SUMMARY OF CHANGES TO ITS SECTION 3.5

SUMMARY OF CHANGES TO ITS SECTION 3.5 - REVISION D

05/29/01

Source of Change	Summary of Change	Affected Pages
RAI 3.5.3-1 Revised response	CTS 4.5.E.1.d states: "...the RCIC pump shall deliver at least 400 gpm against a system head corresponding to a reactor vessel pressure of 1195 psig to 150 psig." This CTS SR has been separated into ITS SR 3.5.3.4 and SR 3.5.3.5. The CTS value of 1195 psig has been revised to 1040 psig in ITS SR 3.5.3.4; and the CTS value of 150 psig has been revised to 165 psig in ITS SR 3.5.3.5. JFD DB3 states: the brackets have been removed, the proper plant specific values provided, that these nominal values are at rated conditions and very close to the lower range where RCIC is required to be operable and at the same time provides some flexibility to establish the test condition. The NRC has stated that the justification provided in DOC M3 and JFD DB3 do not support how these changes to the pressure ranges were derived and why these values are considered acceptable. In the original RAI response, the Licensee stated that DOC M3 of ITS 3.5.3 will be revised to address how the stated pressure ranges are derived and why these values are acceptable. Furthermore, the ITS SRs 3.5.3.4 & 5 proposed wording including a reference to "... of 1195 psig" and "... of 150 psig" will be deleted in the revised submittal. It was noted that this RAI issue and its resolution is also applicable to ITS 3.5.1, HPCI testing. Accordingly, DOC M2 and SRs 3.5.1.8 & 9 will be revised in a similar manner. The revised response also acknowledges that a portion of the change in testing criteria constitutes a Less Restrictive change in that flow is only required to be demonstrated against a system head corresponding to "reactor pressure", not "a reactor pressure of 1195 psig". The CTS markup and DOCs are revised accordingly.	**Section 3.5.1** DOC M2 (DOCs p 6 of 24); DOC L15 (DOCs pp 22, 23 of 24) NSHC L15 CHANGE (NSHCs pp 30, 31 of 31) ITS mark-up, pp 3.5-5, 3.5-6 Retyped ITS pp 3.5-5, 3.5-6 **Section 3.5.3** CTS mark-up, p 2 of 4 DOC M3 (DOCs p 3 of 7); DOC L6 (DOCs pp 6, 7 of 7) NSHC L6 CHANGE (NSHCs pp 10, 11 of 11) ITS mark-up, p 3.5-12 Retyped ITS p 3.5-14

Source of Change	Summary of Change	Affected Pages
RAI 3.5.1 (BSI)	The category of proposed changes associated with JFD DB4 that were generally consistent with proposed industry changes described by TSTFs-223 and 224 have been withdrawn since these TSTFs have been disapproved by the NRC. These changes would have added two new Conditions (ITS 3.5.1 Conditions B and H) to allow various combinations of ECCS subsystems and components to be inoperable for 72 hours. Specifically, Condition B would have allowed one LPCI pump in one or both subsystems and one core spray subsystem to be inoperable for 72 hours. In addition, Condition H would have allowed one ADS valve and the HPCI System to be inoperable for 72 hours. Consistent with these changes Condition J would have also been modified. Therefore, the proposed Conditions B and H, as described above, are removed and the Conditions/Required Actions are reformatted /relettered /renumbered as a consequence of the removal of these proposed changes. Condition J (now Condition H after removal of the old Conditions B and H) is revised accordingly. The category of proposed changes associated with JFD DB3 are generally consistent with TSTF-318 that has been approved by the NRC. These changes included the addition of a Condition to Required Action A to allow one LPCI pump to be inoperable in each subsystem. Each LPCI pump in a LPCI subsystem is supplied by a different electrical division. If one 4.16 kv emergency bus were inoperable, a pump in each LPCI subsystem would be inoperable. Therefore, two LPCI subsystems would be considerable inoperable and, without this proposed change, entry would be required into LCO 3.0.3. Consequently, this proposed change allows continued operation of the unit for 7 days consistent with the allotted out-of-service time associated with one low pressure ECCS subsystem being inoperable. Similarly, Conditions D and F have been revised to allow one LPCI pump to be inoperable in each subsystem in conjunction with an inoperable HPCI System or ADS valve, respectively. Accordingly, the submittal is revised to be consistent with the TSTF with regards to technical content and justification of changes.	**Section 3.5.1** CTS mark-up, pp 2, 4, 5, 6, 7, 8, 17 of 17 DOC A8 (DOCs p 3 of 24); DOC A12 (DOCs p 5 of 24); DOC M3 (DOCs p 7 of 24); DOC M4 (DOCs p 7 of 24); DOC L2 (DOCs p 16 of 24); DOC L4 (DOCs p 17 of 24); DOC L5 (DOCs p 17 of 24); DOC L6 (DOCs p 18 of 24); DOC L8 (DOCs pp 19, 20 of 24); DOC L14 (DOCs p 22 of 24) NSHC L4 CHANGE (NSHCs p 9 of 31) ITS mark-up, pp 3.5-1, Insert Page 3.5-1, 3.5-2, 3.5-3 JFD DB2 (JFDs p 2 of 3); JFD DB4 (JFDs p 2 of 3) ITS Bases mark-up, pp B 3.5-6, B 3.5-7, B 3.5-8, B 3.5-9 Bases JFD DB4 (Bases JFDs p 2 of 3) Retyped ITS pp 3.5-1, 3.5-2, 3.5-3, B 3.5-7, B 3.5-8, B 3.5-9

Source of Change	Summary of Change	Affected Pages
RAI 3.5.3-BSI	The NRC stated that the frequency added to ITS SR 3.5.3.3, "Once each startup prior to exceeding 25% RTP," is not contained in the CTS nor is it part of the ISTS. The Staff has requested that the Licensee provide applicable documentation to support this change. The Licensee will revise the submittal to eliminate the proposed ITS SR 3.5.3.3. Furthermore, CTS 4.5.E.1.e will be justified for relocation to the IST Program (rather than the TRM as previously stated in our response to RAI 3.5.3-BSI) without a change to the CTS Frequency. Consistent with these changes, DOC M6 will be revised and a new DOC, LA4, will be provided to justify relocation to the TRM	**Section 3.5.3** CTS mark-up, pp 1, 2 of 4 DOC A3 (DOCs p 1 of 7); DOC M2 (DOCs p 2 of 7); DOC M3 (DOCs p 3 of 7); DOC M5 (DOCs p 3 of 7); DOC M6 (DOCs p 3 of 7); DOC LA1 (DOCs p 4 of 7); DOC LA4 (DOCs p 4 of 7); DOC L3 (DOCs p 5 of 7) ITS mark-up, pp 3.5-12, Insert Page 3.5-12, 3.5-13 JFD CLB1 (JFDs p 1 of 2); CLB2 (JFDs p 1 of 2); CLB3 (JFDs p 1 of 2); CLB4 (JFDs p 1 of 2); DB2 (JFDs p 1 of 2); DB3 (JFDs p 1 of 2) ITS Bases mark-up, pp B 3.5-27, Insert Page B 3.5-27, B 3.5-28, Insert Page B 3.5-28 Bases JFDs CLB1 (Bases JFDs p 1 of 3); CLB2 (Bases JFDs p 1 of 3); CLB3 (Bases JFDs p 1 of 3); CLB4 (Bases JFDs p 1 of for); DB6 (Bases JFDs p 2 of 3) Retyped ITS pp 3.5-14, 3.5-15, B 3.5-30, B 3.5-31, B 3.5-32

Source of Change	Summary of Change	Affected Pages
TSTF-301	ITS 3.5.1 Required Action C.1 for HPCI inoperable requires verification by administrative means that the RCIC System is operable. ITS 3.5.3 Required Action A.1 for RCIC inoperable requires verification by administrative means that the HPCI is operable. Due to the mechanics of how completion times work, the 1 hour allowance previously included in ITS can probably never be used. For example, if HPCI is inoperable, actions are entered, and the 1 hour verification is performed. If RCIC is operable at this time, the Required Actions are met. However, since the completion time starts upon entry into the condition, if RCIC later becomes inoperable, the 1 hour time has already expired, but ITS 3.5.3 Required Action A.1 would imply that there is 1 hour to verify that HPCI is operable. This is not the case. To avoid this confusion, the completion time is revised to "immediately." [NOTE: This is consistent with CTS requirements.]	**Section 3.5.1** CTS mark-up, p 6 of 17 NSHC L2 CHANGE (NSHCs pp 3, 4, 5 of 31); NSHC L4 CHANGE (NSHCs p 8 of 31) ITS mark-up, pp 3.5-1, Insert Page 3.5-1 JFD TA1 (JFDs p 2 of 3) ITS Bases mark-up, p B 3.5-7 Bases JFD TA1 (Bases JFDs p 3 of 3) Retyped ITS pp 3.5-2, B 3.5-7 **Section 3.5.3** CTS mark-up, p 2 of 4 DOC L4 (DOCs pp 5, 6 of 7) NSHC L4 CHANGE (NSHCs pp 6, 7 of 11) ITS mark-up, pp 3.5-11 JFD TA1 (JFDs p 2 of 2) ITS Bases mark-up, p B 3.5-25 Bases JFD TA1 (Bases JFDs p 2 of 3) Retyped ITS pp 3.5-13

Source of Change	Summary of Change	Affected Pages
TSTF-318, Revision 1	Revises ISTS 3.5.1 to include in Condition A, one LPCI pump inoperable in each of the two ECCS divisions. 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.	**Section 3.5.1** ITS markup p 3.5-2 JFD DB3 (JFDs p 2 of 3);JFD TA2 (JFDs p 3 of 3) ITS Bases mark-up, pp B 3.5-6,7,8 Bases JFDs DB3 (Bases JFDs p 2 of 3); TA2 (Bases JFDs p 3 of 3) Retyped ITS pp 3.5-1, 3.5-2, B 3.5-6, B 3.5-7, B 3.5-8, B 3.5-9
TSTF-367	Bases Section "Applicable Safety Analysis" of ITS 3.5.3 is revised to reflect Criterion 4 consistent with the TSTF.	**Section 3.5.3** ITS Bases mark-up, p B 3.5-24 Bases JFD TA2 (Bases JFDs p 2 of 3) Retyped ITS p B 3.5-27

SUMMARY OF CHANGES TO ITS SECTION 3.5 - REVISION D

05/29/01

Source of Change	Summary of Change	Affected Pages
License Amendment Number 267	This License Amendment revises the CTS to allow reactor coolant system pressure tests at reactor coolant temperatures above 212 F to be performed while remaining in the cold shutdown mode.	**Section 3.5.1** CTS mark-up, pp 6, 7 of 17 DOC A5 (DOCs p 2 of 24); DOC A13 (DOCs p 5 of 24); DOC LA9 (DOCs p 13 of 24); DOC L2 (DOCs p 16 of 24) **Section 3.5.3** CTS mark-up, p 1 of 4 DOC A4 (DOCs p 1 of 7); DOC LA3 (DOCs p 4 of 7)
Editorial	Changed references which read the "New York Power Authority ... " to read "The Licensee .... "	NSHCs - all
Editorial	Editorial correction indicating NEDC-31317P as the plant specific LOCA analysis for JAF. Also deletes the reference to March 1997 as the analysis revision.	**Section 3.5.1** DOC L6 (DOCs p 18 of 24); DOC L8 (DOCs p 19 of 24) NSHC L6 CHANGE (NSHCs pp 12, 13 of 31); NSHC L7 CHANGE (NSHCs p 14, 15 of 31); NSHC L8 CHANGE (NSHCs p 17 of 31) JFD DB7 (JFDs p 2 of 3) ITS Bases mark-up, pp B 3.5-16 Retyped ITS p B 3.5-18 **Section 3.5.2** DOC L5 (DOCs p 8 of 9) NSHC L5 CHANGE (NSHCs pp 8, 9 of 10)
Typographical corrections	Miscellaneous typographical corrections as indicated.	**Section 3.5.1** DOC A13 (DOCs p 5 of 24); DOC L7 (DOCs p 18 of 24) **Section 3.5.3** DOC L1 (DOCs p 5 of 7)

ITS CONVERSION PACKAGE

SECTION 3.5

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

JAFNPP
IMPROVED TECHNICAL SPECIFICATION (ITS)

CONVERSION PACKAGE

Section 3.5

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

Table of Contents

The markup package for each Specification contains the following:

Markup of the current Technical Specifications (CTS);
Discussion of changes (DOCs) to the CTS;
No significant hazards consideration (NSHC) for each less restrictive change (Lx) to the CTS;
Markup of the corresponding NUREG-1433 Specification;
Justification of differences (JFDs) from the NUREG;
Markup of NUREG-1433 Bases;
Justification for differences (JFDs) from NUREG-1433 Bases; and
Retyped proposed Improved Technical Specifications (ITS) and Bases.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

DISCUSSION OF CHANGES (DOCs) TO THE CTS

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

MARKUP OF NUREG-1433, REVISION 1, SPECIFICATION

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1
MARKUP OF NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

3.5 ECCS and RCIC System

Specification 3.5.1

A1

J. PP

3.5 LIMITING CONDITIONS FOR OPERATION

3.5 CORE AND CONTAINMENT COOLING SYSTEMS

Applicability:

Applies to the operational status of the Emergency Core Cooling Systems, the suppression pool cooling, and containment spray modes of the Residual Heat Removal (RHR) System.

Objective:

To assure operability of the Core and Containment Cooling Systems under all conditions for which this cooling capability is an essential response to plant abnormalities.

Specification:

ECCS - Operating

[3.5.1] A. Core Spray System and Low Pressure Coolant Injection (LPCI) Mode of the RHR System

[LCO 3.5.1] 1. Both Core Spray Systems shall be operable (A2) when ever irradiated fuel is in the reactor vessel and prior to reactor startup from a cold condition, except as specified below:

[Applicability]

MODES 1, 2, and 3

M12

4.5 SURVEILLANCE REQUIREMENTS

4.5 CORE AND CONTAINMENT COOLING SYSTEMS

Applicability:

Applies to periodic testing of the Emergency Core Cooling Systems, the suppression pool cooling and containment spray mode of the Residual Heat Removal (RHR) System.

Objective:

To verify the operability of the Core and Containment Cooling Systems under all conditions for which operability is essential.

Specification:

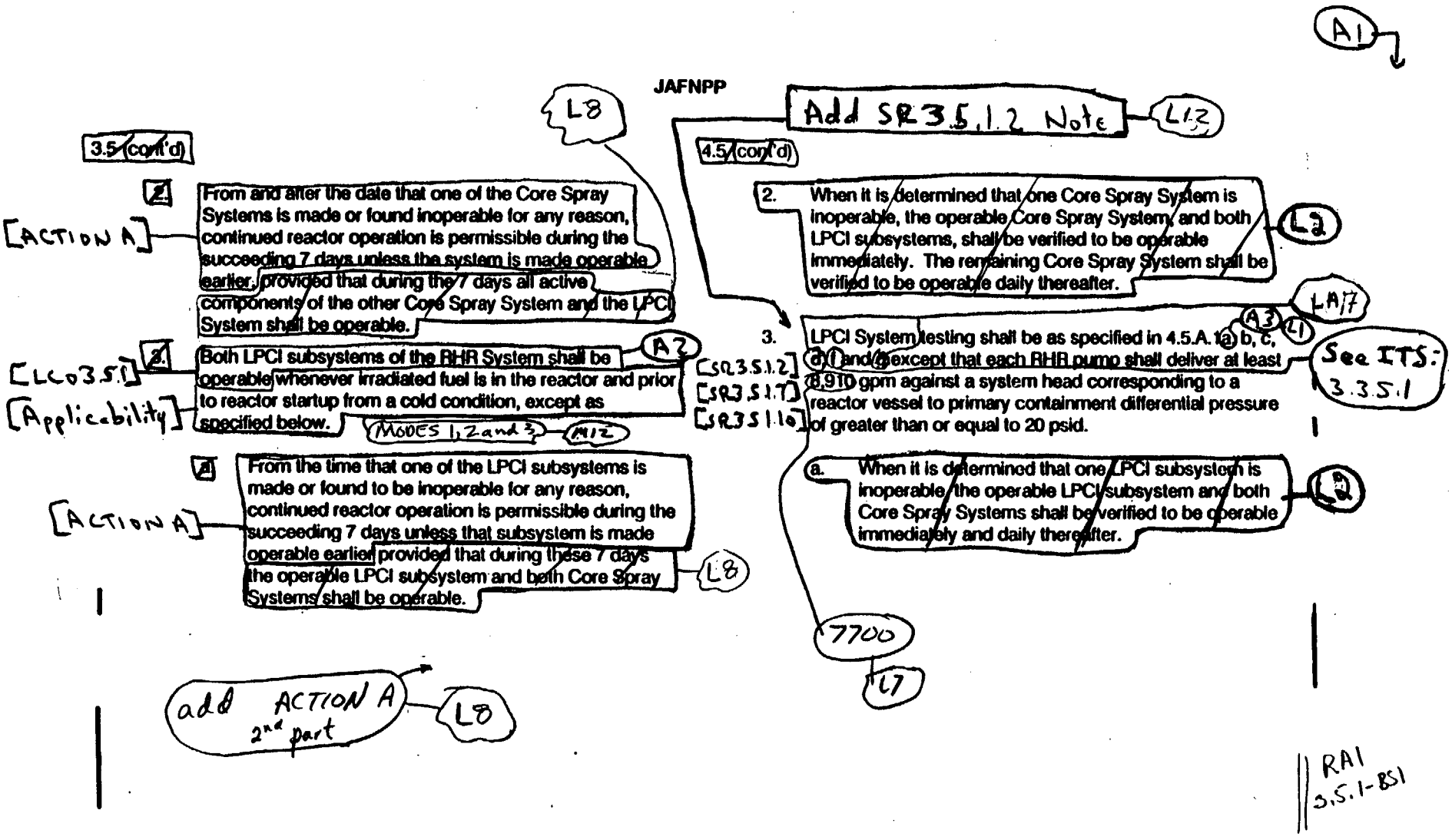
[3.5.1] A. Core Spray System and Low Pressure Coolant Injection (LPCI) Mode of the (RHR) System

1. Surveillance of the Core Spray System shall be performed as follows: A1

SURVEILLANCE Item	Actual or Simulated	Frequency
[SR 3.5.1.10] 2. Automatic Actuation Test	L1	Refer to Table 4.2-2 / 24 months A1

Add SR 3.5.1.10 Note A3

Specification 3, 5.1



Specification 3.5.1

A1

3.5.1 ECCS - Operating

JAFNPP

3.5 (cont'd)

DELETED

4.5 (cont'd)

[3.5.1.2.a]

HIGH PRESSURE COOLANT INJECTION (HPCI SYSTEM)

[Note 1 to SR 3.5.1.10]

[SR 3.5.1.8
SR 3.5.1.9
Note]

[LCO 3.5.1]

1. The HPCI System shall be operable whenever the reactor pressure is greater than 150 psig and reactor coolant temperature is greater than 212°F and irradiated fuel is in the reactor vessel, except as specified below:

A2

[Applicability]

MODE 1
MODE 2 and 3, except HPCI not required to be OPERABLE with reactor steam dome ≤ 150 psig

e. HIGH PRESSURE COOLANT INJECTION (HPCI SYSTEM)

Surveillance of HPCI System shall be performed as follows provided a reactor steam supply is available. If steam is not available at the time the surveillance test is scheduled to be performed, the test shall be performed within 10 days of continuous operation from the time steam becomes available.

M1

12 hours

A3

L1

See ITS: 3.3.5.1

HPCI System testing shall be as specified in 4.5.A.1.a, b, c, d, e, and f except that the HPCI pump shall deliver at least 4,250 gpm against a system head corresponding to a reactor vessel pressure of 1,195 psig to 150 psig.

LA7

3400

L7

[SR 3.5.1.2]
[SR 3.5.1.8]
[SR 3.5.1.10]

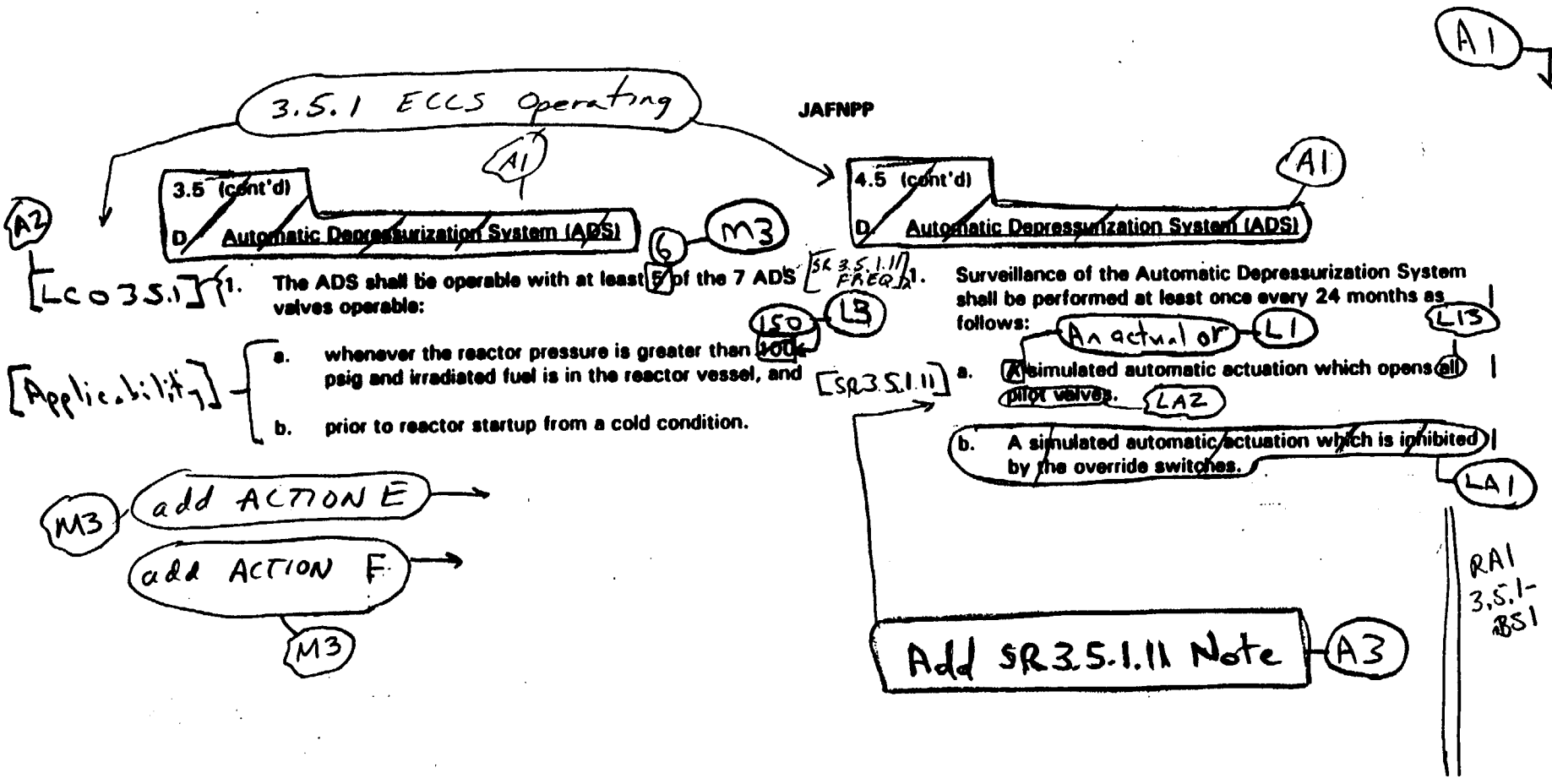
with reactor pressure ≥ 970 and ≤ 1040 psig

M2

[SR 3.5.1.9]

with reactor pressure ≤ 165 psig

Specification 3.5.1



Applicability
3.5 (cont'd)
MODES 1, 2 and 3
M12
M10
de-energized
A1
once each startup prior to exceeding 25% RTP
M5
4.5 (cont'd)

SR 3.5.1.6 — 5. All recirculation pump discharge valves shall be operable prior to reactor startup (or closed if permitted elsewhere in these specifications).

