May-98

Owners Group Comments
(No Comments)

Owners Group Resolution: Approved Date: 19-May-98

TSTF Review Information

TSTF Received Date: 01-Jun-98 Date Distributed for Review 12-Oct-98

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 20-Nov-98

NRC Review Information

NRC Received Date: 15-Dec-98

NRC Comments:
(No Comments)

Final Resolution: NRC Action Pending Final Resolution Date:

Incorporation Into the NUREGs

File to BBS/LAN Date: TSTF Informed Date: TSTF Approved Date:

NUREG Rev Incorporated:

Affected Technical Specifications

Action 3.5.1.B	ECCS - Operating	
	Change Description:	New ACTION
Action 3.5.1.B	ECCS - Operating	
	Change Description:	Renamed C and revised
Action 3.5.1.B Bases	ECCS - Operating	
	Change Description:	Renamed C

Action 3.5.1.B Bases	ECCS - Operating	
	Change Description:	New ACTION Bases
Action 3.5.1.C	ECCS - Operating	
	Change Description:	Renamed D
Action 3.5.1.C Bases	ECCS - Operating	
	Change Description:	Renamed D and revised
Action 3.5.1.D	ECCS - Operating	
	Change Description:	Renamed E and revised
Action 3.5.1.D Bases	ECCS - Operating	
	Change Description:	Renamed E
Action 3.5.1.E	ECCS - Operating	
	Change Description:	Renamed F
Action 3.5.1.E Bases	ECCS - Operating	
	Change Description:	Renamed F
Action 3.5.1.F	ECCS - Operating	
	Change Description:	Renamed G and revised
Action 3.5.1.F Bases	ECCS - Operating	
	Change Description:	Renamed G
Action 3.5.1.G	ECCS - Operating	
	Change Description:	Renamed H and revised
Action 3.5.1.G Bases	ECCS - Operating	
	Change Description:	Renamed H and revised
Action 3.5.1.H	ECCS - Operating	
	Change Description:	Renamed I and revised
Action 3.5.1.H Bases	ECCS - Operating	
	Change Description:	Renamed I and revised

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3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.1 ECCS—Operating

LCO 3.5.1 Each ECCS injection/spray subsystem and the Automatic Depressurization System (ADS) function of [seven] safety/relief valves shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ [150] psig.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One low pressure ECCS injection/spray subsystem inoperable. OR one LPCI pump in both LPCI subsystems inoperable	A.1	Restore low pressure ECCS injection/spray subsystem to OPERABLE status. (5)	7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours
C. HPCI System inoperable.	C.1	Verify by administrative means RCIC System is OPERABLE.	1 hour
	AND		
	C.2	Restore HPCI System to OPERABLE status.	14 days

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. HPCI System inoperable. AND ~~One low pressure ECCS injection/spray subsystem is inoperable.~~ Condition A entered.	D.1 Restore HPCI System to OPERABLE status. OR D.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours 72 hours
E. One ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days
F. One ADS valve inoperable. AND ~~One low pressure ECCS injection/spray subsystem inoperable.~~ Condition A entered.	F.1 Restore ADS valve to OPERABLE status. OR F.2 Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	72 hours 72 hours
G. Two or more ADS valves inoperable. OR Required Action and associated Completion Time of Condition C, D, E, or F not met.	G.1 Be in MODE 3. AND G.2 Reduce reactor steam dome pressure to ≤ [150] psig.	12 hours 36 hours

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A. OR HPCI System and one or more ADS valves inoperable.	H.1 Enter LCO 3.0.3.	Immediately

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BASES

APPLICABILITY (continued)

is ≤ 150 psig, ADS and HPCI are not required to be OPERABLE because the low pressure ECCS subsystems can provide sufficient flow below this pressure. ECCS requirements for MODES 4 and 5 are specified in LCO 3.5.2, "ECCS—Shutdown."