SR 3.5.1.6 — 5. All recirculation pump discharge valves shall be tested for operability any time the reactor is in the cold condition exceeding 48 hours, if operability tests have not been performed during the preceding 31 days. M5

ACTION B — 6. If the requirements of 3.5.A cannot be met, the reactor shall be placed in the cold condition within 24 hrs.
MODE 3 in 12 hours — M4
36
L4

RAI 3.5.1-BSI

B. Containment Cooling Mode (of the RHR System)

1. Both subsystems of the containment cooling mode, each including two RHR and two RHRSW pumps, shall be operable whenever there is irradiated fuel in the reactor vessel, prior to startup from a cold condition, and reactor coolant temperature ≥212°F except as specified below.

B. Containment Cooling Mode (of the RHR System)

1. Subsystems of the containment cooling mode shall be demonstrated operable by performing:

	Item	Frequency
a.	a pump operability and flow rate test on the RHR pumps.	Per Surveillance Requirement 4.5.A.3
b.	an operability test of the RHR containment cooling mode motor operated valves.	In accordance with the Inservice Testing Program
c.	an operability test on the RHRSW pumps and associated motor operated valves.	In accordance with the Inservice Testing Program
d.	a flow rate test verifying a flow rate of 4000 gpm for each RHRSW pump and a total flow rate of 8000 gpm for two RHRSW pumps operating in parallel.	In accordance with the Inservice Testing Program

RAI 3.5.1 BSI

add ACTION H — A8

See ITS: 3.6.1.9, 3.6.2.3, 3.7.1

Specification 3.5.1

~~3.5 (cont'd)~~

~~4.6 (cont'd)~~

[ACTION C]

a. From and after the date that the HPCI System is made or found to be inoperable for any reason, continued reactor operation is permissible only during the succeeding 7 days unless such system is sooner made operable, provided that during such 7 days all active components of the Automatic Depressurization System, the Core Spray System, LPCI System, and Reactor Core Isolation Cooling System are operable.

[Required Action C.1]

b. If the requirements of 3.5.C.1 cannot be met, the reactor shall be placed in the cold condition and pressure less than 150 psig within 24 hrs.

[ACTION G]

2. ~~Low power physics testing and reactor operator training~~ shall be permitted with reactor coolant temperature ≤212°F with an inoperable component(s) as specified in 3.5.C.1 above.

a. When it is determined that the HPCI System is inoperable the RCIC System, both LPCI subsystems, both core spray subsystems, and the ADS System actuation logic shall be verified to be operable immediately. The RCIC System and ADS System logic shall be verified to be operable daily thereafter.

MODE 3 within 12 hours and

<ADD: ACTION D>

RAI 3.5.1-BSI

TSTF 301

RAI 3.5.1-BSI

AMD #267

Specification 3.5.1 A1

~~3.5 (cont'd)~~

MODE 3 within 12 hours M4

[ACTION G] ~~2.~~ If the requirements of 3.5.D.1 cannot be met, the reactor shall be placed in the cold condition and pressure ~~less than 100~~ ≤ 150 psig (L3) within ~~24~~ 36 (L4) hr.

<ADD: ACTION H> A8

A4

3. Low power physics testing and reactor operator training shall be permitted with inoperable ADS components, provided that reactor coolant temperature is ≤212°F and the reactor vessel is vented or reactor vessel head is removed.

~~4.5 (cont'd)~~

2. A logic system functional test.

   a. When it is determined that two valves of the ADS are inoperable, the ADS System actuation logic for the operable ADS valves and the HPCI System shall be verified to be operable immediately and at least weekly thereafter.

   b. When it is determined that more than two relief/safety valves of the ADS are inoperable, the HPCI System shall be verified to be operable immediately. L2

RAI 3.5.1-BSI

Specification 3.5.1 A1

3.5 (cont'd)

4.5 (cont'd)

G. Maintenance of Filled Discharge Pipe

A2

SR 3.5.1.1

Whenever core spray subsystems, LPCI subsystems, HPCI, or RCIC are required to be operable, the discharge piping from the pump discharge of these systems to the last block valve shall be filled.

1. From and after the time that the pump discharge piping of the HPCI, RCIC, LPCI, or Core Spray Systems cannot be maintained in a filled

See ITS; 3.5.3

ACTION A, C, D, F — A10

G. Maintenance of Filled Discharge Pipe

See ITS; 3.5.3 A1

A1 The following surveillance requirements shall be adhered to, in order to assure that the discharge piping of the core spray subsystem, LPCI subsystem, HPCI, and RCIC are filled:

SR 3.5.1.1

1. Every month prior to the testing of the LPCI subsystem and core spray subsystem, the discharge piping of these systems shall be vented from the high point, and water flow observed.

A11

LA6

RAI 3.5.1-BS1

Specification 3.5.1

A1

3.5 (cont'd)

condition, that pump shall be considered inoperable for purposes of satisfying Specifications 3.5.A, 3.5.C, and 3.5.F.

A10

4.5 (cont'd)

A6

2. Following any period where the LPCI subsystems or core spray subsystems have not been maintained in a filled condition, the discharge piping of the affected subsystem shall be vented from the high point of the system and water flow observed.

LA6

[SR 3.5.1.1]

see JTS 3.5.3

M11

3. Whenever the HPCI or RCIC System is lined up to take suction from the condensate storage tank, the discharge piping of the HPCI or RCIC shall be vented from the high point of the system, and water flow observed on a monthly basis.

LA6

4. The level switches located on the Core Spray and RHR System discharge piping high points which monitor these lines to ensure they are full shall be functionally tested each month.

LB1

H. Average Planar Linear Heat Generation Rate (APLHGR)

During power operation, the APLHGR for each type of fuel as a function of axial location and average planar exposure shall be within limits based on applicable APLHGR limit values which have been approved for the respective fuel and lattice types. These values are specified in the Core Operating Limits Report. If at anytime during reactor power operation greater than 25% of rated power it is determined that the limiting value for APLHGR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the APLHGR is not returned to within the prescribed limits within two (2) hours, the reactor power shall be reduced to less than 25% of rated power within the next four hours, or until the APLHGR is returned to within the prescribed limits.

H. Average Planar Linear Heat Generation Rate (APLHGR)

The APLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at ≥25% rated thermal power.

See ITS 3.2.1

Specification 3.5.1 (A1)

3.5 (cont'd)

4.5 (cont'd)

b. [SR 3.5.1.7]	Flow Rate Test - Core spray pumps shall deliver at least 4,265 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 113 psi above primary containment pressure.	In accordance with the Inservice Testing Program
[SR 3.5.1.2] c.	Verify that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed or otherwise secured in position, is in the correct position.	Once per 31 Days
d.	Motor operated valves.	In accordance with the Inservice Testing Program (LA7)
e.	Core Spray Header Δp Instrumentation (LB2) Check Calibrate Test	Once/day Once/3 months Once/3 months
f. (See ITS 3.3.5.1)	Logic System Functional Test	Refer to Table 4.2-2
g.	Testable Check Valves	In accordance with the Inservice Testing Program (LA7)

Specification 3.5.1

A1

~~3.6 (cont'd)~~

2. If Specification 3.6.E.1 is not met, the reactor shall be placed in a cold condition within 24 hours.

3. Low power physics testing and reactor operator training shall be permitted with inoperable components as specified in Specification 3.6.E.1 above, provided that reactor coolant temperature is ≤212 °F and the reactor vessel is vented or the reactor vessel head is removed.

4. The provisions of Specification 3.0.D are not applicable.

<see ITS 3.10.8>

~~4.6 (cont'd)~~

<see ITS 3.4.3>

2. At least one safety/relief valve shall be disassembled and inspected every 24 months.

LA5

3. The integrity of the nitrogen system and components which provide manual and ADS actuation of the safety/relief valves shall be demonstrated at least once every 3 months.

LA3

required

ADS

4. Manually open each safety/relief valve while bypassing steam to the condenser and observe a ≥10% closure of the turbine bypass valves, to verify that the safety/relief valve has opened. This test shall be performed at least every 24 months while in the RUN mode and within the first 12 hours after steam pressure and flow are adequate to perform the test.

[SR 3.5.1.13]

LA3

[SR 3.5.1.13 Note]

M9

ADD: STAGGERED TEST FREQUENCY on each solenoid

<ADD SR 3.5.1.3>

M6

Specification 3.5.1

JAI

A1

M2

MODES 1, 2, 3

3.5 (cont'd)

[Applicability]

[SR 3.5.1.4]

b. When the reactor water temperature is greater than 212°F, the motor operator for the RHR cross-tie valve (10MOV-20) shall be maintained disconnected from its electric power source. It shall be maintained chain-locked in the closed position. The manually operated gate valve (10RHR-09) in the cross-tie line, in series with the motor operated valve, shall be maintained locked in the closed position.

LA4

4. a. The reactor shall not be started up with the RHR System supplying cooling to the fuel pool.

[LCO 3.0.4]

b. The RHR System shall not supply cooling to the spent fuel pool when the reactor coolant temperature is above 212°F.

A7

4.5 (cont'd)

[SR 3.5.1.4]

b. The power source disconnect and chain lock to motor operated RHR cross-tie valve (10MOV-20), and lock on manually operated gate valve (10RHR-09) shall be inspected once per month to verify that both valves are closed and locked.

LA4

LA4

A9

Verify the RHR cross tie valves are closed and power is removed from the electrical valve operator.

Specification 3.5.1 (A1)

see ITS: 3.3.5.1

TABLE 4.2-2 (Cont'd)

CORE AND CONTAINMENT COOLING SYSTEM INSTRUMENTATION
TEST AND CALIBRATION REQUIREMENTS

	Logic System Functional Test	Frequency
[SR 3.5.1.10] 1)	Core Spray Subsystem	SA (Notes 7 & 9)
2)	Low Pressure Coolant Injection Subsystem	SA (Notes 7 & 9)
3)	Containment Cooling Subsystem (M13)	R
4)	HPCI Subsystem	R (Notes 7 & 9)
[SR 3.5.1.11] 5)	ADS Subsystem	SA (Notes 7 & 9)

24 months (A1)

see ITS: 3.3.5.1

see ITS: 3.3.5.1

24 months (A1)

see ITS: 3.3.5.1

(M13) add SR 3.5.1.10

NOTE: See notes following Table 4.2-5.

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Specification 3.5.1

A1

NOTES FOR TABLES 4.2-1 THROUGH 4.2-5

See ITS: 3.4.5

1. Initially once every month until acceptance failure rate data are available; thereafter, a request may be made to the NRC to change the test frequency. The compilation of instrument failure rate data may include data obtained from other boiling water reactors for which the same design instruments operate in a environment similar to that of JAFNPP.

See ITS: 3.3.2.1

2. Functional tests are not required when these instruments are not required to be operable or are tripped. Functional tests shall be performed within seven (7) days prior to each startup.

3. Calibrations are not required when these instruments are not required to be operable or are tripped. Calibration tests shall be performed within seven (7) days prior to each startup or prior to a pre-planned shutdown.

See ITS: 3.3.2.1 3.3.5.1 3.3.5.2 3.3.6.1

4. Instrument checks are not required when these instruments are not required to be operable or are tripped.

5. This instrumentation is exempt from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.

See ITS: 3.3.2.1

6. These instrument channels will be calibrated using simulated electrical signals once every three months.

A1

7. Simulated automatic actuation shall be performed once per 24 months.

actual or

LI

[SR 3.5.1.10] for ECCS

[SR 3.5.1.11] for ADS

8. Reactor low water level, and high drywell pressure are not included on Table 4.2-1 since they are listed on Table 4.1-2.

See ITS: 3.3.6.1

9. The logic system functional tests shall include a calibration of time delay relays and timers necessary for proper functioning of the trip systems.

See ITS 3.3.5.1 3.3.6.1 3.3.6.2

10. (Deleted)

11. Perform a calibration once per 24 months using a radiation source. Perform an instrument channel alignment once every 3 months using a current source.

See ITS: 3.3.6.1 3.3.7.2

~~12. (Deleted)~~

~~13. (Deleted)~~

14. (Deleted)

15. Sensor calibration once per 24 months. Master/slave trip unit calibration once per 6 months.

See ITS: 3.3.5.1 3.3.6.1

16. The quarterly calibration of the temperature sensor consists of comparing the active temperature signal with a redundant temperature signal.

See ITS: 3.3.6.1

See ITS: 3.3.2.1 3.3.5.1 3.3.5.2 3.3.6.1 3.3.7.2

Amendment No. ~~34, 48, 57, 89, 181, 207, 227~~, 233

Specification 3.5.1

[add MODE 3 Applicability] M8

3,5 ECCS and RCIC
3.5.1 ECCS - Operating

3.9 (Con'd)

F. LPCI MOV Independent Power Supplies

A2
[SR 3.5.1.5]

1. Reactor shall not be made critical unless both independent power supplies, including the batteries, inverters and chargers and their associated buses (MCC-155 and MCC-165) are in service, except as specified below. L9

[ACTION A]

2. During power operation, if one independent power supply becomes unavailable, repairs shall be made immediately and continued reactor operation is permissible for a period not to exceed 7 days unless the unavailable train is made operable sooner. From and after the date one of the independent power supplies is made or found to be inoperable for any reason, the following would apply:

a. The other independent power supply including its charger, inverter, battery and associated bus is operable. A12

b. Pilot cell voltage, specific gravity and temperature and overall battery voltage are measured immediately and weekly thereafter for the operable independent power supply battery.

c. The inoperable independent power supply shall be isolated from its associated LPCI MOV bus, and this bus will be manually switched to its alternate power source. L10 L11

See ITS: 3.8.4 3.8.6

JAFNPP

4.9 (Con'd)

See ITS: 3.8.4 ITS 3.8.6

F. LPCI MOV Independent Power Supplies

5. Accelerated performance testing (or modified performance test) shall be conducted on any battery:

a) Annually if capacity drops more than 10% from its previous performance test (or modified performance test).

b) Annually if capacity is below 90% of manufacturer's rating.

c) Annually if it has reached 85% of its service life with capacity < 100% of manufacturer's rating.

d) Once every 24 months if it has reached 85% of its service life with capacity ≥ 100% of the manufacturer's rating.

LA8

SR 3.5.1.12 6. Each battery charger and inverter shall be visually inspected weekly and a performance test conducted once every 24 months.

[SR 3.5.1.5] 7. Once/month: open the battery charger A-C input breakers one at a time and observe performance for proper operation.

add inverter output voltage M7

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Specification 3.5.1

JAFNPP

3.9 (cont'd)

F. LPCI MOV Independent Power Supplies

4.9 (cont'd)

F. LPCI MOV Independent Power Supplies

1. Every week the specific gravity, voltage and temperature of each pilot cell, and overall battery voltage shall be measured and chargers and inverters shall be visually inspected.

2. Every three months the following measurements shall be made:

   a. Voltage of each cell to the nearest of 0.01v;

   b. Specific gravity of each cell;

   c. Temperature of every fifth cell.

3. Once every 24 months, each battery shall be subjected to a service (duty cycle) test.[1]

4. Once every 60 months, each battery shall be subjected to a performance test (or modified performance test). This test shall verify that the battery capacity is at least 80% of the manufacturer's rating.

see ITS: 3.8.4 3.8.6

LAB

see ITS: 3.8.6

see ITS: 3.8.4

see ITS: 3.8.4

1. A modified performance test may be performed in lieu of the battery service test.

Specification 3.5.1

(A1) RAI 3.5.1-BS1

(M4) MODE 3 with 12 hours

3.9 (cont'd) (A8) 4.9 (cont'd)

[ACTION B] From and after the time both power supplies are made or found inoperable the reactor shall be brought to cold condition within 24 hours. (36) (L4)

add ACTION H (A8)

G. REACTOR PROTECTION SYSTEM ELECTRICAL PROTECTION ASSEMBLIES

Two RPS electrical protection assemblies for each inservice RPS MG set and inservice alternate source shall be operable except as specified below:

1. With one RPS electrical protection assembly for an inservice RPS MG set or an inservice alternate power supply inoperable, restore the inoperable channel to operable status within 72 hours or remove the associated RPS MG set or alternate power supply from service.

2. With two RPS electrical protection assemblies for an inservice RPS MG set or an inservice alternate power supply inoperable, restore at least one to operable status within 30 minutes or remove the associated RPS MG set or alternate power supply from service.

See ITS: 3.3.8.2

G. REACTOR PROTECTION SYSTEM ELECTRICAL PROTECTION ASSEMBLIES

The RPS electrical protection assemblies instrumentation shall be determined operable by:

1. Performing a channel functional test each time the plant is in cold shutdown for a period of more than 24 hours, unless performed in the previous 6 months.

2. Once per 24 months, demonstrating the operability of over-voltage, under-voltage and under-frequency protective instrumentation by performance of a channel calibration including simulated automatic actuation of the protective relays, tripping logic and output circuit breakers and verifying the following setpoints:

	RPS MG SET SOURCE
OVER-VOLTAGE	≤132V ≤4 second Time Delay
UNDER-VOLTAGE	≥112.5V for "A"Channel ≥113.9V for "B" Channel ≤4 second Time Delay
UNDER-FREQUENCY	≥57Hz ≤4 second Time Delay

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

DISCUSSION OF CHANGES (DOCs) TO THE CTS

DISCUSSION OF CHANGES
ITS: 3.5.1 - ECCS - OPERATING

ADMINISTRATIVE CHANGES

A1 In the conversion of the James A. FitzPatrick Nuclear Power Plant (JAFNPP) Current Technical Specification (CTS) to the proposed plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes. Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the conventions in NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

A2 Existing specifications governing Operability and Surveillance Testing of Core Spray (CTS 3.5.A.1), Low Pressure Coolant Injection (CTS 3.5.A.3), High Pressure Coolant Injection (CTS 3.5.C.1), and Automatic Depressurization System (CTS 3.5.D.1) are proposed to be combined into proposed Specification 3.5.1, Emergency Core Cooling Systems (ECCS) – Operating, in recognition of the interdependence of the Operability requirements of these systems in meeting the assumptions of the design basis loss of coolant accident. In addition, supporting requirements in CTS 3.5.G (Maintenance of Filled Discharge Piping), and CTS 3.9.F (LPCI MOV Independent Power Supply) have been included along with the Surveillances of ITS 3.5.1 (SR 3.5.1.1 and SR 3.5.1.5, respectively). This is an administrative change in the format designed to make the Required Actions for inoperable ECCS more understandable to the operator.

A3 Existing surveillance tests to simulate automatic actuation of CS (4.5.A.1.a), LPCI (4.5.A.3), and HPCI (4.5.C.1) are all covered by ITS SR 3.5.1.10. This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. However, the Bases indicate that this test must include actuation of all automatic valves to their required positions. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance. This Note, therefore, is explicit recognition that proposed SR 3.5.1.10 can be satisfied by a series of overlapping tests. Since surveillance testing of CS (CTS 4.5.A.1.a), LPCI (CTS 4.5.A.3), and HPCI (CTS 4.5.C.1) do not presently require actual injection, and are all currently satisfied by a series of overlapping tests, the addition of the Note excluding vessel injection/spray is an administrative change. CTS 4.5.D.1 requires a simulated actuation test to be performed on the ADS valves. A Note is proposed to be added (Note to proposed SR 3.5.1.11) to exclude valve actuation. The valves are actuated per proposed SR 3.5.1.12. Therefore, similar to the ECCS pump Note, this change is administrative.

ADMINISTRATIVE CHANGES

A4 CTS 3.5.C.2 and CTS 3.5.D.3 do not require the High Pressure Coolant Injection (HPCI) System and Automatic Depressurization System (ADS) valves, respectively, to be Operable during low power physics testing and during reactor operator (criticality) training provided the reactor coolant temperature ≤ 212°F. These explicit requirements are not retained in the ITS. CTS 3.5.D.1 does not require the ADS valves to be Operable in cold condition. According to CTS Definition 1.0.C, Cold Condition means that the reactor coolant temperature is ≤ 212°F. In addition, CTS 3.5.C.1 does not require the HPCI System to be Operable when the reactor coolant temperature is ≤ 212°F. Therefore, since there are no Operability requirements for the HPCI System and ADS valves during the conditions of CTS 3.5.C.1 and CTS 3.5.D.1, the allowances provided are meaningless and therefore these deletions are considered administrative. This change is consistent with NUREG-1433, Revision 1.

AMEND #267

A5 Not used.

A6 CTS 4.5.G.2 requires that "following any period where these subsystems or systems have not been maintained in a filled condition; the discharge piping shall be verified filled with water from the pump discharge valve to the injection valve prior to declaring the subsystem or system operable". In the ITS presentation this type of requirement is handled generically by SR 3.0.1. SR 3.0.1 states in part that "failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be a failure to meet the LCO" and that "Surveillances do not have to be performed on inoperable equipment or variables outside specified limits." The Bases for SR 3.0.1 clarifies these requirements by stating "Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with

ADMINISTRATIVE CHANGES

A6 (continued)

SR 3.0.2." Thus, anytime where these subsystem or systems had not been maintained in a filled condition SR 3.0.1 would require that the subsystems or systems be verified filled prior to declaring the subsystems or systems operable. Therefore, this change is not a technical change and is considered administrative. The change is consistent with NUREG-1433, Revision 1.

A7 CTS 3.5.A.4.a requires that the "reactor shall not be started up with the RHR System supplying cooling to the fuel pool." CTS 3.5.A.b.4 requires that "the RHR System shall not supply cooling to the spent fuel pool when the reactor coolant temperature is above 212°F."

In the proposed ITS presentation the ability to change MODES is generically controlled by the provisions of LCO 3.0.4 which states in part that "when an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time." LCO 3.5.1, Condition A and Condition B, requires that the LPCI mode of RHR be Operable in MODES 1, 2, and 3, or if inoperable the reactor would be required to shutdown in 7 days, 12 hours.

Therefore LCO 3.0.4 would prevent plant startup with a LPCI subsystem inoperable (i.e., supplying cooling to the fuel pool results in LPCI being inoperable). Likewise, if the reactor coolant temperature is above 212°F, with the plant in MODE 1, 2, or 3 by definition of the MODEs Table (Table 1.1-1), both subsystems of LPCI would be required to be Operable, and therefore a loop of RHR could not be used to supply cooling water to the fuel pool. Therefore, this proposed change causes no technical or actual change from present specifications. Therefore, the change is considered administrative, and is consistent with NUREG-1433, Revision 1.

A8 A new ACTION has been added to CTS 3.5.A (for the Core Spray Systems and Low Pressure Coolant Injection Systems), CTS 3.5.C (for the High Pressure Coolant Injection System) and CTS 3.5.D (for the Automatic Depressurization System (ADS)) for all other conditions not addressed in the current Specification or in ITS 3.5.1 Conditions A, C, D, E, or F. With so many ECCS Systems inoperable the plant is considered to be outside it design bases and entry into CTS 3.0.C will be required. ITS 3.5.1 ACTION H is being proposed which will require immediate entry into LCO 3.0.3 (Required Action H.1) under the same conditions. Since the current Technical Specifications will also require entry into CTS

RAI 3.5.1 - BSI

ADMINISTRATIVE CHANGES

A8 (continued)

3.0.C, this change is considered administrative. Changes to action requirements of CTS 3.0.C are covered in the Discussion of Changes for ITS LCO 3.0. In addition, CTS 3.9.F.3 requires that "the reactor shall be brought to cold condition within 24 hours" when both LPCI independent power supplies are made or found to be inoperable. This specific default action has been changed to require entry into LCO 3.0.3 since the plant will be outside of its design basis in the condition. This portion of the change may be considered as more restrictive but since the current Completion Times in CTS 3.9.F.3 and CTS 3.0.C are equivalent this change is classified as administrative. These changes are consistent with NUREG-1433, Revision 1.

A9 The requirements in CTS 3.5.A.3.b and CTS 4.5.A.3.b concerning the LPCI cross tie valves have been simplified into one Surveillance which requires the verification that the valves are closed and power is removed from the electrical valve operator every 31 days (ITS SR 3.5.1.4). The details on how this is performed have been relocated to the Bases in accordance with LA4. Since the current requirements in both CTS 3.5.A.3.b and 4.5.A.3.b require the valves to be closed and power to be removed, this change reflects a presentation preference and is considered administrative since identical requirements have been combined into one Surveillance (SR 3.5.1.4) in the ITS. This change is consistent with NUREG-1433, Revision 1.

A10 CTS 3.5.G.1 requires the associated ECCS pump (e.g., LPCI and CS) to be declared inoperable for the purposes of satisfying Specifications 3.5.A, 3.5.C and 3.5.E, when the associated pump discharge piping cannot be maintained in a filled condition. This explicit cross reference is not required in ITS 3.5.1 since this CTS requirement is included along with the requirements of the associated system. Failure to meet this Surveillance will require direct entry into the appropriate ITS 3.5.1 ACTION(S). The Operability requirements in CTS 3.5.G.1 and 4.5.G.1 are directly incorporated in the required surveillances of ITS 3.5.1 (SR 3.5.1.1). ITS SR 3.0.1 states that SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance shall be a failure to meet the LCO. Therefore, incorporating the requirement to verify pump discharge piping is in the filled condition within the SRs associated with ECCS-Operating ensures the associated ECCS pump is declared inoperable when the surveillance is not met. Since there are no changes to any technical requirements this change is considered administrative. This change is consistent with NUREG-1433, Revision 1.

ADMINISTRATIVE CHANGES

A11 CTS 4.5.G.1 requires the discharge piping of the required ECCS subsystem to be vented every month prior to the testing of the LPCI and CS subsystems. This explicit requirement to perform the surveillance prior to the testing of the LPCI and CS subsystems has been deleted. The requirement to perform this surveillance every 31 days (ITS SR 3.5.1.1) is sufficient to ensure the discharge piping is full whenever the system is required to be Operable. This change is necessary since the ECCS subsystems flow rate Surveillances (e.g., CTS 4.5.A.1.b) are no longer tested every month. The Frequency of these Surveillances have been changed to "In accordance with the Inservice Testing Program" in recently approved Technical Specification Licensing Amendment 241. CTS 4.5.G.1 should have been modified during the process of the change. This will make the Surveillance consistent with other parts of the CTS and is therefore considered to be an administrative since the current Surveillance Frequency is every 31 days. This change is consistent with NUREG-1433, Revision 1.

A12 The requirement in CTS 3.9.F.2.a that operations may continue only if the other LPCI independent power supply battery including its battery charger, and distribution system is Operable has been deleted. The requirements of the battery and battery charger are included in ITS 3.8.4, while the requirements of battery cell parameters are included in ITS 3.8.6. ITS 3.5.1 includes the requirements for the inverters and the associated buses. The Safety Function Determination Program (ITS 5.5.12) which will be implemented at ITS implementation will require entry into applicable actions when a component in each division is inoperable. In this situation, there is a loss of safety function since the flow path of all LPCI pumps is not available. Therefore, the plant must shutdown in accordance with ITS 3.5.1 Required Action H.1 which requires immediate entry into LCO 3.0.3. The explicit removal of CTS 3.9.F.2.a is considered administrative since the inclusion of the Safety Function Determination Program (as reflected in the Discussion of Changes for Section 5.0) will monitor these types of inoperabilities to ensure there is no loss of safety function. Entry into proposed LCO 3.0.3 will be required upon this loss of safety function. This change is consistent with the philosophy of NUREG-1433, Revision 1.

A13 Not used.

RAI 3.5.1-BSN edit
AMEND #267

TECHNICAL CHANGES - MORE RESTRICTIVE

M1 CTS 4.5.C permits up to 10 days of continuous operation from the time steam becomes available until HPCI Surveillances need to be performed. The Note to ITS SR 3.5.1.8 and SR 3.5.1.9 and Note 1 of SR 3.5.1.10 will allow only 12 hours from the time reactor steam pressure and flow are adequate to perform the test. The 12 hours is deemed to be adequate to perform the testing involved without impacting plant operation. Since the relaxation from performing the test has been reduced from 10 days to 12 hours the change is considered more restrictive. This change will have no impact on plant safety. Instead, it will require that the actual surveillances be performed sooner in the plant startup, and thereby demonstrate HPCI Operability sooner than current requirements dictate.

M2 CTS 4.5.C.1 requirement, that HPCI deliver at least 4,250 gpm (see L7) is being divided into two separate Surveillance Requirements SR 3.5.1.8 and SR 3.5.1.9. ITS SR 3.5.1.8 will require a demonstration of the HPCI pump capability at nominal conditions (970 to 1040 psig in the reactor steam dome) every 92 days. Reactor pressures of $\geq$ 970 psig and $\leq$ 1040 psig represents a nominal value at rated conditions within the CTS required band for testing. This pressure range represents conditions of lower driving pressure for the HPCI turbine and thus, a more restrictive condition under which to provide the required flow. ITS SR 3.5.1.9 will require a demonstration of the HPCI pump capability $\leq$ 165 psig every 24 months. Reactor pressure of $\leq$ 165 psig is near the lower limit (i.e., $\geq$ 150 psig) of operability/capability of the HPCI turbine, yet provides a 15 psig range above the lower limit in which to conduct the test. CTS required that the HPCI test confirm the capability of the pump at 150 psig. As a practical consideration, the test is performed when sufficient pressure is available at near 150 psig. To require the test at $\leq$ 150 psig would be to require a test of the capability of the pump outside the required operability range. Dividing the current surveillance into two separate Surveillance Requirements with explicit Frequencies, and specifying the reactor vessel pressure ranges constitutes an added requirement. Therefore, this change is more restrictive on plant operation but necessary to ensure HPCI is Operable over its entire operating range.

RAI 3.5.3-1, Revised response

TECHNICAL CHANGES - MORE RESTRICTIVE

M3 CTS 3.5.D.1 requires that at least 5 of the 7 ADS valves be Operable. ITS LCO 3.5.1 requires that at least 6 of the ADS valves be Operable. The proposed change also adds two Actions (ITS 3.5.1 ACTION E and F) which do not exist in the CTS. ACTION E contains requirements for what to do if one of the six required ADS valves is inoperable. The Action allows up to 14 days to restore the inoperable ADS valve. ACTION F limits continued reactor operation to 72 hours when there is a simultaneous inoperability of one required ADS valve (one of the six required ADS valves) and one low pressure ECCS (CS or LPCI) subsystem or one LPCI pump inoperable in each subsystem. These requirements are more restrictive because current requirements would allow continued plant operation under the same conditions. The current specifications do not have any concurrent Actions for inoperable ADS valves and inoperable low pressure ECCS Systems. With only five ADS valves Operable or with both a required ADS valve and a low pressure ECCS subsystem (or one LPCI pump inoperable in each subsystem) inoperable, another single failure may place the plant in a condition where adequate core cooling may not be available during an accident. Therefore, the added more restrictive actions are appropriate. The addition of new requirements to the Technical Specifications constitutes a more restrictive change. These Completion Times are consistent with the recommendations of a reliability study (Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975) and have been found to be acceptable through operating experience.

RAI 3.5.1-BSI RAI 3.5.1-BSI

M4 CTS 3.5.A.6 requires that the reactor be placed in the cold shutdown condition within 24 hours when the ACTIONS or Completion Times associated with an inoperable LPCI or CS System cannot be satisfied. CTS 3.5.C.1.b and CTS 3.5.D.2 require that the reactor be placed in the cold shutdown condition within 24 hours when the ACTIONS associated with an inoperable HPCI or ADS System cannot be satisfied. In addition, CTS 3.9.F.3 requires that the reactor be brought to cold condition within 24 hours when both LPCI independent power supplies are made or found to be inoperable. This specific default action has been interpreted to also require entry when the ACTIONs or Completions Times associated with CTS 3.9.F.2 is not met since no other exists. ITS 3.5.1 Required Actions B.1 and G.1 will require the plant be in MODE 3 within 12 hours under

RAI 3.5.1-BSI

TECHNICAL CHANGES - MORE RESTRICTIVE

M4 (continued)

the same conditions. Based on operating experience, this Completion Time limit still allows for an orderly transition to MODE 3 without challenging plant systems. This change is more restrictive because it provides an additional requirement to place the plant in MODE 3 in 12 hours but is necessary to ensure timely Action is taken to place the plant in a MODE outside of the Applicability.

M5 CTS 4.5.A.5 requires that recirculation pump discharge valves be demonstrated Operable (capable of being closed) following "any period of reactor cold shutdown exceeding 48 hours". This requirement is proposed to be replaced by SR 3.5.1.6 which requires that recirculation pump discharge valve Operability verification be performed once each startup prior to exceeding > 25% RTP. Recirculation pump discharge valves are not required while the plant is shutdown. The requirement to perform the verification once each startup prior to exceeding 25% RTP is more restrictive than the existing requirement to perform the test since the test will now be required to be performed within 31 days of any startup not just a startup from a Cold Shutdown that exceeded 48 hours. This change is necessary to ensure the Operability of the recirculation pump discharge valves are adequately maintained.

M6 A new requirement to verify the ADS pneumatic supply header pressure has been added to existing Specifications to ensure adequate pneumatic pressure is available for ADS operation. This new requirement in SR 3.5.1.3 replaces CTS 4.6.E.3 (see comment LA5), the integrity surveillance of the nitrogen system since it addresses an important characteristic of OPERABILITY of whether there is sufficient pneumatic pressure available to permit the actuation of the ADS valves. The addition of this new requirement to the Technical Specifications constitutes a more restrictive change necessary to ensure minimum operability requirements.

M7 CTS 4.9.F.7, the requirement to open the battery charger A-C input breakers one at time and to observe proper operation, has been revised to explicitly state the required LPCI inverter output voltage. This SR will require to cycle open and closed each LPCI motor operated valve independent power supply battery charge AC input breaker and verify that each inverter output voltage is $\geq$ 576 V and $\leq$ 624 V while supplying the respective bus. Since more details are being added this represents a more restrictive change but is necessary to help ensure that the electrical power to the LPCI injection and heat exchanger bypass valves and recirculation discharge valves remains Operable.

TECHNICAL CHANGES - MORE RESTRICTIVE (continued)

M8 According to CTS 3.9.F.1, the reactor shall not be made critical unless both LPCI MOV Independent Power Supplies are operable which is effectively MODES 1 and 2. ITS 3.5.1 requires the low pressure core injection subsystems to be Operable in MODES 1, 2 and 3. Since the operability of the LPCI MOV Independent Power Supply effects the OPERABILITY of the associated LPCI subsystem, the operability requirements of LPCI MOV Independent Power Supplies have been extended to MODE 3. This ensures that each LPCI subsystem will remain operable with the required uninterruptable power supply during reactor conditions where there is significant core energy. This change is considered more restrictive and has no adverse effect on safety.

M9 CTS 4.6.E.4 requires the safety/relief valves to be manual opened every 24 months. ITS SR 3.4.3.2 requires this same manual opening but requires the actuation to be initiated on a Staggered Test Basis for each valve solenoid. This will ensure that a different solenoid will be used to actuate the valve every 24 months and is considered more restrictive since the current requirement does not specify which solenoid to use. This change is necessary to ensure both solenoids are tested within any 48 month period.

M10 CTS 3.5.A.5 requires all recirculation pump discharge valves to be Operable prior to reactor startup (or closed if permitted elsewhere in these specifications). ITS 3.5.1 and associated SR 3.5.1.6 also require all recirculation pump discharge valves to be Operable. However, if this requirement can not be met, then ITS SR 3.5.1.5 allows the associated recirculation pump discharge valve to be "de-energized" in the closed position. Requiring the inoperable recirculation pump discharge valve to also be "de-energized" in the closed position represents an additional restriction on plant operation. This change is necessary to ensure the proper flow path for the associated LPCI subsystem.

M11 CTS 4.5.G.3 requires the HPCI System discharge piping to be vented from the high point of the system whenever HPCI is lined up to take suction from the condensate storage tank (CST) on a monthly basis. In ITS SR 3.5.1.1 this requirement must be met whenever HPCI is required to be Operable whether it is aligned to the CST or the suppression pool. This change is considered more restrictive on plant operation but necessary to help prevent a water hammer following an initiation signal.

M12 CTS 3.5.A.1 and 3.5.A.3 require the Core Spray (CS) and Low Pressure Coolant Injection (LPCI) Systems, respectively to be Operable whenever irradiated fuel is in the reactor vessel and prior to reactor startup from cold shutdown (this covers MODES 1, 2 in the ITS). CTS 3.5.A

TECHNICAL CHANGES - MORE RESTRICTIVE

M12 (continued)

specifies requirements for the LPCI cross tie valves whenever reactor water temperature is greater than 212°F (this covers MODES 1, 3, and portions of MODE 2 operations). In addition, CTS 3.5.A.5 specifies requirements for the recirculation pump discharge valves prior to reactor startup (this covers MODE 1 and 2 in the ITS). The ITS Applicability for these components and Systems (Applicability of ITS 3.5.1) are MODES 1, 2 and 3. This change is more restrictive since the Applicability of all portions of the CS and LPCI subsystems have been changed to cover all three plant operating modes. This change is necessary to ensure all portions of these low pressure ECCS Systems are Operable in MODES where they are assumed to mitigate accidents.

M13 An actual or simulated automatic isolation test (ITS SR 3.5.1.10) has been added to the requirements of CTS Table 4.2-2 Item 3 (Part 2) (Containment Cooling Subsystem) to ensure both a Logic System Functional Test as well as an actual or simulated automatic isolation test is performed for all associated Low Pressure Coolant Injection (LPCI) System Functions currently included in Table 3.2-2 and 4.2-2. The new Surveillance will ensure CTS Table 3.2-1 Items 5 and 6 (ITS Table 3.3.5.1-1 Functions 2.e and 2.h, Reactor Vessel Shroud Level (Level 0) and Containment Pressure - High) are properly tested throughout their operating sequence. Although the current test seems to imply the test is related to the operability of the containment cooling mode, CTS 3.2-2 states that these functions prevent inadvertent operation of containment spray during accident conditions which ensures the Operability of the associated LPCI subsystem. This surveillance is not currently required to be performed, therefore, this change is considered more restrictive on plant operation but is added to enhance plant safety.

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

LA1 CTS 4.5.D.1.b discusses a surveillance requirement for demonstrating that a simulated automatic ADS actuation is inhibited by the override switches. The ADS Inhibit Switch Function is an operational function only and is not considered in any design basis accident or transient. It does provide mitigation of the consequences of a non-design basis ATWS event; however the evaluation summarized in NEDO-31466, November 1987, determined the loss of ADS Manual Inhibit Switch Function to be a non-significant risk contributor to core damage frequency and offsite release. Therefore, the requirements specified in CTS 4.5.D.1.b for the ADS Inhibit Switch Function did not satisfy 10 CFR 50.36(c)(2)(ii) and are proposed to be relocated to the Technical Requirements Manual (TRM).

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

LA1 (continued)

The TRM will be incorporated by reference into the UFSAR at ITS implementation. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59.

LA2 The details in CTS 4.5.D.1.a that the simulated automatic actuation test for the Automatic Depressurization System (ADS) opens the pilot valves (control valves) is proposed to be relocated to the Bases. The requirement in SR 3.5.1.11 to verify the ADS actuates on an actual (L1) or simulated automatic initiation signal every 24 months, the requirement in LCO 3.5.1 that the ADS function of six safety/relief valves shall be OPERABLE, the definition of OPERABILITY and the applicability of these requirements ensures the appropriate components must be OPERABLE and tested in the required Frequency. As such, these details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the Technical Specifications.

LA3 The methods in CTS 4.6.E.4 for verifying the safety/relief valves have opened (i.e., while bypassing steam to the condenser, etc) and the detail that the test must be performed in Run are proposed to be relocated to the Bases. These details are not necessary to ensure Operability of the S/RVs. The requirements of ITS LCO 3.5.1 and the associated SRs are adequate to ensure that ADS is maintained OPERABLE. SR 3.5.1.13 will require each required ADS valve to be manually actuated after reactor steam dome pressure and flow are adequate to perform this test. The Bases for this SR will prescribe the test method and the conditions for performing the test. In addition, the Bases discusses that the pressure and flow conditions will require the plant to be in MODE 1, which has been shown to be an acceptable condition to perform this test. This test will cause a small neutron flux transient which may cause a scram while operating close to the Average Power Range Monitors Neutron Flux-High (Startup) Allowable Value in MODE 2. As such these methods of verification and details that the plant must be in Run are not necessary to be included in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the Technical Specifications.

LA4 CTS 3.5.A.3.b contains detailed descriptions of the requirements of assuring that the LPCI cross-tie line be isolated. ITS SR 3.5.1.4 requires that the cross tie valves be verified closed and electrical power be removed from the electrically powered motor operator.

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

LA4 (continued)

Additional details on actual valve numbers and method of valve closing presents information that is not required for assuring that the cross-tie be isolated. These additional details are proposed to be relocated to the Bases. As such, these details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the Technical Specifications.

LA5 The requirement in CTS 4.6.E.3 concerning the integrity of the nitrogen system and components which provide manual and ADS actuation of the safety/relief valves are proposed to be relocated to the Technical Requirements Manual (TRM). The system will continue to be required to perform its required safety function to be considered OPERABLE. ITS SR 3.5.1.3 is added (refer to M6) to address the important characteristic of whether there is sufficient pneumatic pressure available to permit the actuation of the ADS valves should an accident occur. The Operability requirements of ITS 3.5.1 for ADS valves and the ITS definition of OPERABLE - OPERABILITY are adequate to ensure the ADS valves are maintained capable of performing their specified safety function. In addition, the surveillance being relocated will continue to be performed and will identify degradation of the ADS nitrogen system pressure retention capabilities. As such, this surveillance is not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the relocated requirement in the TRM will be controlled by the provisions of 10 CFR 50.59.

LA6 CTS 4.5.G.1, 4.5.G.2, and CTS 4.5.G.3 present the technical detail of the method to be employed to assure that the Core Spray, Low Pressure Coolant Injection and High Pressure Coolant Injection pump discharge lines are full of water (shall be vented from the high point of the system and water flow observed). The detail pertaining to how these Surveillances are to be performed are proposed to be relocated to the Bases. These details are not necessary to ensure the Operability of the ECCS subsystems. The requirements of Specification 3.5.1, ECCS-Operating, and the associated SR 3.5.1.1 are adequate to ensure the ECCS subsystems remain Operable. Therefore, the relocated details are not required to be in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the Bases Control Program described in Chapter 5 of the Technical Specifications.

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC) (continued)

LA7 The requirement in CTS 4.5.A.1.d and CTS 4.5.A.1.g to perform motor operator valve and testable check valve testing respectively, for the Core Spray System in accordance with the Frequency of the Inservice Testing (IST) Program are proposed to be relocated to the IST Program. In addition, these same tests required for the Low Pressure Core Injection System (referenced in CTS 4.5.A.3) and the High Pressure Coolant Injection System (referenced in CTS 4.5.C.1) are also proposed to be relocated to the IST Program. The IST Program lists all valves required to be tested in accordance with ASME Section XI. In addition, ITS 5.5.7 requires the IST Program to be conducted. These controls are adequate to ensure the required tests are performed at the appropriate frequencies. Therefore, these tests do not need to be repeated in the Technical Specifications to provide adequate protection of the public health and safety. Changes to the IST Program will be controlled by the provisions of 10 CFR 50.59.

LA8 The requirement in CTS 4.9.F.1 and CTS 4.9.F.6 to perform a weekly visual inspection on the LPCI MOV Independent Power Supply inverters is proposed to be relocated to the Technical Requirements Manual (TRM). This inspection does not necessarily determine whether the inverter is OPERABLE. The requirement in proposed SR 3.5.1.5 (see comment M7) to verify the LPCI independent power supply inverter output voltage is within the correct limits while supplying the associated bus and the proposed Surveillances in LCO 3.8.4, "DC-Sources" for the LPCI independent power supply batteries ensures an uninterruptable power supply is available to support the LPCI motor operated valves during a design bases accident. As such, this surveillance is not required to be in the ITS to provide adequate protection of the public health and safety. At ITS implementation, the TRM will be incorporated by reference into the UFSAR. Changes to the relocated requirements in the TRM will be controlled by the provisions of 10 CFR 50.59.

AMEND #267

LA9 Not used.

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

LB1 The operability of the Core Spray and RHR level switches on the discharge piping keep full level switch instrumentation in CTS 4.5.G.4 is not directly related to the respective system Operability and are proposed to be relocated to the Technical Requirements Manual (TRM). NUREG-1433 does not specify indication-only equipment to be Operable to support Operability of a system or component. The availability of indications, monitoring instruments, and alarms are normally controlled by plant operating procedures and policies. These procedures also control compensatory actions (such as system venting) if the instrumentation is inoperable. Therefore, this instrumentation, along with the supporting Surveillance, are proposed to be relocated to the TRM. These details are not required to be in the ITS to provide adequate protection of public health and safety. At ITS implementation, the relocated requirement will be incorporated by reference into the UFSAR. Changes to the relocated requirements in the TRM will be controlled by the provisions of 10 CFR 50.59.

LB2 CTS 4.5.A.1.e requires daily checks and quarterly tests and calibration of the Core Spray header Delta P Instrumentation. These requirements are proposed to be relocated to the Technical Requirements Manual (TRM). This instrumentation provides continuous verification of the integrity of Core Spray piping inside the reactor vessel. NUREG-1433 does not specify alarm-only equipment to be Operable to support the Operability of a system or component. The availability of indications, monitoring instruments, and alarms are normally addressed by plant operating procedures and policies. These procedures also control compensatory actions if the instrumentation is inoperable. Therefore, this instrumentation along with supporting surveillances are proposed to be relocated to the TRM and implemented through plant procedures. These details are not required to be in the ITS to provide adequate protection of public health and safety. At ITS implementation, the relocated requirement will be incorporated by reference into the UFSAR. Changes to the relocated requirements in the TRM will be controlled by the provisions of 10 CFR 50.59.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 Existing requirements for actuation testing of CS (CTS 4.5.A.1.a and Table 4.2-2 Note 7), LPCI (CTS 4.5.A.3 and Table 4.2-2 Note 7), HPCI (CTS 4.5.C.1 and Table 4.2-2 Note 7), and ADS (CTS 4.5.D.1.a and Table 4.2-2 Note 7) stipulate a simulated automatic actuation test shall be performed. The phrase "actual or," in reference to the automatic initiation signal, has been added to the Surveillance Requirements for verifying that each ECCS subsystem actuates on an automatic initiation signal. This allows satisfactory automatic system initiations to be used to fulfill the Surveillance Requirements. Operability is adequately demonstrated in either case since the ECCS subsystem itself can not discriminate between "actual" or "simulated" signals.