ACTIONS

A.1

or if one LPCI pump in both LPCI subsystems is inoperable,

If any one low pressure ECCS injection/spray subsystem is inoperable, the inoperable subsystem must be restored to OPERABLE status within 7 days. In this Condition, the remaining OPERABLE subsystems provide adequate core cooling during a LOCA. However, overall ECCS reliability is reduced, because a single failure in one of the remaining OPERABLE subsystems, concurrent with a LOCA, may result in the ECCS not being able to perform its intended safety function. The 7 day Completion Time is based on a reliability study (Ref. 12) that evaluated the impact on ECCS availability, assuming various components and subsystems were taken out of service. The results were used to calculate the average availability of ECCS equipment needed to mitigate the consequences of a LOCA as a function of allowed outage times (i.e., Completion Times).

B.1 and B.2

If the inoperable low pressure ECCS subsystem cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

If the HPCI System is inoperable and the RCIC System is verified to be OPERABLE, the HPCI System must be restored to OPERABLE status within 14 days. In this Condition, adequate core cooling is ensured by the OPERABILITY of the redundant and diverse low pressure ECCS injection/spray subsystems in

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BASES

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ACTIONS

C.1 and C.2 (continued)

conjunction with ADS. Also, the RCIC System will automatically provide makeup water at most reactor operating pressures. Verification of RCIC OPERABILITY within 1 hour is therefore required when HPCI is inoperable. This may be performed as an administrative check by examining logs or other information to determine if RCIC is out of service for maintenance or other reasons. It does not mean to perform the Surveillances needed to demonstrate the OPERABILITY of the RCIC System. If the OPERABILITY of the RCIC System cannot be verified, however, Condition G must be immediately entered. If a single active component fails concurrent with a design basis LOCA, there is a potential, depending on the specific failure, that the minimum required ECCS equipment will not be available. A 14 day Completion Time is based on a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

D.1 and D.2

, or one LPCI pump in both LPCI subsystems,

If any one low pressure ECCS injection/spray subsystem is inoperable in addition to an inoperable HPCI System, the inoperable low pressure ECCS injection/spray subsystem or the HPCI System must be restored to OPERABLE status within 72 hours. In this Condition, adequate core cooling is ensured by the OPERABILITY of the ADS and the remaining low pressure ECCS subsystems. However, the overall ECCS reliability is significantly reduced because a single failure in one of the remaining OPERABLE subsystems concurrent with a design basis LOCA may result in the ECCS not being able to perform its intended safety function. Since both a high pressure system (HPCI) and a low pressure subsystem are inoperable, a more restrictive Completion Time of 72 hours is required to restore either the HPCI System or the low pressure ECCS injection/spray subsystem to OPERABLE status. This Completion Time is based on a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

E.1

The LCO requires seven ADS valves to be OPERABLE in order to provide the ADS function. Reference 13 contains the results

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BASES

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ACTIONS

E.1 (continued)

of an analysis that evaluated the effect of one ADS valve being out of service. Per this analysis, operation of only six ADS valves will provide the required depressurization. However, overall reliability of the ADS is reduced, because a single failure in the OPERABLE ADS valves could result in a reduction in depressurization capability. Therefore, operation is only allowed for a limited time. The 14 day Completion Time is based on a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

F.1 and F.2

(, or one LPCI pump in both LPCI subsystems,

If any one low pressure ECCS injection/spray subsystem is inoperable in addition to one inoperable ADS valve, adequate core cooling is ensured by the OPERABILITY of HPCI and the remaining low pressure ECCS injection/spray subsystem. However, overall ECCS reliability is reduced because a single active component failure concurrent with a design basis LOCA could result in the minimum required ECCS equipment not being available. Since both a high pressure system (ADS) and a low pressure subsystem are inoperable, a more restrictive Completion Time of 72 hours is required to restore either the low pressure ECCS subsystem or the ADS valve to OPERABLE status. This Completion Time is based on a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

G.1 and G.2

If any Required Action and associated Completion Time of Condition C, D, E, or F is not met, or if two or more ADS valves are inoperable, the plant must be brought to a condition in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and reactor steam dome pressure reduced to $\leq$ 150 psig within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

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