L2 CTS 4.5.A.2 requires the immediate verification that the remaining Core Spray (CS) subsystem and both low pressure coolant injection (LPCI) subsystems are Operable whenever it is determined that one CS subsystem is determined to be inoperable. It also requires the verification that the remaining CS subsystem is Operable daily thereafter. CTS 4.5.A.3.a requires the immediate and daily verification that the remaining LPCI subsystem and both CS subsystems are Operable whenever it is determined that one LPCI subsystem is determined to be inoperable. It also requires the verification that the remaining CS subsystem is Operable daily thereafter. CTS 4.5.C.1.a requires that RCIC, both LPCI subsystems, both CS subsystems, and the ADS System actuation logic be verified to be Operable immediately when it is determined that HPCI is determined to be inoperable. It also requires that the RCIC and ADS Systems logic be verified to be Operable daily thereafter. When it is determined that two ADS valves are inoperable, CTS 4.5.D.2.a requires the ADS System actuation logic for the operable ADS valves and the HPCI System be verified to be Operable immediately and at least weekly thereafter.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 (continued)

Finally, CTS 4.5.D.2.b requires that when it is determined that more than two relief/safety valves of the ADS are inoperable, the HPCI System shall be verified to be Operable immediately. These explicit verifications have all been deleted except for the verification that RCIC is Operable when HPCI is determined to be inoperable. ITS 3.5.1 Required Action C.1 requires verification by administrative means that the RCIC System is Operable immediately. These verifications are an implicit part of using Technical Specifications and determining the appropriate Conditions to enter and Actions to take in the event of inoperability of Technical Specification equipment. In addition, plant and equipment status is continuously monitored by control room personnel. The results of this monitoring process are documented in records/logs maintained by control room personnel. The continuous monitoring process includes re-evaluating the status of compliance with Technical Specification requirements when Technical Specification equipment becomes inoperable using the control room records/logs as aids. Therefore, the explicit requirements to periodically verify the Operability of other systems, subsystems, or components when an ECCS component, subsystem, or system is inoperable are considered to be unnecessary for ensuring compliance with the applicable Technical Specification actions. The RCIC verification has been retained in ITS 3.5.1 as Required Action C.1 due to the similar high pressure functions of the RCIC subsystem with HPCI and as required by CTS 3.5.C.1.a (RCIC System must be Operable whenever HPCI is inoperable). Since the Operability requirements of RCIC are included in ITS 3.5.3, this cross check between Specifications is necessary. On the otherhand, the cross checks between ECCS Systems are not necessary since all ECCS requirements are included in one Specification (ITS 3.5.1) as described in A3.

TSTF - 301, R0 RAI 3.5.1-BSI

TSTF - 301, R0

L3 The pressure at which ADS is required to be Operable in CTS 3.5.D.1.a is proposed to be increased from >100 psig to > 150 psig (ITS 3.5.1 Applicability) to provide consistency with the Operability requirements for HPCI. The ADS is required to operate to lower the pressure sufficiently so that the LPCI and CS Systems can provide makeup to mitigate small break LOCA accidents when HPCI does not actuate. The Core Spray and LPCI systems can begin to inject water into the reactor pressure vessel at pressures well above 150 psig. The values used in the JAFNPP plant specific LOCA analysis (NEDC-31317P, "James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis) are 196 psig for LPCI and 265 psig for CS. Therefore, there is no safety significance in ADS not being Operable between 100 and 150 psig. Along with this change the default action of

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L3 (continued)

CTS 3.5.D.2 to reduce pressure to less than 100 psig has been changed to reduce reactor steam dome pressure to ≤ 150 psig consistent with the proposed Applicability. These changes are consistent with NUREG-1433, Revision 1.

L4 CTS 3.5.A.6 requires that the reactor be in the cold condition within 24 hours when the ACTIONS for LPCI or CS cannot be satisfied, CTS 3.5.C.1.b requires that the reactor be in the cold condition and reactor pressure be reduced to less than 150 psig within 24 hours when the ACTIONS for HPCI cannot be satisfied, and 3.5.D.2 requires that the reactor be placed in the cold condition and that reactor pressure be reduced to less than 100 psig (see L2) within 24 hours when the Required Actions for inoperable ADS valves cannot be satisfied. In addition, CTS 3.9.F.3 requires that the reactor shall be brought to cold condition within 24 hours when both LPCI independent power supplies are made or found to be inoperable. This specific default action has been interpreted to also require entry when the ACTIONs or Completions Times associated with CTS 3.9.F.2 is not met since no other exists. The proposed requirements, LCO 3.5.1, Required Actions B.2 and G.2, extend the time allowed for the plant to reduce pressure or be in MODE 4 or to be at ≤ 150 psig respectively, from 24 hours to 36 hours. This change is acceptable since the compensatory action added in accordance with M4 and this extended time to reach MODE 4 (or ≤ 150 psig in the case of Required Action G.2) will ensure a more continuous reduction in power and reactor coolant temperature the specified maximum cooldown rate and within the capabilities of the plant. The additional time to complete these ACTIONS reduces the potential for a plant event that could challenge plant safety systems.

RAI 3.5.1-BSI

L5 CTS 3.5.C.1.a allows continued operation for a maximum of 7 days after HPCI is determined to be inoperable. ITS 3.5.1 ACTION C allows continued operation for a maximum of 14 days under the same conditions. As in the existing Specification, the 14 day Completion Time for restoring HPCI is contingent upon the Operability of RCIC and all of the ECCS subsystems (ADS, LPCI, and CS). The exception, ITS 3.5.1 ACTION D, which allows operation for 72 hours with HPCI and one low pressure ECCS subsystem inoperable or one LPCI pump inoperable in each subsystem is addressed in L6. The 14 day Completion Time is consistent with a reliability study that evaluated the impact on ECCS availability (Memorandum from R.L. Baer (NRC) to V. Stello, JR. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975). Factors contributing to the acceptability of allowing continued operation for 14 days with HPCI inoperable include: the similar

RAI 3.5.1-BSI

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L5 (continued)

functions of HPCI and RCIC, and that the RCIC is capable of performing the HPCI function, although at a substantially lower capacity; the continued availability of the required complement of ADS valves and the ADS system's capability in response to a small break LOCA; and, the continued availability of the full complement of low pressure ECCS subsystems which, in conjunction with ADS, are capable of responding to a small break LOCA.

RAI 3.5.1-BSI

L6 ITS 3.5.1 ACTION D establishes Required Actions and Completion Times for the situation when the HPCI System and one low pressure ECCS (CS or LPCI) subsystem or one LPCI pump in each subsystem are inoperable. The proposed Specification is less restrictive than CTS 3.5.C, which allows continued operation if HPCI is inoperable only if the ADS subsystem, the RCIC System, both LPCI subsystems and both core spray subsystems are Operable. The accident analysis presented in NEDC-31317P, "James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis", indicates that the plant is protected by the ADS System and the remaining ECCS subsystems when the HPCI System and a low pressure ECCS subsystem (or one LPCI pump in each subsystem) are inoperable. However, with both the HPCI System and a low pressure ECCS subsystem inoperable (or one LPCI pump in each subsystem), another single failure may place the plant in a condition where adequate core cooling may not be available during an accident. Therefore, an allowable outage time of 72 hours has been assigned to either restore the inoperable HPCI System or the low pressure ECCS subsystem(s). This Completion Time is consistent with the recommendations of a reliability study (Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975) and has been found to be acceptable through operating experience. Furthermore, the change is considered acceptable since not requiring an immediate plant shutdown reduces the potential for an unnecessary shutdown transient.

edit

L7 The flow rates specified in CTS 4.5.A.3 (8,910 gpm) for the Low Pressure Injection System (LPCI) and CTS 4.5.C.1 (4250 gpm) for the High Pressure Injection System (HPCI) have been decreased to 7700 gpm and 3400 gpm, respectively. These proposed values are consistent with the values used in the plant specific LOCA analysis reflected in NEDC-31317P (James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss of Coolant Accident Analysis). The SAFER/GESTR-LOCA analysis for FitzPatrick was performed with NRC requirements and demonstrates conformance with the ECCS acceptance criteria of 10 CFR 50.46 and 10 CFR 50, Appendix K. A sufficient number of plant-specific break sizes were evaluated to

edit

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L7 (continued)

establish the behavior of both the nominal and Appendix K peak cladding temperature (PCT) as a function of break size. Different single failures were also investigated in order to clearly identify the worst cases. The FitzPatrick specific analysis was performed with a conservatively high Peak Linear Heat Generation Rate and a conservatively low Minimum Critical Power Ratio (MCPR). The Licensing Basis PCT for JAFNPP is 1620°F, which is well below the PCT limit of 2200°F. The Upper Bound PCT limit is 1600°F. The calculated Upper Bound PCT for the analysis is 1510°F. With the explicit verification that the Licensing Basis PCT for JAFNPP is greater than the Upper Bound (95th percentile) PCT, the level of safety and conservatism of this analysis meets the NRC approved criteria. Therefore, the requirements of Appendix K are satisfied with the proposed flow rates and the change is considered acceptable. In addition, the IST Program requires the trending of ECCS pump pressure, flow rate, and vibration. Whenever the parameters fall within the IST Alert Range the test frequency is required to be doubled until the cause of the deviation is determined and the condition corrected. If a parameter falls within the IST required action range, the associated pump(s) must be declared inoperable and the appropriate Condition(s) of ITS 3.5.1 must be entered. Since the requirements of the IST Program will continue to monitor the status of ECCS pumps and provide corrective actions at a more conservative action level than the ITS values, the reduction in the CTS flow rates have little or no impact on plant operations.

RAI edit 3.5.1 - BSI

L8 ITS 3.5.1 Condition A (second part) has been added to allow continued operation for 7 days with one low pressure coolant injection pump inoperable in each subsystem. CTS 3.5.A.2 and CTS 3.5.A.3.a require the plant to shutdown under the same conditions in accordance with the CTS 3.0.C, implying that the plant is outside design basis. The plant analysis summarized in NEDC-31317P (James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss of Coolant Accident Analysis), shows that adequate core cooling is provided in these conditions even if the break occurs on a pipe connected to one of the OPERABLE ECCS pumps (recirculation discharge pipe or Core Spray pipe). The Licensing Basis PCT for JAFNPP is 1620°F, which is well below the PCT limit of 2200°F. The Upper Bound PCT limit is 1600°F. The calculated Upper Bound PCT for the analysis is 1510°F. With the explicit verification that the Licensing Basis PCT for JAFNPP is greater than the Upper Bound (95th percentile) PCT, the level of safety and conservatism of this analysis meets the NRC approved criteria. Therefore, the requirements of Appendix K are satisfied in this configuration. However, in the above described conditions, the redundancy is reduced such that an additional

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L8 (continued)

RAI 3.5.1-BSI

single active component failure may not maintain the ability to provide adequate core cooling. The 7 day Completion Time is consistent with the recommendations of a reliability study (Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975) and has been found to be acceptable through operating experience. Furthermore, this change is considered acceptable since not requiring an immediate plant shutdown reduces the potential for an unnecessary shutdown transient.

L9 The details in CTS 3.9.F.1 related to the specific inverter buses (MCC-155 and MCC-165) required to be in service are proposed to be deleted. These details are not necessary to ensure the LPCI inverter and buses remain Operable. The proposed definition of OPERABLE - OPERABILITY specifies that a system is considered OPERABLE when it is capable of performing its specified safety function(s) and when all necessary attendant equipment are capable of performing their related support function(s). The inverter buses support the OPERABILITY of the LPCI System valves, which must automatically align upon receiving an automatic actuation signal so that the LPCI pumps can inject water into the vessel. Thus, the inverter buses support the OPERABILITY of the LPCI subsystem valves which in turn support the OPERABILITY of the LPCI System. Therefore, implicitly by the definition of OPERABILITY and the requirement that ECCS injection subsystem must be OPERABLE is sufficient to ensure this equipment is maintained Operable. In addition, the requirement of ITS SR 3.5.1.5 (M7) to verify each LPCI motor operated valve independent power supply inverter output voltage is $\geq$ 584 and $\leq$ 616 V while supplying the respective bus (which describes the required equipment) helps to ensure the required equipment is maintained Operable. The Bases also provides a description of the type of equipment required by the Specification.

L10 CTS 3.9.F.2.c requires, if one independent power supply becomes inoperable, the inoperable independent power supply be isolated from its associated LPCI MOV bus, and this bus be manually switched to its alternate power source. If this cannot be met, CTS 3.0.C must be entered and the plant must be in COLD SHUTDOWN within 24 hours. This change deletes this requirement since CTS 3.5.A.2 allows a 7 day Completion Time for any other LPCI subsystem inoperability with no other compensatory actions. The CTS action is sometimes impractical since the most important action is to repair the inoperable LPCI MOV Independent Power Supply, perform the required tests to ensure OPERABILITY and place it into service once again. This change will allow operations to concentrate on restoration of the equipment rather than to simply switch

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L10 (continued)

the bus to its alternate power source. In addition, since the LPCI MOV Independent Power Supply System is an attribute of maintaining LPCI Operable, a 7 day allowed outage time is provided for these conditions consistent with the existing time allowed for other conditions when a LPCI subsystem is inoperable and with the allowance in CTS 3.9.F.2 for one LPCI MOV Independent Power Supply. This change will provide consistency in ITS ACTIONS for the various LPCI System degradation. With a LPCI subsystem inoperable, the risk associated with continued operation for a short period of time could be less than that associated with a plant shutdown. This change is acceptable since the accident analysis can be satisfied with the remaining LPCI independent power supply system.

L11 CTS 3.9.F.2.b requires the performance of additional Surveillances on the OPERABLE LPCI MOV Independent Power Supply System if one LPCI MOV Independent Power Supply System is inoperable. The proposed change deletes the additional requirements. This change will allow credit to be taken for normal periodic Surveillances as a verification of OPERABILITY and availability of the remaining LPCI MOV Independent Power Supply subsystem components. The LPCI MOV Independent Power Supply System is a very reliable system, therefore this CTS requirement would rarely be required to be performed. In addition, the Frequencies specified to verify OPERABILITY of the remaining LPCI components are adequate to ensure equipment OPERABILITY. As stated in NRC Generic Letter 87-09, "It is overly conservative to assume that systems or components are inoperable when a surveillance requirement has not been performed. The opposite is in fact the case; the vast majority of surveillances demonstrate the systems or components in fact are Operable." Therefore, reliance on the specified surveillance intervals does not result in a reduced level of confidence concerning the equipment availability. Also, the ITS and current BWR operating philosophy accept the philosophy of system OPERABILITY based on satisfactory performance of monthly, quarterly, refueling interval, post-maintenance or other specified performance tests without requiring additional testing when another system is inoperable (except for diesel generator testing, which is not being changed).

L12 A Note has been added to CTS 4.5.A.3 (ITS SR 3.5.1.2 Note) that allows the LPCI subsystems to be considered OPERABLE during alignment and operation in decay heat removal below the RHR cut in permissive in MODE 3, if capable of being manually realigned and not otherwise inoperable. In MODE 3 all control rods are inserted, and with the reactor steam dome pressure less than the RHR cut in permissive pressure, a reduced

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L12 (continued)

complement of low pressure ECCS subsystems should provide the required cooling, thereby allowing operation of RHR shutdown cooling, when necessary. This allowance will avoid an unnecessary entry into the ACTIONS of proposed ITS 3.5.1 which in turn may require the initiation of a plant shutdown which is the objective of aligning a LPCI subsystem in the decay heat removal mode. Removing decay heat will in turn place the plant outside the Applicability of the Specification where even fewer ECCS Systems are required to be Operable. This change is acceptable since it avoids an unnecessary entry into ITS 3.5.1 ACTIONS and allows operators to concentrate on the controlled shutdown and place the reactor in a safe condition outside the Applicability of ITS 3.5.1. This change is consistent with NUREG-1433, Revision 1.

L13 The explicit requirement in CTS 4.5.D.1 to open "all" Automatic Depressurization System (ADS) pilot valves during the performance of the simulated automatic actuation test has been modified. ITS SR 3.5.1.11 requires the verification that ADS actuates on an actual (L1) or simulated automatic initiation signal. This change is less restrictive since this test will only require the pilot valves (solenoids) associated with six (6) Operable ADS valves to be tested during the performance of the Surveillance. This change is acceptable since only "required" equipment must be OPERABLE to satisfy the conditions of the LCO. ITS 3.5.1 LCO will require 6 ADS valves (M3) to be Operable since only five (5) ADS valves are needed to meet the safety analysis. This ensures the single criteria can be met. When the Surveillance is performed if 6 pilot valves open, the Surveillance and LCO are met. This change is consistent with the philosophy in NUREG-1433, Revision 1.

RAI 3.5.1-BSI

L14 CTS 3.5.C.1.b requires pressure to be reduced to less than 150 psig. ITS 3.5.1 Required Action G.2 requires reactor steam dome pressure to be reduced to $\leq$ 150 psig. This change is slightly less restrictive since a reduction in reactor steam dome pressure to only 150 psig will be considered as satisfying the requirement, whereas in the CTS reactor steam dome pressure must be reduced to < 150 psig. This change is acceptable since it places the plant outside of the current and proposed Applicability of the HPCI System in CTS 3.5.C.1 (ITS 3.5.1 Applicability). This change is consistent with NUREG-1433, Revision 1.

RAI 3.5.3 - 1
Revised response

L15 The CTS 4.5.C.1.b specification that required HPCI flow be demonstrated "against a system head corresponding to a reactor vessel pressure of 1195 to 150 psig" is changed to a demonstration of required HPCI flow "against a system head corresponding to reactor pressure", consistent with NUREG-1433, Revision 1 requirements. The CTS 4.5.C.1.b

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L15 (continued)

specification is represented in ITS as two surveillances (see DOC M2), ITS SR 3.5.1.9 performed at a reactor pressure of ≤ 165 psig, and ITS SR 3.5.1.8 performed with reactor pressure ≥ 970 and ≤ 1040 psig. Adopting NUREG wording for ITS SR 3.5.1.9 results in testing requirements analogous to the CTS specification and current testing practice at the low pressure end of the HPCI operability band. Adopting NUREG wording for ITS SR 3.5.1.8 constitutes a less restrictive change.

The HPCI system is designed to provide its rated flow over a reactor pressure range of 150 psig to a maximum pressure based on the lowest SRV safety setpoint. The CTS range of 1195 to 150 psig corresponds to the entire range of operability for HPCI and is intended to demonstrate HPCI operability throughout this range. As noted in DOC M2, however, the CTS does not specify a reactor pressure range for test performance. In practice, the test is performed at the low end of the range (i.e., ~150 psig) after start-up, and within the normal reactor operating pressure range (970 to 1040 psig) on a periodic basis. CTS testing at the low end of the range demonstrates flow against a discharge head based upon a differential above reactor pressure, consistent with the proposed ITS SR 3.5.1.9. CTS testing in the normal reactor operating pressure range, however, demonstrates flow against a system head derived from the "reactor vessel pressure of 1195" CTS value, not "against a system head corresponding to reactor pressure" as proposed by ITS SR 3.5.1.8.

In actual operation, HPCI system inlet steam pressure and HPCI pump discharge pressure correspond to reactor pressure with allowance for line losses. Requiring that HPCI demonstrate minimum system design flow "against a system head corresponding to a reactor vessel pressure of 1195" with actual reactor steam dome pressure in the normal operating range is overly conservative, since the condition represents less driving steam pressure for the HPCI turbine than would be available if a discharge pressure corresponding to 1195 psig reactor pressure were actually required. HPCI is required to exceed its design operating requirements to satisfy such test conditions. The NUREG-1433, Revision 1 requirement specifying a reactor pressure range for performing the test and requiring demonstration of flow rate "against a system head corresponding to reactor pressure" constitutes a more accurate and appropriate demonstration of HPCI operability than the CTS in that the NUREG requirements more accurately reflect actual HPCI operating conditions. Since adoption of the NUREG requirements for ITS SR 3.5.1.8 removes a degree of overly restrictive conservatism, the change is considered less restrictive.

RAI 3.5.3 - 1, Revised response

DISCUSSION OF CHANGES
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGES - RELOCATIONS

None

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The phrase "actual or," in reference to the automatic initiation signal, has been added to the system functional test surveillance test description. This does not impose a requirement to create an "actual" signal, nor does it eliminate any restriction on producing an "actual" signal. This change will allow the plant to take credit for spurious or real actuations as long as the surveillance requirements are satisfied. While creating an "actual" signal could increase the probability of an event, existing procedures and 10 CFR 50.59 control of revisions to them, dictate the acceptability of generating this signal. The proposed change does not affect the procedures governing plant operations and therefore the probability of creating these signals; it simply would allow such a signal to be credited when evaluating the acceptance criteria for the system functional test requirements. Therefore, the change does not involve a significant increase in the probability of an accident previously evaluated. Since the method of initiation will not affect the acceptance criteria of the system functional test, the change does not involve a significant increase in the consequences of an accident previously evaluated.

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

   The possibility of a new or different kind of accident from any accident previously evaluated is not created because the proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. The change merely allows the plant to take credit for spurious or real actuations as long as the actuation satisfies the surveillance requirement.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

3. Does this change involve a significant reduction in a margin of safety?

Use of an actual signal instead of the existing requirement, which limits use to a simulated signal, will not affect the performance or acceptance criteria of the surveillance test. Operability is adequately demonstrated in either case since the system itself cannot discriminate between "actual" or "simulated" signals. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

TSTF-301, R0 This proposed change deletes the requirements to periodically verify the Operability of other systems, subsystems, or components when an ECCS component, subsystem, or system is inoperable, except for the verification that RCIC is Operable when HPCI is determined to be inoperable. These verifications are not considered in the initiation of any previously analyzed accident. Therefore, this change does not significantly increase the frequency of such accidents. This verification is an implicit part of using Technical Specifications and determining the appropriate Conditions to enter and Actions to take in the event of inoperability of Technical Specification equipment. In addition, plant and equipment status is continuously monitored by control room personnel. The results of this monitoring process are documented in records/logs maintained by control room personnel. The continuous monitoring process includes re-evaluating the status of compliance with Technical Specification requirements when Technical Specification equipment becomes inoperable using the control room records/logs as aids. Therefore, the explicit requirements to periodically verify the Operability of other systems, subsystems, or components when an ECCS component, subsystem, or system is inoperable are considered to be unnecessary for ensuring compliance with the applicable Technical Specification actions. The status of the plant and equipment will continue to be monitored to assure the potential consequences are not significantly increased. The RCIC verification has been retained in ITS 3.5.1 due to the similar high pressure functions of the RCIC subsystem with HPCI and since all other ECCS requirements have been incorporated within ITS 3.5.1. Since the Operability requirements of RCIC are included in ITS 3.5.3, this cross check between Specifications is considered necessary. Therefore, this change does not significantly increase the consequences of any previously analyzed accident.

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE (continued)

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

This proposed change deletes the requirements to periodically verify the Operability of other systems, subsystems, or components when an ECCS component, subsystem, or system is inoperable, except for the verification that RCIC is Operable when HPCI is determined to be inoperable. This does not change the practice of continuously monitoring plant and equipment status. The status of the plant and equipment will continue to be monitored to assure the possibility for a new or different kind of accident are not created. Therefore, this change does not create the possibility of a new or different kind of accident from any previously analyzed accident.

TSTF-301, R0

3. Does this change involve a significant reduction in a margin of safety?

This proposed change deletes the requirements to periodically verify the Operability of other systems, subsystems, or components when an ECCS component, subsystem, or system is inoperable, except for the verification that RCIC is Operable when HPCI is determined to be inoperable. The verification of the status of equipment Operability is an implicit part of using Technical Specifications and determining the appropriate Conditions to enter and Actions to take in the event of inoperability of Technical Specification equipment. Plant and equipment status is continuously monitored by control room personnel. The results of this monitoring process are documented in records/logs maintained by control room personnel. The continuous monitoring process includes re-evaluating the status of compliance with Technical Specification requirements when Technical Specification equipment becomes inoperable using the control room records/logs as aids. Therefore, the explicit requirements to periodically verify the Operability of other systems, subsystems, or components when an ECCS component, subsystem, or system is inoperable are considered to be unnecessary for ensuring compliance with the applicable Technical Specification actions. The status of the plant and equipment will continue to be monitored to assure appropriate previously approved actions are taken in the event of equipment inoperabilities.

TSTF-301, R0

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

3. (continued)

The RCIC verification has been retained in ITS 3.5.1 due to the similar high pressure functions of the RCIC subsystem with HPCI. Since the Operability requirements of RCIC are included in ITS 3.5.3, this cross check between Specifications is considered necessary. This change will not affect the margin of safety because it has no impact on the safety analysis assumptions. Therefore, this change does not involve a significant reduction in the margin of safety.

TSTF-301, R0

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L3 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   This change proposes to raise the minimum pressure at which ADS is required to be operable to 150 psig. ADS is not assumed to initiate any previously analyzed accidents and therefore, this change will not affect the probability of such an event. ADS is assumed in the mitigation of consequences of a loss of coolant accident which occurs at high reactor vessel pressure. It is not assumed in the mitigation of low pressure events since its function is to lower the pressure to within the capabilities of the low pressure ECCS. At 150 psig both the Core Spray Systems and the Low Pressure Coolant Injection subsystems of the RHR System are capable of injecting sufficient quantities of water into the RPV to assure adequate ECCS response to any previously analyzed accident. Since the ECCS capability is, therefore, not affected there is no significant increase in the consequences of any previously analyzed accident.

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

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change proposes to raise the minimum pressure at which ADS is required to be Operable to 150 psig. ADS is assumed in the mitigation of a loss of coolant accident which occurs at high reactor vessel pressures. It is not assumed in the mitigation of low pressure events since its function is to lower the pressure to within the capabilities of the low pressure ECCS. At 150 psig both the Core Spray Systems and the Low Pressure Coolant Injection subsystems are capable of injecting sufficient quantities of water into the RPV to assure adequate ECCS

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L3 CHANGE

3. (continued)

response to any previously analyzed accident. If an accident occurred at 150 psig, the reactor pressure will not have to be reduced any further to ensure the assumed flow rates can be achieved. This ADS function is not necessary in the mitigation of loss of coolant accidents which occur at low pressures. Therefore, this change does not significantly decrease any margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L4 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

TSTF-301, R0 The proposed change extends the time allowed for the plant to reduce pressure below 150 psig (for HPCI and ADS), or the time to Cold Shutdown (for CS or LPCI) as applicable, from 24 hours to 36 hours when the Required Actions or Completion Times associated with an inoperable LPCI or CS subsystem, HPCI System or ADS valve, as applicable, cannot be satisfied. The proposed change does not increase the probability of an accident because it will not involve any physical changes to plant systems, structures, components (SSC), or the manner in which these SSCs are operated, maintained, modified, tested or inspected. The ECCS systems are not assumed to be an initiator of any analyzed event. The ECCS system's function is to mitigate the consequences of analyzed events by supplying water at critical times during an accident. Furthermore, the probability of an event requiring the ECCS systems to function during this additional time period, is low. The consequences of an accident are not increased because LCO 3.5.1 Required Actions B.1 or G.1 will require that the plant be placed in MODE 3 within 12 hours once the determination is made that the Required Actions or Completion Time associated with an inoperable LPCI or CS subsystem, HPCI System, or ADS valve cannot be satisfied. This change reduces the time the reactor would be allowed to continue to operate once the condition is identified. The consequences of a LOCA are significantly reduced when the reactor is shutdown and a controlled cooldown is already in progress. In addition, the consequences of an event occurring during the proposed shutdown Completion Time are the same as the consequences of an event occurring during the existing shutdown Completion Time. Therefore, the change does not involve a significant increase in the probability or consequences of an event previously evaluated.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L4 CHANGE

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

The proposed change will not involve any physical changes to plant SSC, or the manner in which these SSC are operated, maintained, modified, tested, or inspected. The change increases the time allowed for the plant to reduce pressure below 150 psig, or the time to Cold Shutdown as applicable, from 24 hours to 36 hours. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

The change extends the time allowed for the plant to reduce pressure below 150 psig, or the time to Cold Shutdown as applicable, from 24 hours to 36 hours when the Required Actions or Completion Times associated with an inoperable LPCI or CS subsystem, HPCI System or ADS valve, as applicable, cannot be satisfied. There is no reduction in the margin of safety because LCO 3.5.1 Required Actions B.1 and G.1 will require that the plant be placed in MODE 3 within 12 hours once the determination is made that the Required Actions or Completion Times associated with an inoperable LPCI or CS subsystem, HPCI System, or ADS valve cannot be satisfied. This concurrent change reduces the time the reactor would be allowed to continue to operate once the condition is identified. The consequences of a LOCA are significantly reduced when the reactor is shutdown and a controlled cooldown is already in progress. In addition, this change provides the benefit of a reduced potential for a plant event that could challenge safety systems by providing additional time to reduce pressure in a controlled and orderly manner. Therefore, this change does not involve a significant reduction in a margin of safety.

RAI 3.5.1 - BSI

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L5 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The proposed change relaxes the existing Specification that allows continued operation for a maximum of 7 days after HPCI is determined to be inoperable and allows continued operation for a maximum of 14 days under the same conditions. The proposed change does not increase the probability of an accident because the inoperability of the HPCI System is not assumed to be an initiator of any analyzed accident. The role of the HPCI System is in the mitigation of accident consequences. The proposed change to extend the Completion time to 14 days for restoring HPCI is contingent upon the operability of RCIC and all of the required ECCS subsystems (ADS, LPCI, and CS). Therefore, although the proposed change would result in an increase in the probability of an accident occurring when HPCI is inoperable, the compensatory requirements that RCIC and all the rest of the ECCS subsystems are Operable, assures that the consequences of an accident previously evaluated has not increased.

   In addition, the consequences of an event occurring during the proposed 14 day Completion Time are the same as the consequences of an event occurring during the existing 7 day Completion Time. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, modified, tested, or inspected. The proposed change extends the Completion Time for restoring the HPCI System from 7 days to 14 days. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L5 CHANGE

3. Does this change involve a significant reduction in a margin of safety?

The proposed change does not significantly decrease the margin of safety because, as in the existing Specification, the 14 day Completion Time for restoring HPCI is contingent upon the operability of RCIC and all of the required ECCS subsystems (ADS, LPCI, and CS). The 14 day Completion Time is based on a reliability study that evaluated the impact on ECCS availability (Memorandum from R. L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components, "December 1, 1975). This study determined that allowing the additional outage time for HPCI was acceptable. Factors contributing to the acceptability of allowing continued operation for 14 days with HPCI inoperable include: the similar functions of HPCI and RCIC, and that the RCIC is capable of performing the HPCI's function, although at a lower capacity; the continued availability of the required complement of ADS valves and the ADS capability in response to a small break LOCA; and, the continued availability of the full complement of low pressure ECCS subsystems which, in conjunction with ADS, are capable of responding to a small break LOCA. This change also provides the benefit of potentially avoiding a plant shutdown transient (due to a longer HPCI System completion time) when the remaining ECCS subsystems and RCIC System are available and capable of mitigating potential events. In addition, the probability of an event occurring during this extended period requiring the high pressure ECCS Functions is low. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L6 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The proposed change establishes Required Actions and Completion Times for the situation when the HPCI System and one low pressure ECCS (CS or LPCI) subsystem or one LPCI pump in each subsystem are inoperable. The proposed change does not increase the probability of an accident because the ECCS subsystems affected by this change are not assumed to be initiators of analyzed events. The role of these ECCS subsystems is in the mitigation of accident consequences. The proposed change does not allow continuous operation such that a single failure could result in a loss of function. The proposed change does not increase the consequences of an accident because accident analysis presented in NEDC-31317P, James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis, indicates that the plant is protected by the ADS System and the remaining ECCS components when HPCI and the specified low pressure ECCS components are inoperable. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

edit

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

   The proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, modified, tested, or inspected. The change ensures adequate ECCS capability exists to mitigate the consequences of accidents. Therefore, this change will not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change establishes Required Actions and Completion Times for the situation when the HPCI System and one low pressure ECCS (CS or LPCI) subsystem or one LPCI pump in each subsystem are inoperable. The

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L6 CHANGE

3. (continued)

edit

proposed change does not significantly reduce the margin of safety because accident analysis presented in NEDC-31317P, James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis, indicates that the plant is protected by the ADS System and the remaining ECCS components when HPCI and the specified low pressure ECCS components are inoperable. The accident analysis demonstrates that in this condition the peak clad temperature remains below the limit. However, another single failure may place the plant in a condition where adequate core cooling may not be available during an accident. Therefore, an allowable outage time of 72 hours has been assigned to either restore the inoperable HPCI System or the low pressure ECCS subsystem(s). The allowable outage times specified for the various combination of inoperabilities is consistent with the recommendation in a reliability study (Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975) and have been found to be acceptable through operating experience. This change provides the benefit of potentially avoiding a plant shutdown transient (due to a completion time being provided for the HPCI System and the specified low pressure ECCS component inoperable) when the remaining ECCS components and the ADS are capable of mitigating potential events. In addition, the probability of an event occurring during this extended period requiring the ECCS subsystems is low. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L7 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

edit The flow rates specified in CTS 4.5.A.3 (8,910 gpm) for the Low Pressure Injection System (LPCI) and CTS 4.5.C.1 (4250 gpm) for the High Pressure Injection System (HPCI) have been decreased to 7700 gpm and 3400 gpm, respectively. The ECCS flow rates are not assumed in the initiation of a design bases event. Therefore this change does not increase the probability of an accident previously evaluated. These proposed values are consistent with the values used in the plant specific LOCA analysis reflected in NEDC-31317P (James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss of Coolant Accident Analysis). The SAFER/GESTR-LOCA analysis for JAFNPP was performed with NRC requirements and demonstrates conformance with the ECCS acceptance criteria of 10 CFR 50.46 and 10 CFR 50, Appendix K. A sufficient number of plant-specific break sizes were evaluated to establish the behavior of both the nominal and Appendix K PCT as function of break size. Different single failures were also investigated in order to clearly identify the worst cases. The JAFNPP specific analysis was performed with a conservatively high Peak Linear Heat Generation Rate and a conservatively low Minimum Critical Power Ratio (MCPR). The Licensing Basis peak cladding temperature (PCT) for JAFNPP is 1620°F, which is well below the PCT limit of 2200°F. The Upper Bound PCT limit is 1600°F. The calculated Upper Bound PCT for the analysis is 1510°F. With the explicit verification that the Licensing Basis PCT for JAFNPP is greater than the Upper Bound (95th percentile) PCT, the level of safety and conservatism of this analysis meets the NRC approved criteria. Therefore, the requirements of Appendix K are satisfied with the proposed flow and the change is considered acceptable. Therefore, the consequences of an accident previously evaluated will be bounded by the SAFER/GESTR analysis. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L7 CHANGE

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

The proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, modified, tested, or inspected. The proposed change still ensures the ECCS components will be adequately maintained Operable. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

The flow rates specified in CTS 4.5.A.3 (8,910 gpm) for the Low Pressure Injection System (LPCI) and CTS 4.5.C.1 (4250 gpm) for the High Pressure Injection System (HPCI) have been decreased to 7700 gpm and 3400 gpm, respectively. These proposed values are consistent with the values used in the plant specific LOCA analysis reflected in NEDC-31317P (James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss of Coolant Accident Analysis). The SAFER/GESTR-LOCA analysis for JAFNPP was performed with NRC requirements and demonstrates conformance with the ECCS acceptance criteria of 10 CFR 50.46 and Appendix K. A sufficient number of plant-specific break sizes were evaluated to establish the behavior of both the nominal and Appendix K PCT as function of break size. Different single failures were also investigated in order to clearly identify the worst cases. The JAFNPP specific analysis was performed with a conservatively high Peak Linear Heat Generation Rate and a conservatively low Minimum Critical Power Ratio (MCPR). The Licensing Basis PCT for JAFNPP is 1620°F, which is well below the PCT limit of 2200°F. The Upper Bound PCT limit is 1600°F. The calculated Upper Bound PCT for the analysis is 1510°F. With the explicit verification that the Licensing Basis PCT for JAFNPP is greater than the Upper Bound (95th percentile) PCT, the level of safety and conservatism of this analysis meets the NRC approved criteria. Therefore, the requirements of Appendix K are satisfied with the proposed flow rates and the change is considered acceptable. The consequences of an accident previously evaluated will be bounded by the SAFER/GESTR analysis. In addition, the IST Program requires the trending of ECCS pump pressure, flow rate, and vibration. Whenever the parameters fall within the IST Alert Range the test frequency is required to be doubled until the cause of the deviation is determined and the condition corrected. If a parameter falls within the IST

edit

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L7 CHANGE

3. (continued)

required action range, the associated pump(s) must be declared inoperable and the appropriate Condition(s) of ITS 3.5.1 must be entered. Since the requirements of the IST Program will continue to monitor the status of ECCS pumps and provide a more conservative action level than the ITS values, the reduction in the CTS flow rates have little or no impact on plant operations. Therefore, this change does not involve a significant reduction in any margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L8 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The proposed change allows a short out-of-service time for various combinations of inoperable ECCS subsystems instead of an immediate plant shutdown. ECCS equipment is used to mitigate the consequences of an accident, but the inoperability of ECCS equipment is not considered as the initiator of any previously analyzed accident. As such, the inoperability of ECCS subsystems will not increase the probability of any accident previously evaluated. The proposed combinations of inoperable ECCS subsystems are bounded by the analyses summarized in edit NEDC-31317P (James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss of Coolant Accident Analysis). These analyses demonstrated that adequate core cooling would still be provided with the remaining complement of ECCS subsystems. Therefore, the consequences of an event occurring during the proposed allowed outage time are the same as the consequences of an event occurring during the current period allowed to place the plant in a shutdown condition. As a result, the change does not involve a significant increase in the consequences of any accident previously evaluated.

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

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   edit The proposed combinations of inoperable ECCS subsystems are bounded by the analyses summarized in NEDC-31317P (James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA Loss of Coolant Accident Analysis) which utilize NRC approved methodologies. These analyses demonstrated that adequate core cooling would still be provided

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L8 CHANGE

3. (continued)

with the proposed change. The allowable outage times specified for the various combinations of inoperabilities is consistent with the recommendations in a reliability study (Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975) and have been found to be acceptable through operating experience. Any reduction in the margin of safety is offset by the benefit of reducing the transient risk associated with an immediate plant shutdown. In addition, the probability of an event occurring during this extended period requiring the ECCS subsystems is low. Therefore, the change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L9 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The proposed change would delete the identification of the specific LPCI inverter buses required to be in service. The inverter buses are not considered as an initiator of any previously evaluated accident. The proposed change will not impact the ability of the LPCI System to perform the intended function. Therefore, the proposed change will not increase the probability of any accident previously evaluated. Additionally, while the LPCI System is assumed to mitigate accidents, this change does not affect the capability of the LPCI System to mitigate the consequences of an accident when needed. Therefore, the proposed change will not increase the consequences of any accident previously evaluated.

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

   The proposed change does not involve physical modification to the plant. The LPCI inverter buses provide power to the associated LPCI motor operated valves. However, under the proposed change, Operability of the LPCI inverter buses is not impacted. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change would delete the identification of the specific LPCI inverter buses required to be in service. These details are not necessary to ensure the LPCI System is maintained Operable. The requirements of ITS 3.5.1 and associated Surveillance Requirement (SR 3.5.1.5) are adequate to ensure the required LPCI subsystems and inverters are maintained Operable. The proposed change will not impact the ability of the LPCI System to perform its intended function. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L10 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The requirement to align the LPCI MOV bus to the alternate source when its associated LPCI independent power supply is inoperable has been deleted. The LPCI independent power supply is not considered to be an initiator of any accident previously evaluated. Therefore, this change will not increase the probability of an accident previously evaluated. The LPCI independent power supply subsystem supports the operability of the associated LPCI subsystem. With a LPCI subsystem inoperable for some other reason, the current and proposed Technical Specifications allows 7 days to restore the subsystem to OPERABLE status. Therefore, the consequences of an accident previously evaluated will be bounded by the condition when a LPCI subsystem is inoperable for some other reason. Therefore this change does not increase the consequences of an accident previously evaluated.

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

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created.

3. Does this change involve a significant reduction in a margin of safety?

   The CTS 3.9.F.2.c requirement to align the LPCI MOV bus to the alternate source when its associated LPCI MOV independent power supply is inoperable has been deleted. The LPCI MOV independent power supply subsystem supports the OPERABILITY of the associated LPCI subsystem. With a LPCI subsystem inoperable for some other reason, the current and proposed Technical Specification allows 7 days to restore the subsystem to OPERABLE status with no other compensatory actions. The change allows operations to determine the appropriate actions to take to repair the LPCI independent power supply instead of requiring the alignment to

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L10 CHANGE

3. (continued)

its alternate power source. Aligning the system to its alternate source will increase availability of the system for certain DBAs but the major objective should be to restore the power supply to OPERABLE status to ensure the entire Emergency Core Cooling network is OPERABLE. If it is determined that the LPCI independent power supply will take a few days to repair, operations may decide to align the MOV bus to its alternate power source but this decision should not be a requirement since allowances currently exist to operate 7 days with one LPCI subsystem inoperable. This change will avoid an unnecessary shutdown if the alignment to the alternate source were not possible, and avoid an unnecessary shutdown transient. Therefore, this change does not significantly reduce a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L11 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   CTS 3.9.F.2.b requires the performance of additional Surveillances on the OPERABLE LPCI MOV Independent Power Supply System if one LPCI MOV Independent Power Supply System is inoperable. The proposed change deletes the additional requirements. The inoperability of these components/subsystems is not assumed in the initiation of any analyzed event. This change redefines the method for demonstrating Operability of the remaining required components/subsystems when a component/subsystem is declared inoperable. Since the other required components/subsystems remain Operable, redefining the method by which the required components/subsystems are demonstrated or verified Operable does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The proposed change does not necessitate a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will only redefine the method by which the remaining required components/subsystems are verified Operable when a LPCI MOV Independent Power supply is inoperable. Redefining the method by which required components/subsystems are verified Operable does not create the possibility of a new or different type of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   CTS 3.9.F.2.b requires the performance of additional Surveillances on the OPERABLE LPCI MOV Independent Power Supply System if one LPCI MOV Independent Power Supply System is inoperable. The proposed change deletes the additional requirements. This change allows credit to be taken for normal periodic surveillances as a verification of

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L11 CHANGE

3. (continued)

Operability and availability of the remaining required components/subsystems. Thus, this change eliminates the requirement to perform surveillances on required components/subsystems when the LPCI MOV Independent Power supply subsystem is inoperable. The periodic frequencies specified to verify Operability of the remaining required components/subsystems have been shown to be adequate to ensure equipment Operability. As stated in NRC Generic Letter 87-09, "It is overly conservative to assume that systems or components are inoperable when a surveillance requirement has not been performed. The opposite is in fact the case; the vast majority of surveillances demonstrate the systems or components in fact are operable." Therefore, reliance on the specified surveillance intervals does not result in a reduced level of confidence concerning the equipment availability. Therefore, reliance on the normal surveillance requirement is judged to be an equivalent testing program as compared to the requirements being deleted. Thus, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L12 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   This change will allow LPCI subsystems to be considered Operable during alignment and operation in decay heat removal below the RHR cut in permissive in MODE 3, if capable of being manually realigned and not otherwise inoperable. The LPCI subsystem is not assumed to be an initiator of any accident previously evaluated. Therefore, this change will not significantly increase the probability of an accident previously evaluated. In MODE 3 all control rods are inserted and with the reactor steam dome pressure less than the RHR cut in permissive pressure a reduced complement of low pressure ECCS subsystems should provide the required cooling, thereby allowing operation of RHR shutdown cooling, when necessary. This allowance will avoid an unnecessary entry into the ACTIONS of proposed ITS 3.5.1 which in turn may require the initiation of a plant shutdown which is the objective of aligning a LPCI subsystem in the decay heat removal mode. Removing decay heat will in turn place the plant outside the Applicability of ITS 3.5.1 where even fewer ECCS Systems are required to be OPERABLE. The consequences of an accident will be same as when a LPCI subsystem was not considered Operable while aligned in the shutdown cooling mode. Therefore, this change does not significantly increase the consequences of an accident previously evaluated.

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

   The proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created.

3. Does this change involve a significant reduction in a margin of safety?

   This change will allow LPCI subsystems to be considered Operable during alignment and operation in decay heat removal below the RHR cut

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L12 CHANGE

3. (continued)

in permissive in MODE 3, if capable of being manually realigned and not otherwise inoperable. The margin of safety is not significantly reduced since when the plant is in MODE 3 all control rods are inserted and with the reactor steam dome pressure less than the RHR cut in permissive pressure a reduced complement of low pressure ECCS subsystems should provide the required cooling, thereby allowing operation of RHR shutdown cooling, when necessary. The RHR shutdown cooling mode of operation is design to function just below the RHR cut in permissive pressure. This allowance will avoid an unnecessary entry into the ACTIONS of proposed ITS 3.5.1 which in turn may require the initiation of a plant shutdown which is the objective of aligning a LPCI subsystem in the decay heat removal mode. Removing decay heat will in turn place the plant outside the Applicability of ITS 3.5.1 where even fewer ECCS Systems are required to be OPERABLE. Therefore, this change does not involve a significant reduction or the margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L13 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   This change will only require the pilot valves (solenoid) associated with six (6) Operable ADS valves to be tested during the actual or simulated automatic actuation test. The ADS pilot valves are designed for the mitigation of a design basis events. They are not considered to cause an event to occur. Therefore, this change will not increase the probability of an accident previously evaluated. Five (5) ADS valves are assumed in the mitigation of a design basis accident. Since the proposed ITS LCO 3.5.1 will require 6 ADS valves to be Operable, and to test all 6 ADS and pilot valves, the design basis events can still be met even including an additional failure of another ADS valve or associated pilot valve. This change only deletes the current requirement to explicitly test "all" pilot valves during the scheduled Surveillance. If during the performance of the test, it is determined that one pilot valve is inoperable, Operation can continue indefinitely within the CTS as long as five (5) ADS valves remain Operable compared to six (6) in the ITS. Therefore, redefining the Surveillance does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The proposed change does not necessitate a physical alteration of the plant (no new or different type of equipment will be installed) or changes in parameters governing normal plant operation. The proposed change will limit the Surveillance to only require 6 valves to be tested satisfactorily to meet the Surveillance requirement. Redefining the Surveillance is not considered to create the possibility of a new or different type of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L13 CHANGE

3. Does this change involve a significant reduction in a margin of safety?

This change will only require the pilot valves (control valves) associated with six (6) Operable ADS valves to be tested during the actual or simulated automatic actuation test. The ADS valves and associated pilot valves are designed for the mitigation of a design basis event. Five ADS valves are assumed in the mitigation of a design basis accident. Since proposed ITS LCO 3.5.1 will require 6 ADS valves to be Operable, the design basis events can still be met even including an additional failure of another ADS valve or associated pilot valve. The margin of safety is not significantly reduced since in fact the current Specifications will allow continuous operation with 2 inoperable ADS valves. Thus, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L14 CHANGE

edit The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The proposed change modifies the default action to reduce reactor steam dome pressure from < 150 psig to ≤ 150 psig. This change is acceptable since it places the plant outside of the current and proposed Applicability of the HPCI System in CTS 3.5.C.1 (ITS 3.5.1 Applicability). Operating the plant at a reactor steam dome pressure of 150 psig will not increase the potential for an accident to occur. Therefore, the proposed change does not involve a significant increase in the probability of an accident previously evaluated. The low pressure ECCS subsystems are capable of supplying water to the reactor vessel at reactor steam dome pressure in excess of 150 psig. The consequences of an accident occurring at 150 psig will be bounded by the safety analysis. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   This change will not physically alter the plant (no new or different types of equipment will be installed). The changes in methods governing normal plant operation are consistent with the current safety analysis assumptions. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   The proposed change modifies the default action to reduce reactor steam dome pressure from < 150 psig to ≤ 150 psig. This change is acceptable since it places the plant outside of the current and proposed Applicability of the HPCI System in CTS 3.5.C.1 (ITS 3.5.1 Applicability). Operating the plant at a reactor steam dome pressure of 150 psig will not increase the potential for an accident to occur. The

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L14 CHANGE

3. (continued)

low pressure ECCS subsystems are capable of supplying water to the reactor vessel at reactor steam dome pressure in excess of 150 psig. The consequences of an accident occurring at 150 psig will be bounded by the safety analysis. Therefore, this change will not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

L15 CHANGE

The Licensee has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

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

   The proposed change modifies surveillance criteria for demonstrating High Pressure Coolant Injection (HPCI) flow at normal reactor operating pressure from "against a system head corresponding to a reactor vessel pressure of 1195... psig" to "against a system had corresponding to reactor pressure". The purpose of the surveillance is to demonstrate HPCI operability. The change, which removes a degree of excess conservatism from the current surveillance criteria, adopts NUREG-1433, Revision 1 criteria and constitutes an acceptable method of demonstrating HPCI operability. HPCI operability is satisfactorily demonstrated by either the CTS criteria or the proposed ITS criteria.

   The proposed change does not result in a change in probability of an accident previously evaluated because SR test conditions or test acceptance criteria are not conditions that change any assumptions with regard to accident initiation sequences. The proposed change does not result in a change in the consequences of an accident previously evaluated because acceptance criteria verify system performance within design parameters consistent with those assumed in the accident analysis. Therefore the proposed change involves no change in the probability or consequences of an accident previously evaluated.

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

   The proposed change involves no physical alteration of Structures, Systems, or Components (i.e.,no new type of equipment installed). Proposed changes in test conditions and acceptance criteria are consistent with accident analysis. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

RAI 3.5.3 - 1, Revised response

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.5.1 - ECCS - OPERATING

TECHNICAL CHANGE - LESS RESTRICTIVE (SPECIFIC)

RAI 3.5.3 - 1, Revised response

L15 CHANGE

3. Does this change involve a significant reduction in a margin of safety?

The proposed change only involves test conditions and acceptance criteria. System performance requirements continue to meet or exceed those assumed in accident analysis. Neither HPCI system operability nor the ability of the HPCI system to perform its accident mitigation function is affected by the change. Therefore, the change does not involve a significant reduction in a margin of safety.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

MARKUP OF NUREG-1433, REVISION 1 SPECIFICATION

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~~ six 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.	A.1	Restore low pressure ECCS injection/spray subsystem to OPERABLE status.	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 Immediately
	AND		
	C.2	Restore HPCI System to OPERABLE status.	14 days

(continued)

INSERT ACTION A

TSTF-301, R0

RAI 3.5.1-85

OR

One low pressure coolant injection (LPCI) pump in both LPCI subsystems inoperable .

Insert Page 3.5-1

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. (CSI)	72 hours 72 hours
E. One required ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days
F. One required 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. (CSI)	72 hours 72 hours
G. Two or more required 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. (DSI)	12 hours 36 hours

(continued)

REVISION D

ACTIONS (continued)

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

RAI 3.5.1-BS1

for reasons other than Condition A

TA2

required

RAI

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days
SR 3.5.1.2	----------NOTE---------- Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than [the Residual Heat Removal (RHR) cut in permissive pressure] in MODE 3, if capable of being manually realigned and not otherwise inoperable. ----------	
	Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.1.3	Verify ADS [air] supply header [pressure] is ≥ [90] psig.	31 days
SR 3.5.1.4	Verify the [RHR] System cross tie valve[s] [is] closed and power is removed from the valve operator[s].	31 days
SR 3.5.1.5	Verify each LPCI inverter output voltage is ≥ [870] V and ≤ [938] V while supplying the respective bus.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.6	----------NOTE---------- Not required to be performed if performed within the previous 31 days. ---------- Verify each recirculation pump discharge valve [and bypass valve] cycles through one complete cycle of full travel or is de-energized in the closed position.	Once each startup prior to exceeding 25% RTP
SR 3.5.1.7	Verify the following ECCS pumps develop the specified flow rate [against a system head corresponding to the specified reactor pressure]. [above primary containment pressure] SYSTEM FLOW RATE — NO. OF PUMPS — [SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE OF] Core Spray ≥ [4250] gpm — [2] — ≥ [113] psig LPCI ≥ [17,000] gpm — [1] — ≥ [20] psig	[In accordance with the Inservice Testing Program] [92 days] [ABOVE PRIMARY CONTAINMENT PRESSURE]
SR 3.5.1.8	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- Verify, with [reactor pressure] ≤ [1020] psig and ≥ [920] psig, the HPCI pump can develop a flow rate ≥ [4250] gpm [against a system head corresponding to reactor pressure].	[In accordance with the Inservice Testing Program] [92 days]

(continued)

RAI 3.5.3-1

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.9 [4.5.C]	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- [4.5.C.1] [M2] Verify, with [reactor pressure] ≤ [165] psig, the HPCI pump can develop a flow rate ≥ [4250] gpm against a system head corresponding to reactor pressure.	[18] months
SR 3.5.1.10 [Table 4.2-2 Note 7] [4.5.A.1.a] [4.5.A.3] [4.6.C.1]	----------NOTE---------- Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	[18] months
SR 3.5.1.11 [4.5.D.1.a] [Table 4.2-2 Item 5 Note 7]	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	[18] months
SR 3.5.1.12 [4.6.E.4]	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- Verify each required ADS valve opens when manually actuated.	18 months on a STAGGERED TEST BASIS for each valve solenoid

CLB4

INSERT SR 3.5.1.10 NOTE 1

1. For the HPCI System, not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test.

CLB5

Insert SR 3.5.1.12

SR 3.5.1.12	Verify each LPCI motor operated independent power supply inverter capacity is adequate to supply and maintain in OPERABLE status the required emergency loads for the design duty cycle.	24 months

Insert Page 3.5-6

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS: 3.5.1 - ECCS - OPERATING

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 The brackets have been removed from SR 3.5.1.4 and the appropriate design feature included consistent with CTS 3.5.A.3.b and 4.5.A.3.b.

CLB2 The bracketed Surveillance Frequencies in SR 3.5.1.7 and the 92 day Frequency in SR 3.5.1.8 have been changed to "In accordance with the Inservice Testing Program" consistent with the current allowances in the CTS.

CLB3 The bracketed Frequencies of SR 3.5.1.10 and SR 3.5.1.11 has been modified from 18 months to 24 months consistent with the current licensing basis.

CLB4 A Note has been added to the actual or simulated automatic initiation test in ITS SR 3.5.1.10 to allow HPCI testing to be delayed until adequate reactor steam dome pressure and flow are adequate. This Note is consistent with the allowances specified in CTS 4.5.C as modified in M1 and is necessary to properly test the HPCI pump. The subsequent Note of SR 3.5.1.10 has been renumbered.

CLB5 ITS SR 3.5.1.12, the LPCI motor operated valve independent power supply inverter duty cycled test, has been added consistent with the current requirements.

CLB6 The requirement to cycle open and closed each LPCI motor operated valve independent power supply AC input breaker has been added to the requirements of ITS SR 3.5.1.5 consistent with current licensing requirements. This requirement helps to ensure the independent supply can become independent from the emergency AC supply which is required by the accident analysis.

CLB7 The brackets have been removed from SR 3.5.1.7 for Core Spray flow rate and the current licensing basis flow rate in CTS 4.5.A.1.b included.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 The word "required" has been incorporated since not all ADS valves are included in the LCO. This change is consistent with the philosophy of the use of term throughout the NUREG.

PA2 Change made for consistency with similar conditions in other Specifications.

PA3 The brackets have been removed and the proper plant specific nomenclature has been provided.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The proper number of ADS valves has been included in LCO 3.5.1. Five valves are required to meet the safety analysis, therefore six are required in the LCO to satisfy the single failure criteria.

DB2 The proper steam dome pressure of 150 psig has been retained in the ITS 3.5.1 Applicability for HPCI and ADS Applicability requirements. These values are supported by the safety analysis. Similar changes have been made in ITS 3.5.1 Required Action G.2.

RAI 3.5.1-SS1

DB3 Not Used.

TSTF-318, R1

DB4 Not Used.

RAI 3.5.1-BS1

DB5 Not Used.

DB6 The bracketed Surveillance (ITS SR 3.5.1.5) has been included since it is consistent with the JAFNPP design and current licensing requirements.

DB7 The bracketed flow rates and system heads in ITS SR 3.5.1.7, SR 3.5.1.8 and SR 3.5.1.9 for LPCI and HPCI pumps have been chosen consistent with NEDC-31317P, JAFNPP SAFER/GESTR-LOCA.

editl

DB8 The brackets have been removed and the proper plant specific values have been provided. The range of pressures specified in SR 3.5.1.8 (between 970 psig and 1040 psig) are normal values at rated conditions. The pressure condition of $\leq$ 165 psig in SR 3.5.1.9 is very close to the lower range where HPCI is required to be operable, however, at the same time allows some flexibility to establish the condition.

DB9 The bracketed Surveillance in ITS SR 3.5.1.12 (on a STAGGERED TEST BASIS for each valve solenoid) has been retained since JAFNPP design includes two valve solenoids for each valve. This will ensure both solenoids are tested in a 48 month period (or two scheduled refueling outages).

DB10 The bracketed details in ITS SR 3.5.1.6 have been retained consistent with CTS 4.5.A.5 and with the JAFNPP design. There is no bypass valve in the design, therefore this detail has been deleted.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TSTF-301, R0

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 301, Revision 0, have been incorporated into the revised Improved Technical Specifications.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB) (continued)

TSTF-318, R1

TA2 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 318, Revision 1, have been incorporated into the revised Improved Technical Specifications.

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

X1 The bracketed Frequency of SR 3.5.1.9 has been modified from 18 months to 24 months consistent with the current fuel cycle.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

MARKUP OF NUREG-1433, REVISION 1, BASES

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

B 3.5.1 ECCS—Operating

BASES

BACKGROUND

The ECCS is designed, in conjunction with the primary and secondary containment, to limit the release of radioactive materials to the environment following a loss of coolant accident (LOCA). The ECCS uses two independent methods (flooding and spraying) to cool the core during a LOCA. The ECCS network consists of the High Pressure Coolant Injection (HPCI) System, the Core Spray (CS) System, the low pressure coolant injection (LPCI) mode of the Residual Heat Removal (RHR) System, and the Automatic Depressurization System (ADS). The suppression pool provides the required source of water for the ECCS. Although no credit is taken in the safety analyses for the condensate storage tank (CST), it is capable of providing a source of water for the HPCI and CS systems.

On receipt of an initiation signal, ECCS pumps automatically start; simultaneously, the system aligns and the pumps inject water, taken either from the CST or suppression pool, into the Reactor Coolant System (RCS) as RCS pressure is overcome by the discharge pressure of the ECCS pumps. Although the system is initiated, ADS action is delayed, allowing the operator to interrupt the timed sequence if the system is not needed. The HPCI pump discharge pressure almost immediately exceeds that of the RCS, and the pump injects coolant into the vessel to cool the core. If the break is small, the HPCI System will maintain coolant inventory as well as vessel level while the RCS is still pressurized. If HPCI fails, it is backed up by ADS in combination with LPCI and CS. In this event, the ADS timed sequence would be allowed to time out and open the selected safety/relief valves (S/RVs), depressurizing the RCS, thus allowing the LPCI and CS to overcome RCS pressure and inject coolant into the vessel. If the break is large, RCS pressure initially drops rapidly and the LPCI and CS cool the core.

Water from the break returns to the suppression pool where it is used again and again. Water in the suppression pool is circulated through a heat exchanger cooled by the RHR Service Water System. Depending on the location and size of

(continued)

BASES

BACKGROUND (continued)

the break, portions of the ECCS may be ineffective; however, the overall design is effective in cooling the core regardless of the size or location of the piping break. Although no credit is taken in the safety analysis for the RCIC System, it performs a similar function as HPCI, but has reduced makeup capability. Nevertheless, it will maintain inventory and cool the core while the RCS is still pressurized following a reactor pressure vessel (RPV) isolation.

PA2

low pressure

PA7

All ECCS subsystems are designed to ensure that no single active component failure will prevent automatic initiation and successful operation of the minimum required ECCS equipment.

DB1

if preferred power is available

after a time delay of approximately 11 seconds

The CS System (Ref. 1) is composed of two independent subsystems. Each subsystem consists of a motor driven pump, a spray sparger above the core, and piping and valves to transfer water from the suppression pool to the sparger. The CS System is designed to provide cooling to the reactor core when reactor pressure is low. Upon receipt of an initiation signal, the CS pumps in both subsystems are automatically started when AC power is available. When the RPV pressure drops sufficiently, CS System flow to the RPV begins. A full flow test line is provided to route water from and to the suppression pool to allow testing of the CS System without spraying water in the RPV.

Insert CS-1

DB1

DB1

PA1

PA3

line

LPCI is an independent operating mode of the RHR System. There are two LPCI subsystems (Ref. 2), each consisting of two motor driven pumps and piping and valves to transfer water from the suppression pool to the RPV via the corresponding recirculation loop. The two LPCI subsystems can be interconnected via the RHR System cross tie valve; however, the cross tie valve is maintained closed with its power removed to prevent loss of both LPCI subsystems during a LOCA. The LPCI subsystems are designed to provide core cooling at low RPV pressure. Upon receipt of an initiation signal, all four LPCI pumps are automatically started (B pump immediately when AC power is available, and A, C, and D pumps approximately 10 seconds after AC power is available). RHR System valves in the LPCI flow path are automatically positioned to ensure the proper flow path for water from the suppression pool to inject into the recirculation loops. When the RPV pressure drops sufficiently, the LPCI flow to the RPV, via the

CLB1

INSERT LPCI-1

INSERT LPCI-2

DB1

DB1

(continued)

DBI

INSERT CS-1

If a CS initiation signal is received when preferred power is not available, the CS pumps start approximately 11 seconds after the associated bus is energized by the emergency diesel generators (EDGs).

CLBI

INSERT LPCI-1

this line is maintained closed to prevent loss of both LPCI subsystems during a LOCA. The line is isolated by chain-locking the 10MOV-20 valve in the closed position with electric power disconnected from its motor operator, and maintaining the manually operated gate valve (10RHR-09) locked in the closed position.

DBI

INSERT LPCI-2

if preferred power is available, LPCI pumps A and D start in approximately one second. LPCI pumps B and C are started in approximately 6 seconds to limit the loading of the preferred power sources. With a loss of preferred power LPCI pumps A and D start in approximately one second after the associated bus is energized by the EDGs, and LPCI pumps B and C start approximately 6 seconds after the associated bus is energized by the EDGs to limit the loading of the EDGs. If one EDG should fail to force parallel, an associated LPCI pump will not start (LPCI pump B or C) to ensure the other EDG in the same EDG subsystem is not overloaded.

BASES

BACKGROUND (continued)

corresponding recirculation loop, begins. The water then enters the reactor through the jet pumps. Full flow test lines are provided for the four LPCI pumps to route water from the suppression pool, to allow testing of the LPCI pumps without injecting water into the RPV. These test lines also provide suppression pool cooling capability, as described in LCO 3.6.2.3, "RHR Suppression Pool Cooling."

The HPCI System (Ref. 3) consists of a steam driven turbine pump unit, piping, and valves to provide steam to the turbine, as well as piping and valves to transfer water from the suction source to the core via the feedwater system line, where the coolant is distributed within the RPV through the feedwater sparger. Suction piping for the system is provided from the CST and the suppression pool. Pump suction for HPCI is normally aligned to the CST to minimize injection of suppression pool water into the RPV. However, if the CST water supply is low, or if the suppression pool level is high, an automatic transfer to the suppression pool water source ensures a water supply for continuous operation of the HPCI System. The steam supply to the HPCI turbine is piped from a main steam line upstream of the associated inboard main steam isolation valve.

The HPCI System is designed to provide core cooling for a wide range of reactor pressures (150 psig to 1135 psig, vessel to pump suction). Upon receipt of an initiation signal, the HPCI turbine stop valve and turbine control valve open simultaneously and the turbine accelerates to a specified speed. As the HPCI flow increases, the turbine governor valve is automatically adjusted to maintain design flow. Exhaust steam from the HPCI turbine is discharged to the suppression pool. A full flow test line is provided to route water from and to the CST, to allow testing of the HPCI System during normal operation without injecting water into the RPV.

The ECCS pumps are provided with minimum flow bypass lines, which discharge to the suppression pool. The valves in these lines automatically open to prevent pump damage due to overheating when other discharge line valves are closed. To ensure rapid delivery of water to the RPV and to minimize water hammer effects, all ECCS pump discharge lines are filled with water. The LPCI and CS System discharge lines are kept full of water using a "keep fill" system (jockey pump system). The HPCI System is normally aligned to the full

(continued)

BASES

BACKGROUND (continued)

CST. The height of water in the CST is sufficient to maintain the piping full of water up to the first isolation valve. The relative height of the feedwater line connection for HPCI is such that the water in the feedwater lines keeps the remaining portion of the HPCI discharge line full of water. Therefore, HPCI does not require a "keep fill" system.

The ADS (Ref. 4) consists of 7 of the 11 S/RVs. It is designed to provide depressurization of the RCS during a small break LOCA if HPCI fails or is unable to maintain required water level in the RPV. ADS operation reduces the RPV pressure to within the operating pressure range of the low pressure ECCS subsystems (CS and LPCI), so that these subsystems can provide coolant inventory makeup. Each of the S/RVs used for automatic depressurization is equipped with one air accumulator and associated inlet check valves. The accumulator provides the pneumatic power to actuate the valves.

Insert ADS-1

APPLICABLE SAFETY ANALYSES

The ECCS performance is evaluated for the entire spectrum of break sizes for a postulated LOCA. The accidents for which ECCS operation is required are presented in References 5, 6, and 7. The required analyses and assumptions are defined in Reference 8. The results of these analyses are also described in Reference 9.

This LCO helps to ensure that the following acceptance criteria for the ECCS, established by 10 CFR 50.46 (Ref. 10), will be met following a LOCA, assuming the worst case single active component failure in the ECCS:

a. Maximum fuel element cladding temperature is ≤ 2200°F;

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;

c. Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react;

d. The core is maintained in a coolable geometry; and

(continued)

DB1

INSERT ADS-1

One of the ADS valves shares an accumulator with a non-ADS valve.

BASES

APPLICABLE SAFETY ANALYSES (continued)

e. Adequate long term cooling capability is maintained.

The limiting single failures are discussed in Reference 14. For a large discharge pipe break (LOCA), failure of the [HPCI] valve on the unbroken recirculation loop is considered the most severe failure. For a small break LOCA, HPCI failure is the most severe failure. One ADS valve failure is analyzed as a limiting single failure for events requiring ADS operation. The remaining OPERABLE ECCS subsystems provide the capability to adequately cool the core and prevent excessive fuel damage.

The ECCS satisfy Criterion 3 of the NRC Policy Statement.

LCO

Each ECCS injection/spray subsystem and seven ADS valves are required to be OPERABLE. The ECCS injection/spray subsystems are defined as the two CS subsystems, the two LPCI subsystems, and one HPCI System. The low pressure ECCS injection/spray subsystems are defined as the two CS subsystems and the two LPCI subsystems.

With less than the required number of ECCS subsystems OPERABLE, the potential exists that during a limiting design basis LOCA concurrent with the worst case single failure, the limits specified in Reference 10 could be exceeded. All ECCS subsystems must therefore be OPERABLE to satisfy the single failure criterion required by Reference 10.

LPCI subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the actual RHR cut in permissive pressure in MODE 3, if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. At these low pressures and decay heat levels, a reduced complement of ECCS subsystems should provide the required core cooling, thereby allowing operation of RHR shutdown cooling when necessary.

APPLICABILITY

All ECCS subsystems are required to be OPERABLE during MODES 1, 2, and 3, when there is considerable energy in the reactor core and core cooling would be required to prevent fuel damage in the event of a break in the primary system piping. In MODES 2 and 3, when reactor steam dome pressure

(continued)

DB2

INSERT ASA

In the analysis of events requiring ADS operation, it is assumed that only five of the seven ADS valves operate. Since six ADS valves are required to be OPERABLE, the explicit assumption of the failure of an ADS valve is not considered in the analysis.

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

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

(continued)

BASES

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

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

(continued)

BASES

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 five 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

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 ≤ 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.

(continued)

BASES

ACTIONS (continued)

H.1

When multiple ECCS subsystems are inoperable, as stated in Condition H, the plant is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

RAI 3.5.1-BS1

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

The flow path piping has the potential to develop voids and pockets of entrained air. Maintaining the pump discharge lines of the HPCI System, CS System, and LPCI subsystems full of water ensures that the ECCS will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent a water hammer following an ECCS initiation signal. One acceptable method of ensuring that the lines are full is to vent at the high points and observe water flow through the vent. The 31 day Frequency is based on the gradual nature of void buildup in the ECCS piping, the procedural controls governing system operation, and operating experience.

PA7

SR 3.5.1.2

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. For the HPCI System, this SR also includes the steam flow path for the turbine and the flow controller position.

The 31 day Frequency of this SR was derived from the Inservice Testing Program requirements for performing valve

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.2 (continued)

testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would only affect a single subsystem. This Frequency has been shown to be acceptable through operating experience.

This SR is modified by a Note that allows LPCI subsystems to be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the RHR cut in permissive pressure in MODE 3, if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. This allows operation in the RHR shutdown cooling mode during MODE 3, if necessary.

In MODE 3 with reactor dome pressure less than the actual RHR cut in permissive pressure, the RHR system may be required to operate in the shutdown cooling mode to remove decay heat and sensible heat from the reactor. Therefore,

Insert SR 3.5.1.2

SR 3.5.1.3

Verification every 31 days that ADS air supply header pressure is ≥ [90] psig ensures adequate air pressure for reliable ADS operation. The accumulator on each ADS valve provides pneumatic pressure for valve actuation. The design pneumatic supply pressure requirements for the accumulator are such that, following a failure of the pneumatic supply to the accumulator, at least two valve actuations can occur with the drywell at 70% of design pressure (Ref. [ ]). The ECCS safety analysis assumes only one actuation to achieve the depressurization required for operation of the low pressure ECCS. This minimum required pressure of ≥ [90] psig is provided by the ADS instrument air supply. The 31 day Frequency takes into consideration administrative controls over operation of the air system and alarms for low air pressure.

SR 3.5.1.4

Verification every 31 days that the RHR System cross tie valves is closed and power to its operator is disconnected ensures that each LPCI subsystem remains independent and a failure of the flow path in one subsystem will not affect the flow path of the other LPCI subsystem. Acceptable methods of removing power to the operator include de-energizing breaker control power or racking out or

(continued)

PAI

INSERT SR 3.5.1.2

Alignment and operation for decay heat removal includes when the system is being realigned from or to the RHR shutdown cooling mode. At the low pressures and decay heat loads associated with operation in MODE 3 with reactor steam dome pressure less than the shutdown cooling permissive pressure, a reduced complement of low pressure ECCS subsystems should provide the required cooling, thereby allowing operation of RHR shutdown cooling, when necessary.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.4 (continued) one or more of motor operated valves are removing the breaker. If the RHR System cross tie valve is open or power has not been removed from the valve operator, both LPCI subsystems must be considered inoperable. The 31 day Frequency has been found acceptable, considering that these valves are under strict administrative controls that will ensure the valves continue to remain closed with either control or motive power removed.

Cycling open and closed each LPCI motor operated valve independent power supply battery charger AC input breaker and the capability of the supply to become independent from emergency AC power and

SR 3.5.1.5

Verification every 31 days that each LPCI inverter output has a voltage of ≥ [570] V and ≤ [630] V while supplying its respective bus demonstrates that the AC electrical power is available to ensure proper operation of the associated LPCI injection and minimum flow valves and the recirculation pump discharge valve. Each inverter must be OPERABLE for the associated LPCI subsystem to be OPERABLE. The 31 day Frequency has been found acceptable based on engineering judgment and operating experience.

heat exchanger bypass

and battery charger AC input breaker

SR 3.5.1.6

Cycling the recirculation pump discharge [and bypass] valves through one complete cycle of full travel demonstrates that the valves are mechanically OPERABLE and will close when required. Upon initiation of an automatic LPCI subsystem injection signal, these valves are required to be closed to ensure full LPCI subsystem flow injection in the reactor via the recirculation jet pumps. De-energizing the valve in the closed position will also ensure the proper flow path for the LPCI subsystem. Acceptable methods of de-energizing the valve include de-energizing breaker control power, racking out the breaker or removing the breaker.

The specified Frequency is once during reactor startup before THERMAL POWER is > 25% RTP. However, this SR is modified by a Note that states the Surveillance is only required to be performed if the last performance was more than 31 days ago. Therefore, implementation of this Note requires this test to be performed during reactor startup before exceeding 25% RTP. Verification during reactor

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.6 (continued)

startup prior to reaching > 25% RTP is an exception to the normal Inservice Testing Program generic valve cycling Frequency of 92 days, but is considered acceptable due to the demonstrated reliability of these valves. If the valve is inoperable and in the open position, the associated LPCI subsystem must be declared inoperable.

SR 3.5.1.7, SR 3.5.1.8, and SR 3.5.1.9

The performance requirements of the low pressure ECCS pumps are determined through application of the 10 CFR 50, Appendix K criteria (Ref. 8). This periodic Surveillance is performed (in accordance with the ASME Code, Section XI, requirements for the ECCS pumps) to verify that the ECCS pumps will develop the flow rates required by the respective analyses. The low pressure ECCS pump flow rates ensure that adequate core cooling is provided to satisfy the acceptance criteria of Reference 10. The pump flow rates are verified against a system head equivalent to the RPV pressure expected during a LOCA. The total system pump outlet pressure is adequate to overcome the elevation head pressure between the pump suction and the vessel discharge, the piping friction losses, and RPV pressure present during a LOCA. These values may be established during preoperational testing.

The flow tests for the HPCI System are performed at two different pressure ranges such that system capability to provide rated flow is tested at both the higher and lower operating ranges of the system. Additionally, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the HPCI System diverts steam flow. Reactor steam pressure must be ≥ 920 psig to perform SR 3.5.1.8 and ≥ 1500 psig to perform SR 3.5.1.9. Adequate steam flow is represented by at least one turbine bypass valve open or total steam flow ≥ 10^6 lb/hr. Therefore, sufficient time is allowed after adequate pressure and flow are achieved to perform these tests. Reactor startup is allowed prior to performing the low pressure Surveillance test because the reactor pressure is low and the time allowed to satisfactorily perform the Surveillance test is short. The reactor pressure is allowed to be increased to normal

(continued)

PAT

INSERT SR 3.5.1.7

The required system head should overcome the RPV pressure and associated discharge line losses. Adequate reactor steam pressure must be available to perform these tests.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.7, SR 3.5.1.8, and SR 3.5.1.9 (continued)

operating pressure since it is assumed that the low pressure test has been satisfactorily completed and there is no indication or reason to believe that HPCI is inoperable.

Therefore, SR 3.5.1.8 and SR 3.5.1.9 are modified by Notes that state the Surveillances are not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test.

The Frequency for SR 3.5.1.7 and SR 3.5.1.8 is in accordance with the Inservice Testing Program requirements. The 18 month Frequency for SR 3.5.1.9 is based on the need to perform the Surveillance under the conditions that apply just prior to or during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.5.1.10

The ECCS subsystems are required to actuate automatically to perform their design functions. This Surveillance verifies that, with a required system initiation signal (actual or simulated), the automatic initiation logic of HPCI, CS, and LPCI will cause the systems or subsystems to operate as designed, including actuation of the system throughout its emergency operating sequence, automatic pump startup and actuation of all automatic valves to their required positions. This SR also ensures that the HPCI System will automatically restart on an RPV low water level (Level 2) signal received subsequent to an RPV high water level (Level 8) trip, and that the suction is automatically transferred from the CST to the suppression pool. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlaps this Surveillance to provide complete testing of the assumed safety function.

The 18 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

(continued)

PA7

INSERT SR 3.5.1.8

The 12 hours allowed for performing the flow test after the required pressure and flow are reached is sufficient to achieve stable conditions for testing and provides reasonable time to complete the SRs.

CL83

INSERT SR 3.5.1.10-1

The HPCI System actual or simulated automatic actuation test must be performed with adequate steam pressure for verification of automatic pump startup. Additionally, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the HPCI System diverts steam flow. Thus, sufficient time is allowed after adequate pressure and flow are achieved to perform this test associated with the HPCI System. Adequate reactor steam dome pressure is > 150 psig. Adequate steam flow is represented by at least one turbine bypass valve open.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.10 (continued)

Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

SR 3.5.1.11

The ADS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.10 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The 18 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation. This prevents an RPV pressure blowdown.

SR 3.5.1.12

A manual actuation of each ADS valve is performed to verify that the valve and solenoid are functioning properly and

(continued)

CLB3

INSERT SR 3.5.1.10-2

For HPCI, the 24 month Frequency is based on the need to perform the surveillance under conditions that apply during a startup from a plant outage.

CLB3

INSERT SR 3.5.1.10 Note 1

This SR is modified by two Notes. Note 1 states that for the HPCI System, the Surveillance is not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for performing the actual or simulated automatic actuation for the HPCI System after the required pressure and flow are reached is sufficient to achieve stable conditions for testing and provides reasonable time to complete the SR.

CLB5

INSERT SR 3.5.1.12

A LPCI motor operated valve independent power supply subsystem inverter test is a test of the inverter's capacity, as found, to satisfy the design requirements (inverter duty cycle). The discharge rate and test length correspond to the design duty cycle requirements.

The Frequency of 24 months is acceptable, given plant conditions required to perform the test and the other requirements existing to ensure adequate LPCI inverter performance during the 24 month interval. In addition, the Frequency is intended to be consistent with expected fuel cycle lengths.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.12 (continued)

that no blockage exists in the S/RV discharge lines. This can also be demonstrated by the response of the turbine control or bypass valve or by a change in the measured flow or by any other method suitable to verify steam flow. Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening. Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this SR. Adequate pressure at which this SR is to be performed is ≥970 psig (the pressure recommended by the valve manufacturer). Adequate steam flow is represented by two or more turbine bypass valves open or total steam flow ≥ 10^6 lb/hr. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements, prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure is reached is sufficient to achieve stable conditions and provides adequate time to complete the Surveillance. SR 3.5.1.11 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of 24 months on a STAGGERED TEST BASIS ensures that both solenoids for each ADS valve are alternately tested. The Frequency is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section 6.4.3
2. FSAR, Section 6.4.4

(continued)

DB 10

INSERT SR 3.5.1.13

These conditions will require the plant to be in MODE 1, which has been shown to be an acceptable condition to perform this test. This test causes a small neutron flux transient which may cause a scram in MODE 2 while operating close to the Average Power Range Monitors Neutron Flux–High (Startup) Allowable Value.

BASES

REFERENCES (continued)

3. UFSAR, Section [6.3.2.2.1]. 6.4.1
4. UFSAR, Section [6.3.2.2.2]. 6.4.2
5. [FSAR, Section [15.2.8]].
6. UFSAR, Section [15.6.4]. 14.6.1.5
7. UFSAR, Section [15.6.5] 14.6.1.3
8. 10 CFR 50, Appendix K.
9. UFSAR, Section [6.3.3]. 6.5
10. 10 CFR 50.46.
11. [FSAR, Section [7.3.1.2.2]]. 10 CFR 50.36(c)(2)(ii)
12. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.
13. UFSAR, Section [6.3.3.3] 4.4.5

NEDC-31317P, Revision 2, "James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA, Loss-of Coolant Accident Analysis," April 1993.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.5.1 - ECCS - OPERATING

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 The RHR System cross tie description in the Background has been changed to be consistent with CTS 3.5.A.3.b and 4.5.A.3.b.

CLB2 The SR Frequencies of SR 3.5.1.9, SR 3.5.1.10, SR 3.5.1.11, and SR 3.5.1.12 have been extended from 18 months to 24 months consistent with the current fuel cycle and current requirements.

CLB3 A Note has been added to the actual or simulated automatic initiation test in ITS SR 3.5.1.10 to allow HPCI testing to be delayed until reactor steam dome pressure and flow are adequate. This Note is consistent with the allowances specified in CTS 4.5.C as modified in M1 and is necessary to properly test the HPCI pump. The subsequent Note of SR 3.5.1.10 has been renumbered. The Bases has been modified as required to reflect this modification.

CLB4 SR 3.5.1.12 has been modified to reflect the current requirements in CTS 4.6.E.4.

CLB5 ITS SR 3.5.1.12, the LPCI motor operated valve independent power supply inverter duty cycled test has been added consistent with the current requirements. Subsequent Surveillances have been renumbered. The Bases has been modified to reflect this change, as necessary.

CLB6 The requirement to cycle open and closed each LPCI motor operated valve independent power supply AC input breaker has been added to the requirements of ITS SR 3.5.1.5 consistent with current licensing requirements. This requirement helps to ensure the independent supply can become independent from the emergency AC supply which is required by the accident analysis.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 Editorial changes have been made to be consistent with similar statements in other places in the Bases, with no change in intent.

PA2 This discussion has been deleted since it discusses RCIC. This system is not part of LCO 3.5.1.

PA3 Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature.

PA4 Editorial changes have been made to correct a typographical/grammatical error.

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.5.1 - ECCS - OPERATING

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA5 The word "required" has been incorporated since not all ADS valves are included in the LCO. This change is consistent with the philosophy of the use of the term throughout the NUREG.

PA6 The quotations used in the Bases References have been removed. The Writer's Guide does not require the use of quotations.

PA7 Changes have been made to enhance clarity with no change in intent.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 Changes have been made (additions, deletions and/or changes to the NUREG) to reflect the plant specific design.

DB2 The proper number of ADS valves has been included in LCO 3.5.1. Five valves are required to meet the safety analysis, therefore six are required in the LCO to satisfy the single failure criteria. The Bases have been modified as required.

TE-318, R1

| DB3 Not Used.

| DB4 Not Used.

RAI 3.5.1-BSI

DB5 Changes have been made (additions, deletions and/or changes to the NUREG) to reflect Reference 12.

DB6 ITS SR 3.5.1.3 has been revised to be consistent with UFSAR, Section 4.4.5 (Ref. 5).

DB7 ITS SR 3.5.1.5 Bases have been revised to be consistent with the plant specific design.

DB8 The brackets have been removed and the proper plant specific References included, as applicable.

DB9 The Bases for SR 3.5.1.7 and SR 3.5.1.8 have been revised to reflect the appropriate methods for determining the proper flow conditions to perform the test. The bracketed steam dome pressures have been revised to be consistent with the Specification.

DB10 The Bases for SR 3.5.1.12 has been revised to reflect the appropriate test pressures and flow conditions to perform the test. In addition, the Bases has been revised to reflect additional justification for these conditions.

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.5.1 - ECCS - OPERATING

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TSTF-301, R0

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 301, Revision 0, have been incorporated into the revised Improved Technical Specifications.

TSTF-318, R1

TA2 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 318, Revision 1, have been incorporated into the revised Improved Technical Specifications.

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

X1 NUREG-1433, Revision 1, Bases reference to "the NRC Policy Statement" has been replaced with 10 CFR 50.36(c)(2)(ii), in accordance with 60 FR 36953 effective August 18, 1995.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.1

ECCS - Operating

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

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 six 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 low pressure coolant injection (LPCI) pump in both LPCI subsystems inoperable.	A.1 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

ISTE-310 & RAI 3.5.1-8S1

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. HPCI System inoperable.	C.1 Verify by administrative means RCIC System is OPERABLE. AND C.2 Restore HPCI System to OPERABLE status.	Immediately 14 days
D. HPCI System inoperable. AND Condition A entered.	D.1 Restore HPCI System to OPERABLE status. OR D.2 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	72 hours 72 hours
E. One required ADS valve inoperable.	E.1 Restore ADS valve to OPERABLE status.	14 days
F. One required ADS valve inoperable. AND Condition A entered.	F.1 Restore ADS valve to OPERABLE status. OR F.2 Restore low pressure ECCS injection/spray subsystem(s) to OPERABLE status.	72 hours 72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Required Action and associated Completion Time of Condition C, D, E, or F not met. OR Two or more required ADS valves inoperable.	G.1 Be in MODE 3. AND G.2 Reduce reactor steam dome pressure to ≤ 150 psig.	12 hours 36 hours
H. Two or more low pressure ECCS injection/spray subsystems inoperable for reasons other than Condition A. OR HPCI System and one or more required ADS valves inoperable.	H.1 Enter LCO 3.0.3.	Immediately

RAI 3.5.1-18

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify, for each ECCS injection/spray subsystem, the piping is filled with water from the pump discharge valve to the injection valve.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.2	----------NOTE---------- Low pressure coolant injection (LPCI) subsystems may be considered OPERABLE during alignment and operation for decay heat removal with reactor steam dome pressure less than the Residual Heat Removal (RHR) cut in permissive pressure in MODE 3, if capable of being manually realigned and not otherwise inoperable. ---------- Verify each ECCS injection/spray subsystem manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.5.1.3	Verify ADS pneumatic supply header pressure is ≥ 95 psig.	31 days
SR 3.5.1.4	Verify the RHR System cross tie valves are closed and power is removed from the electrical valve operator.	31 days
SR 3.5.1.5	Cycle open and closed each LPCI motor operated valve independent power supply battery charger AC input breaker and verify each LPCI inverter output voltage is ≥ 576 V and ≤ 624 V while supplying the respective bus.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE				FREQUENCY
SR 3.5.1.6	----------NOTE---------- Not required to be performed if performed within the previous 31 days. ---------- Verify each recirculation pump discharge valve cycles through one complete cycle of full travel or is de-energized in the closed position.			Once each startup prior to exceeding 25% RTP
SR 3.5.1.7	Verify the following ECCS pumps develop the specified flow rate against a system head corresponding to the specified reactor pressure above primary containment pressure.			In accordance with the Inservice Testing Program
	SYSTEM	FLOW RATE	NO. OF PUMPS	SYSTEM HEAD CORRESPONDING TO A REACTOR PRESSURE ABOVE PRIMARY CONTAINMENT PRESSURE OF
	Core Spray	≥ 4265 gpm	1	≥ 113 psi
	LPCI	≥ 7700 gpm	1	≥ 20 psi
SR 3.5.1.8	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- Verify, with reactor pressure ≤ 1040 and ≥ 970 psig, the HPCI pump can develop a flow rate ≥ 3400 gpm against a system head corresponding to reactor pressure.			In accordance with the Inservice Testing Program

Rev 3.5.3-1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.9	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- Verify, with reactor pressure ≤ 165 psig, the HPCI pump can develop a flow rate ≥ 3400 gpm against a system head corresponding to reactor pressure.	24 months
SR 3.5.1.10	----------NOTES---------- 1. For the HPCI System, not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform test. 2. Vessel injection/spray may be excluded. ---------- Verify each ECCS injection/spray subsystem actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.11	----------NOTE---------- Valve actuation may be excluded. ---------- Verify the ADS actuates on an actual or simulated automatic initiation signal.	24 months
SR 3.5.1.12	Verify each LPCI motor operated valve independent power supply inverter capacity is adequate to supply and maintain in OPERABLE status the required emergency loads for the design duty cycle.	24 months

RAI 3.5.3-1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.13	----------NOTE---------- Not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. ---------- Verify each required ADS valve opens when manually actuated.	24 months on a STAGGERED TEST BASIS for each valve solenoid

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

B 3.5.1 ECCS – Operating

BASES

BACKGROUND

The ECCS is designed, in conjunction with the primary and secondary containment, to limit the release of radioactive materials to the environment following a loss of coolant accident (LOCA). The ECCS uses two independent methods (flooding and spraying) to cool the core during a LOCA. The ECCS network consists of the High Pressure Coolant Injection (HPCI) System, the Core Spray (CS) System, the low pressure coolant injection (LPCI) mode of the Residual Heat Removal (RHR) System, and the Automatic Depressurization System (ADS). The suppression pool provides the required source of water for the ECCS. Although no credit is taken in the safety analyses for the condensate storage tanks (CSTs), they are capable of providing a source of water for the HPCI and CS systems.

On receipt of an initiation signal, ECCS pumps automatically start; simultaneously, the system aligns and the pumps inject water, taken either from the CSTs or suppression pool, into the Reactor Coolant System (RCS) as RCS pressure is overcome by the discharge pressure of the ECCS pumps. Although the system is initiated, ADS action is delayed, allowing the operator to interrupt the timed sequence if the system is not needed. The HPCI pump discharge pressure almost immediately exceeds that of the RCS, and the pump injects coolant into the vessel to cool the core. If the break is small, the HPCI System will maintain coolant inventory as well as vessel level while the RCS is still pressurized. If HPCI fails, it is backed up by ADS in combination with LPCI and CS. In this event, if the ADS timed sequence is allowed to time out, the selected safety/relief valves (S/RVs) would open, depressurizing the RCS, thus allowing the LPCI and CS to overcome RCS pressure and inject coolant into the vessel. If the break is large, RCS pressure initially drops rapidly and the LPCI and CS cool the core.

Water from the break returns to the suppression pool where it is used again and again. Water in the suppression pool is circulated through a heat exchanger cooled by the RHR Service Water System. Depending on the location and size of

(continued)

BASES

BACKGROUND (continued)

the break, portions of the ECCS may be ineffective; however, the overall design is effective in cooling the core regardless of the size or location of the piping break.

All low pressure ECCS subsystems are designed to ensure that no single active component failure will prevent automatic initiation and successful operation of the minimum required ECCS equipment.

The CS System (Ref. 1) is composed of two independent subsystems. Each subsystem consists of a motor driven pump, a spray sparger above the core, and piping and valves to transfer water from the suppression pool to the sparger. The CS System is designed to provide cooling to the reactor core when reactor pressure is low. Upon receipt of an initiation signal if preferred power is available, the CS pumps in both subsystems will automatically start after a time delay of approximately 11 seconds. If a CS initiation signal is received when preferred power is not available, the CS pumps start approximately 11 seconds after the associated bus is energized by the emergency diesel generators (EDGs). When the RPV pressure drops sufficiently, CS System flow to the RPV begins. A full flow test line is provided to route water to the suppression pool to allow testing of the CS System without spraying water in the RPV.

LPCI is an independent operating mode of the RHR System. There are two LPCI subsystems (Ref. 2), each consisting of two motor driven pumps and piping and valves to transfer water from the suppression pool to the RPV via the corresponding recirculation loop. The two LPCI subsystems can be interconnected via the RHR System cross tie line; however, this line is maintained closed to prevent loss of both LPCI subsystems during a LOCA. The line is isolated by chain-locking the 10MOV-20 valve in the closed position with electric power disconnected from its motor operator, and maintaining the manually operated gate valve (10RHR-09) locked in the closed position. The LPCI subsystems are designed to provide core cooling at low RPV pressure. Upon receipt of an initiation signal if preferred power is available, LPCI pumps A and D start in approximately one second. LPCI pumps B and C are started in approximately 6 seconds to limit the loading of the preferred power sources. With a loss of preferred power LPCI pumps A and D start in approximately one second after the associated bus

(continued)

BASES

BACKGROUND (continued)

is energized by the EDGs, and LPCI pumps B and C start approximately 6 seconds after the associated bus is energized by the EDGs to limit the loading of the EDGs. If one EDG should fail to force parallel, an associated LPCI pump will not start (LPCI pump B or C) to ensure the other EDG in the same EDG subsystem is not overloaded. RHR System valves in the LPCI flow path are automatically positioned to ensure the proper flow path for water from the suppression pool to inject into the recirculation loops. When the RPV pressure drops sufficiently, the LPCI flow to the RPV, via the corresponding recirculation loop, begins. The water then enters the reactor through the jet pumps. A full flow test line is provided for each LPCI subsystem to route water from the suppression pool, to allow testing of the LPCI pumps without injecting water into the RPV. These test lines also provide suppression pool cooling capability, as described in LCO 3.6.2.3, "RHR Suppression Pool Cooling."

The HPCI System (Ref. 3) consists of a steam driven turbine pump unit, piping, and valves to provide steam to the turbine, as well as piping and valves to transfer water from the suction source to the core via the feedwater system line, where the coolant is distributed within the RPV through the feedwater sparger. Suction piping for the system is provided from both CSTs and the suppression pool. Pump suction for HPCI is normally aligned to both CSTs to minimize injection of suppression pool water into the RPV. However, if the water supply is low in both CSTs, or if the suppression pool level is high, an automatic transfer to the suppression pool water source ensures a water supply for continuous operation of the HPCI System and ensures the containment loads do not exceed design values. The steam supply to the HPCI turbine is piped from the "C" main steam line upstream of the inboard main steam isolation valve.

The HPCI System is designed to provide core cooling for a wide range of reactor pressures (150 psig to 1195 psig). Upon receipt of an initiation signal, the HPCI turbine stop valve and turbine control valve open simultaneously and the turbine accelerates to a specified speed. As the HPCI flow increases, the turbine governor valve is automatically adjusted to maintain design flow. Exhaust steam from the HPCI turbine is discharged to the suppression pool. A full flow test line is provided to route water to the CSTs to allow testing of the HPCI System during normal operation without injecting water into the RPV.

(continued)

BASES

BACKGROUND (continued)

The ECCS pumps are provided with minimum flow bypass lines, which discharge to the suppression pool. The valve in the HPCI line automatically opens to prevent pump damage due to overheating when other discharge line valves are closed. The minimum flow bypass valves for the LPCI and CS pumps are normally open for the same purpose. To ensure rapid delivery of water to the RPV and to minimize water hammer effects, all ECCS pump discharge lines are filled with water. The LPCI and CS System discharge lines are kept full of water using a "keep full" system (jockey pump system). The HPCI System is normally aligned to the CSTs. The height of water in the CSTs is sufficient to maintain the piping full of water up to the first isolation valve. The relative height of the feedwater line connection for HPCI is such that the water in the feedwater lines keeps the remaining portion of the HPCI discharge line full of water. Therefore, HPCI does not require a "keep full" system.

The ADS (Ref. 4) consists of 7 of the 11 S/RVs. It is designed to provide depressurization of the RCS during a small break LOCA if HPCI fails or is unable to maintain required water level in the RPV. ADS operation reduces the RPV pressure to within the operating pressure range of the low pressure ECCS subsystems (CS and LPCI), so that these subsystems can provide coolant inventory makeup. Each of the S/RVs used for automatic depressurization is equipped with one air accumulator and associated inlet check valves. The accumulator provides the pneumatic power to actuate the valves. One of the ADS valves shares an accumulator with a non-ADS valve.

APPLICABLE SAFETY ANALYSES

The ECCS performance is evaluated for the entire spectrum of break sizes for a postulated LOCA. The accidents for which ECCS operation is required are presented in References 5, 6, and 7. The required analyses and assumptions are defined in Reference 8. The results of these analyses are also described in Reference 9.

This LCO helps to ensure that the following acceptance criteria for the ECCS, established by 10 CFR 50.46 (Ref. 10), will be met following a LOCA, assuming the worst case single active component failure in the ECCS:

a. Maximum fuel element cladding temperature is ≤ 2200°F;

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;

c. Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react;

d. The core is maintained in a coolable geometry; and

e. Adequate long term cooling capability is maintained.

The limiting single failures are discussed in Reference 5. For a LOCA due to a large recirculation pump suction line pipe break, failure of the Division 2 125 VDC battery is considered the most severe failure. For a small break LOCA, HPCI failure is the most severe failure. In the analysis of events requiring ADS operation, it is assumed that only five of the seven ADS valves operate. Since six ADS valves are required to be OPERABLE, the explicit assumption of the failure of an ADS valve is not considered in the analysis. The remaining OPERABLE ECCS subsystems provide the capability to adequately cool the core and prevent excessive fuel damage.

The ECCS satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 11).

LCO

Each ECCS injection/spray subsystem and six ADS valves are required to be OPERABLE. The ECCS injection/spray subsystems are defined as the two CS subsystems, the two LPCI subsystems, and one HPCI System. The low pressure ECCS injection/spray subsystems are defined as the two CS subsystems and the two LPCI subsystems.

With less than the required number of ECCS subsystems OPERABLE, the potential exists that during a limiting Design Basis LOCA concurrent with the worst case single active component failure, the limits specified in Reference 10 could be exceeded. All ECCS subsystems must therefore be OPERABLE to satisfy the single failure criterion required by Reference 10.

(continued)

BASES

LCO (continued)

LPCI subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the actual RHR cut in permissive pressure in MODE 3, if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. Alignment and operation for decay heat removal includes when the system is being realigned from or to the RHR shutdown cooling mode. At these low pressures and decay heat levels, a reduced complement of ECCS subsystems should provide the required core cooling, thereby allowing operation of RHR shutdown cooling when necessary.

APPLICABILITY

All ECCS subsystems are required to be OPERABLE during MODES 1, 2, and 3, when there is considerable energy in the reactor core and core cooling would be required to prevent fuel damage in the event of a break in the primary system piping. In MODES 2 and 3, when reactor steam dome pressure 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

If any one low pressure ECCS injection/spray subsystem is inoperable or if one LPCI pump in both LPCI subsystems is inoperable, the inoperable subsystem(s) 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 active component 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 consistent with the recommendations provided in 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).

TSTF-318

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If the inoperable low pressure ECCS subsystem(s) 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 conjunction with ADS. Also, the RCIC System will automatically provide makeup water at most reactor operating pressures. Verification of RCIC OPERABILITY immediately 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 consistent with the recommendations provided in a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

D.1 and D.2

If any one low pressure ECCS injection/spray subsystem is inoperable or one LPCI pump in both LPCI subsystems in addition to an inoperable HPCI System, the inoperable low pressure ECCS injection/spray subsystem(s) or the HPCI System must be restored to OPERABLE status within 72 hours.

(continued)

BASES

ACTIONS

D.1 and D.2 (continued)

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 active component 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 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 consistent with the recommendations provided in a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

E.1

The LCO requires six ADS valves to be OPERABLE in order to provide the ADS function. Reference 5 contains the results of an analysis that evaluated the effect of two of the seven ADS valves being out of service. This analysis shows that, assuming a failure of the HPCI System, operation of only five ADS valves will provide the required depressurization. However, overall reliability of the ADS is reduced, because a single active component failure in the OPERABLE ADS valves could result in a reduction in depressurization capability. Therefore, operation with five ADS valves is only allowed for a limited time. The 14 day Completion Time is consistent with the recommendations provided in a reliability study cited in Reference 12 and has been found to be acceptable through operating experience.

F.1 and F.2

If any one low pressure ECCS injection/spray subsystem is inoperable, or one LPCI pump in both LPCI subsystems in addition to one required ADS valve inoperable, adequate core cooling is ensured by the OPERABILITY of HPCI and the remaining low pressure ECCS injection/spray subsystem(s). However, overall ECCS reliability is reduced because a

TSTF-318 RAI 3.5.1-BSI

(continued)

BASES

ACTIONS

F.1 and F.2 (continued)

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 low pressure subsystem(s) are inoperable, a more restrictive Completion Time of 72 hours is required to restore either the low pressure ECCS subsystem(s) or the ADS valve to OPERABLE status. This Completion Time is consistent with the recommendations provided in 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 required 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 ≤ 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.

H.1

When multiple ECCS subsystems are inoperable, as stated in Condition H, the plant is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

The flow path piping has the potential to develop voids and pockets of entrained air. Maintaining the pump discharge lines of the HPCI System, CS System, and LPCI subsystems full of water ensures that the ECCS will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent a water hammer following an ECCS

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1 (continued)

initiation signal. One acceptable method of ensuring that the lines are full is to vent at the high points. The 31 day Frequency is based on the gradual nature of void buildup in the ECCS piping, the procedural controls governing system operation, and operating experience.

SR 3.5.1.2

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since these were verified to be in the correct position prior to locking, sealing, or securing. A valve that receives an initiation signal is allowed to be in a nonaccident position provided the valve will automatically reposition in the proper stroke time. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves. For the HPCI System, this SR also includes the steam flow path for the turbine and the flow controller position.

The 31 day Frequency of this SR was derived from the Inservice Testing Program requirements for performing valve testing at least once every 92 days. The Frequency of 31 days is further justified because the valves are operated under procedural control and because improper valve position would only affect a single subsystem. This Frequency has been shown to be acceptable through operating experience.

In MODE 3 with reactor dome pressure less than the actual RHR cut in permissive pressure, the RHR System may be required to operate in the shutdown cooling mode to remove decay heat and sensible heat from the reactor. Therefore, this SR is modified by a Note that allows LPCI subsystems to be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned (remote or local) to the LPCI mode and not otherwise inoperable. Alignment and operation for decay heat removal

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.2 (continued)

includes when the system is being realigned from or to the RHR shutdown cooling mode. At the low pressures and decay heat loads associated with operation in MODE 3 with reactor steam dome pressure less than the shutdown cooling permissive pressure, a reduced complement of low pressure ECCS subsystems should provide the required cooling, thereby allowing operation of RHR shutdown cooling, when necessary.

SR 3.5.1.3

Verification every 31 days that ADS pneumatic supply header pressure is ≥ 95 psig ensures adequate pneumatic pressure for reliable ADS operation. The accumulator on each ADS valve provides pneumatic pressure for valve actuation. The design pneumatic supply pressure requirements for the accumulator are such that, following a failure of the pneumatic supply to the accumulator, at least one valve actuation can occur with the drywell at 70% of design pressure (Ref. 13). The ECCS safety analysis assumes only one actuation to achieve the depressurization required for operation of the low pressure ECCS. This minimum required pressure of ≥ 95 psig is provided by the ADS nitrogen supply. The 31 day Frequency takes into consideration administrative controls over operation of the pneumatic system and alarms for low pneumatic pressure.

SR 3.5.1.4

Verification every 31 days that the RHR System cross tie valves are closed and power to the motor operated valve is disconnected ensures that each LPCI subsystem remains independent and a failure of the flow path in one subsystem will not affect the flow path of the other LPCI subsystem. Acceptable methods of removing power to the operator include de-energizing breaker control power or racking out or removing the breaker. If one or more of the RHR System cross tie valves are open or power has not been removed from the motor operated valve, both LPCI subsystems must be considered inoperable. The 31 day Frequency has been found acceptable, considering that these valves are under strict administrative controls that will ensure the valves continue to remain closed with either control or motive power removed.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.5

Cycling open and closed each LPCI motor operated valve independent power supply battery charger AC input breaker and verification that each LPCI inverter output has a voltage of ≥ 576 V and ≤ 624 V while supplying its respective bus demonstrates the capability of the supply to become independent from emergency AC power and that the AC electrical power is available to ensure proper operation of the associated LPCI injection and heat exchanger bypass valves and the recirculation pump discharge valve. Each inverter and battery charger AC input breaker must be OPERABLE for the associated LPCI subsystem to be OPERABLE. The 31 day Frequency has been found acceptable based on operating experience.

SR 3.5.1.6

Cycling the recirculation pump discharge valves through one complete cycle of full travel demonstrates that the valves are mechanically OPERABLE and will close when required. Upon initiation of an automatic LPCI subsystem injection signal, these valves are required to close to ensure full LPCI subsystem flow injection in the reactor via the recirculation jet pumps. De-energizing the valve in the closed position will also ensure the proper flow path for the LPCI subsystem. Acceptable methods of de-energizing the valve include de-energizing breaker control power, racking out the breaker or removing the breaker.

The specified Frequency is once during reactor startup before THERMAL POWER is > 25% RTP. However, this SR is modified by a Note that states the Surveillance is only required to be performed if the last performance was more than 31 days ago. Verification during reactor startup prior to reaching > 25% RTP is an exception to the normal Inservice Testing Program generic valve cycling Frequency of 92 days, but is considered acceptable due to the demonstrated reliability of these valves. If the valve is inoperable and in the open position, the associated LPCI subsystem must be declared inoperable.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.7, SR 3.5.1.8, and SR 3.5.1.9

The performance requirements of the low pressure ECCS pumps are determined through application of the 10 CFR 50, Appendix K criteria (Ref. 8). This periodic Surveillance is performed (in accordance with the ASME Code, Section XI, requirements for the ECCS pumps) to verify that the ECCS pumps will develop at least the flow rates required by the respective analyses. The low pressure ECCS pump flow rates ensure that adequate core cooling is provided to satisfy the acceptance criteria of Reference 10. The pump flow rates are verified against a system head equivalent to the RPV pressure expected during a LOCA. The total system pump outlet pressure is adequate to overcome the elevation head pressure between the pump suction and the vessel discharge, the piping friction losses, and RPV pressure present during a LOCA. These values may be established during preoperational testing.

The flow tests for the HPCI System are performed at two different pressure ranges such that system capability to provide rated flow against a system head corresponding to reactor pressure is tested at both the higher and lower operating ranges of the system. The required system head should overcome the RPV pressure and associated discharge line losses. Adequate reactor steam pressure must be available to perform these tests. Additionally, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the HPCI System diverts steam flow. Therefore, sufficient time is allowed after adequate pressure and flow are achieved to perform these tests. Adequate reactor steam pressure must be $\geq$ 970 psig to perform SR 3.5.1.8 and $\leq$ 165 psig to perform SR 3.5.1.9. Adequate steam flow is represented by at least one turbine bypass valve open or main turbine generator load is greater than 100 MWe. Reactor startup is allowed prior to performing the low pressure Surveillance test because the reactor pressure is low and the time allowed to satisfactorily perform the Surveillance test is short. The reactor pressure is allowed to be increased to normal operating pressure since it is assumed that the low pressure test has been satisfactorily completed and there is no indication or reason to believe that HPCI is inoperable.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.7, SR 3.5.1.8, and SR 3.5.1.9 (continued)

Therefore, SR 3.5.1.8 and SR 3.5.1.9 are modified by Notes that state the Surveillances are not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for performing the flow test after the required pressure and flow are reached is sufficient to achieve stable conditions for testing and provides reasonable time to complete the SRs.

The Frequency for SR 3.5.1.7 and SR 3.5.1.8 is in accordance with the Inservice Testing Program requirements. The 24 month Frequency for SR 3.5.1.9 is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.5.1.10

The ECCS subsystems are required to actuate automatically to perform their design functions. This Surveillance verifies that, with a required system initiation signal (actual or simulated), the automatic initiation logic of HPCI, CS, and LPCI will cause the systems or subsystems to operate as designed, including actuation of the system throughout its emergency operating sequence, automatic pump startup and actuation of all automatic valves to their required positions. The HPCI System actual or simulated automatic actuation test must be performed with adequate steam pressure for verification of automatic pump startup. Additionally, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the HPCI System diverts steam flow. Thus, sufficient time is allowed after adequate pressure and flow are achieved to perform this test associated with the HPCI System. Adequate reactor steam dome pressure is > 150 psig. Adequate steam flow is represented by at least one turbine bypass valve open. This SR also ensures that the HPCI System will automatically restart on an RPV low water level (Level 2) signal received subsequent to an RPV high water level (Level 8) trip. In

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.10 (continued)

addition, this SR also ensures that the HPCI suction is automatically transferred from the CSTs to the suppression pool on high suppression pool water level or low CST water level. The LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlaps this Surveillance to provide complete testing of the assumed safety function.

For CS and LPCI, the 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. For HPCI, the 24 month Frequency is based on the need to perform the surveillance under conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by two Notes. Note 1 states that for the HPCI System, the Surveillance is not required to be performed until 12 hours after the reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for performing the actual or simulated automatic actuation for the HPCI System after the required pressure and flow are reached is sufficient to achieve stable conditions for testing and provides reasonable time to complete the SR. Note 2 excludes vessel injection/spray during the Surveillance. Since all active components are testable and full flow can be demonstrated by recirculation through the test line, coolant injection into the RPV is not required during the Surveillance.

SR 3.5.1.11

The ADS designated S/RVs are required to actuate automatically upon receipt of specific initiation signals. A system functional test is performed to demonstrate that the mechanical portions of the ADS function (i.e., solenoids) operate as designed when initiated either by an actual or simulated initiation signal, causing proper actuation of all the required components. SR 3.5.1.13 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.11 (continued)

overlap this Surveillance to provide complete testing of the assumed safety function. The 24 month Frequency is based on the need to perform the Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is modified by a Note that excludes valve actuation since the valves are individually tested in accordance with SR 3.5.1.13. This prevents the possibility of an RPV pressure blowdown.

SR 3.5.1.12

A LPCI motor operated valve independent power supply subsystem inverter test is a test of the inverter's capability, as found, to satisfy the design requirements (inverter duty cycle). The discharge rate and test length correspond to the design duty cycle requirements as specified in Reference.

The Frequency of 24 months is acceptable, given plant conditions required to perform the test and the other requirements existing to ensure adequate LPCI inverter performance during the 24 month interval. In addition, the Frequency is intended to be consistent with expected fuel cycle lengths.

SR 3.5.1.13

A manual actuation of each required ADS valve is performed while bypassing main steam flow to the condenser and observing ≥ 10% closure of the turbine bypass valves to verify that the valve and solenoid are functioning properly and that no blockage exists in the S/RV discharge lines. This can also be demonstrated by the response of the turbine control or bypass valve or by a change in the measured flow or by any other method suitable to verify steam flow.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.1.13 (continued)

Adequate reactor steam dome pressure must be available to perform this test to avoid damaging the valve. Also, adequate steam flow must be passing through the main turbine or turbine bypass valves to continue to control reactor pressure when the ADS valves divert steam flow upon opening.

Sufficient time is therefore allowed after the required pressure and flow are achieved to perform this SR. Adequate pressure at which this SR is to be performed is ≥ 970 psig (the pressure consistent with vendor recommendation). Adequate steam flow is represented by at least two or more turbine bypass valves open or total steam flow ≥ 10^6 lb/hr. These conditions will require the plant to be in MODE 1, which has been shown to be an acceptable condition to perform this test. This test causes a small neutron flux transient which may cause a scram in MODE 2 while operating close to the Average Power Range Monitors Neutron Flux – High (Startup) Allowable Value. Reactor startup is allowed prior to performing this SR because valve OPERABILITY and the setpoints for overpressure protection are verified, per ASME requirements, prior to valve installation. Therefore, this SR is modified by a Note that states the Surveillance is not required to be performed until 12 hours after reactor steam pressure and flow are adequate to perform the test. The 12 hours allowed for manual actuation after the required pressure and flow are reached is sufficient to achieve stable conditions and provides adequate time to complete the Surveillance. SR 3.5.1.11 and the LOGIC SYSTEM FUNCTIONAL TEST performed in LCO 3.3.5.1 overlap this Surveillance to provide complete testing of the assumed safety function.

The Frequency of 24 months on a STAGGERED TEST BASIS ensures that both solenoids for each ADS valve are alternately tested. The Frequency is based on the need to perform the Surveillance under the conditions that apply during a startup from a plant outage. Operating experience has shown that these components usually pass the SR when performed at the 24 month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. UFSAR, Section 6.4.3.

(continued)

BASES

REFERENCES (continued)

2. UFSAR, Section 6.4.4.

3. UFSAR, Section 6.4.1.

4. UFSAR, Section 6.4.2.

5. NEDC-31317P, Revision 2, James A. FitzPatrick Nuclear Power Plant SAFER/GESTR-LOCA, Loss of Coolant Accident Analysis, April 1993.

6. UFSAR, Section 14.6.1.5.

7. UFSAR, Section 14.6.1.3.

8. 10 CFR 50, Appendix K.

9. UFSAR, Section 6.5.

10. 10 CFR 50.46.

11. 10 CFR 50.36(c)(2)(ii).

12. Memorandum from R.L. Baer (NRC) to V. Stello, Jr. (NRC), Recommended Interim Revisions to LCOs for ECCS Components, December 1, 1975.

13. UFSAR, Section 4.4.5.

EDITS

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.2

ECCS - Shutdown

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

DISCUSSION OF CHANGES (DOCs) TO THE CTS

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

MARKUP OF NUREG-1433, REVISION 1, SPECIFICATION

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1
MARKUP OF NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.5.2

ECCS - Shutdown

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

Specification 3.5.2 A1

3.5 ECCS and RCIC A1

3.5 (cont'd)

[3.5.2] B. ECCS-Cold Condition Shutdown

[LCO 3.5.2] B. 1. A minimum of two low pressure Emergency Core Cooling subsystems shall be operable whenever irradiated fuel is in the reactor, the reactor is in the cold condition, and work is being performed with the potential for draining the reactor vessel. L1 add ACTION A

[Applicability] A3

[LCO 3.5.2] 2. A minimum of one low pressure Emergency Core Cooling subsystem shall be operable whenever irradiated fuel is in the reactor, the reactor is in the cold condition and no work is being performed with the potential for draining the reactor vessel A3

A3 [Applicability] [ACTION B]

[LCO 3.5.2] 3. Emergency Core Cooling subsystems are not required to be operable provided that the reactor vessel head is removed, the cavity is flooded, the spent fuel pool gates are removed and the water level above the fuel is in accordance with Specification 3.10.C. M3 22 ft 2 inches above top of RPV flange

[Applicability]

[Required Action B.1] [Required Action C.1] [Required Action C.2] [Action D]

L3

4. With the requirements of 3.5.F.1, 3.5.F.2, or 3.5.F.3 not satisfied, suspend Core alterations and all operations with the potential for draining the reactor vessel. Restore at least one system to operable status within 4 hours or establish Secondary Containment integrity within the next 8 hours. M4 M1 Immediately initiate action to

A4

4.5 (cont'd)

[3.5.2] B. ECCS-Cold Condition

[SR 3.5.2.5] Surveillance of the low pressure ECCS systems required by 3.5.F.1 and 3.5.F.2 shall be as follows:

1. In accordance with the Inservice Testing Program, perform a flowrate test on the required Core Spray pump(s) and/or the RHR pump(s). Each Core Spray pump shall deliver at least 4,265 gpm against a system head corresponding to a reactor vessel pressure greater than or equal to 113 psi above primary containment pressure. Each RHR pump shall deliver at least 7700 gpm against a system head corresponding to a reactor vessel to primary containment differential pressure of ≥ 20 psid. L5 7700

2. In accordance with the Inservice Testing Program, perform an operability test on the required Core Spray and/or LPCI motor operated valves. LA1 12 L2

[SR 3.5.2.1] B. Once per 8 hours verify the suppression pool water level is greater than or equal to 10.33 ft. whenever the low pressure ECCS subsystems are aligned to the suppression pool.

[SR 3.5.2.2.4] 12 L2

4. Once per 8 hours verify a minimum of 324 inches of water is available in the Condensate Storage Tanks (CST) whenever the Core Spray System(s) is aligned to the tanks.

[SR 3.5.2.2.b]

[SR 3.5.2.4] 5. Once per 31 days, verify that each valve (manual, power operated, or automatic) in the flowpath that is not locked, sealed, or otherwise secured in position, is in the correct position for the required RHR and/or core spray system(s).

add SR 3.5.2.2.b Note M2

add SR 3.5.2.4 Note A2

Specification 3.5.2

A1

JAFNPP

3.5 (cont'd)

G. Maintenance of Filled Discharge Pipe

Whenever core spray subsystems, LPCI subsystems, HPCI, or RCIC are required to be operable, the discharge piping from the pump discharge of these systems to the last block, valve shall be filled.

1. From and after the time that the pump discharge piping of the HPCI, RCIC, LPCI, or Core Spray Systems cannot be maintained in a filled

4.5 (cont'd)

G. Maintenance of Filled Discharge Pipe

The following surveillance requirements shall be adhered to, in order to assure that the discharge piping of the core spray subsystem, LPCI subsystem, HPCI and RCIC are filled:

Verify

1. Every month prior to the testing of the LPCI subsystem and core spray subsystem, the discharge piping of these systems shall be vented from the high point, and water flow observed.

to the injection valve

A1

A1

Specification 3.5.2

JAFNPP

3.5 (cont'd)

ACTION A or ACTION C

condition, that pump shall be considered inoperable for purposes of satisfying Specifications 3.5.A, 3.5.C, and 3.5.E.

A5

4.5 (cont'd)

A8

2. Following any period where the LPCI subsystems or core spray subsystems have not been maintained in a filled condition, the discharge piping of the affected subsystem shall be vented from the high point of the system and water flow observed.

LA2

See ITS: 3.5.1

3. Whenever the HPCI or RCIC System is lined up to take suction from the condensate storage tank, the discharge piping of the HPCI or RCIC shall be vented from the high point of the system, and water flow observed on a monthly basis.

LB1

4. The level switches located on the Core Spray and RHR System discharge piping high points which monitor these lines to ensure they are full shall be functionally tested each month.

H. Average Planar Linear Heat Generation Rate (APLHGR)

During power operation, the APLHGR for each type of fuel as a function of axial location and average planar exposure shall be within limits based on applicable APLHGR limit values which have been approved for the respective fuel and lattice types. These values are specified in the Core Operating Limits Report. If at anytime during reactor power operation greater than 25% of rated power it is determined that the limiting value for APLHGR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the APLHGR is not returned to within the prescribed limits within two (2) hours, the reactor power shall be reduced to less than 25% of rated power within the next four hours, or until the APLHGR is returned to within the prescribed limits.

H. Average Planar Linear Heat Generation Rate (APLHGR)

The APLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at ≥25% rated thermal power.

See ITS: 3.2.1

Amendment No. ~~48, 64, 74, 88, 98, 109, 117, 132, 134, 162, 190, 192~~, 123, 241

Specification 3.5.2 (A1)

TABLE 4.2-2 (Cont'd)

CORE AND CONTAINMENT COOLING SYSTEM INSTRUMENTATION
TEST AND CALIBRATION REQUIREMENTS

	Logic System Functional Test	Frequency
[SR 3.5.2.6] 1)	Core Spray Subsystem	SA (Notes 7 & 9)
2)	Low Pressure Coolant Injection Subsystem	SA (Notes 7 & 9)
3)	Containment Cooling Subsystem	R
4)	HPCI Subsystem	R (Notes 7 & 9)
5)	ADS Subsystem	SA (Notes 7 & 9)

see ITS: 3.3.5.1

see ITS: 3.3.5.1

NOTE: See notes following Table 4.2-5.

Specification 3.5.2

A1

See ITS: 3.4.5

NOTES FOR TABLES 4.2-1 THROUGH 4.2-5

1. Initially once every month until acceptance failure rate data are available; thereafter, a request may be made to the NRC to change the test frequency. The compilation of instrument failure rate data may include data obtained from other boiling water reactors for which the same design instruments operate in a environment similar to that of JAFNPP.

See ITS: 3.3.2.1

2. Functional tests are not required when these instruments are not required to be operable or are tripped. Functional tests shall be performed within seven (7) days prior to each startup.

3. Calibrations are not required when these instruments are not required to be operable or are tripped. Calibration tests shall be performed within seven (7) days prior to each startup or prior to a pre-planned shutdown.

See ITS: 3.3.2.1, 3.3.5.1, 3.3.5.2, 3.3.6.1

4. Instrument checks are not required when these instruments are not required to be operable or are tripped.

See ITS: 3.3.2.1, 3.3.5.1, 3.3.6.1, 3.3.5.2

5. This instrumentation is exempt from the functional test definition. The functional test will consist of injecting a simulated electrical signal into the measurement channel.

6. These instrument channels will be calibrated using simulated electrical signals once every three months.

[SR 3.5.2.6]

7. Simulated automatic actuation shall be performed once per 24 months.

or actual — L4

add Note to SR 3.5.2.C — A7

See ITS: 3.3.2.1

See ITS: 3.3.6.1

8. Reactor low water level, and high drywell pressure are not included on Table 4.2-1 since they are listed on Table 4.1-2.

See ITS: 3.3.5.1, 3.3.6.1

9. The logic system functional tests shall include a calibration of time delay relays and timers necessary for proper functioning of the trip systems.

See ITS: 3.3.6.1, 3.3.7.2

10. ~~(Deleted)~~

11. Perform a calibration once per 24 months using a radiation source. Perform an instrument channel alignment once every 3 months using a current source.

12. ~~(Deleted)~~

13. ~~(Deleted)~~

14. ~~(Deleted)~~

See ITS: 3.3.5.1, 3.3.6.1

15. Sensor calibration once per 24 months. Master/slave trip unit calibration once per 6 months.

16. The quarterly calibration of the temperature sensor consists of comparing the active temperature signal with a redundant temperature signal.

See ITS: 3.3.6.1

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