SUMMARY OF CHANGES
ITS SECTION 3.4

Change Description	Affected Pages
The change described in the response to Question 200405121250 for ITS 3.4.1 has been made. This change relocates Unit 2 CTS 3.2.5.b (the Coolant System (RCS) T_{avg} lower limit in MODE 1) to the Technical Requirements Manual (TRM).	Pages 7 and 14 of 632.
The change described in the response to Question 200405130816 for ITS 3.4.1 has been made. This change revises the Justification for Deviations (JFD) for ITS 3.4.1 LCO to clarify that the Core Operating Limits Report (COLR) limit for RCS flow is the primary RCS total flow rate limit that applies, and that the specific RCS total flow rate value is specifically the minimum value that may be specified in the COLR	Page 22 of 632.
The change described in the response to Question 200405130824 for ITS 3.4.1 Bases has been made. This change revises the JFD for ITS 3.4.1 Bases Applicability Section to provide additional justification for deleting the last paragraph of the Improved Standard Technical Specification (ISTS) 3.4.1 Bases Applicability section referencing Safety Limit (SL) 2.1.1.	Page 32 of 632.
The change described in the response to Question 200405130938 for ITS 3.4.2 has been made. This change revises the ITS 3.4.2 Discussion of Change (DOC) A.2 to provide additional justification for deleting the redundant and unnecessary CTS 3.1.1.5 Action requirement to restore T_{avg} to within its limit within 15 minutes.	Page 39 of 632.
The change described in the response to Question 200406151738 for ITS 3.4.3 Bases has been made. This change revises the ITS 3.4.3 Bases to restore the third sentence in the NUREG-1431, Revision 2, ISTS 3.4.3 Bases Applicable Safety Analyses section.	Page 80 of 632.
The change described in the response to Question 200406151743 for ITS 3.4.3 Bases has been made. This change revises the ITS 3.4.3 Bases Markup, ACTIONS C.1 and C.2, fourth paragraph, to change "Ref. 6" to "Ref. 7."	Page 86 of 632.
A self-identified change for ITS 3.4.5 has been made. This change revises ITS SR 3.4.5.2 similar to the changes described in the response to Questions 200406151001 for ITS 3.4.6 (Beyond Scope Issue 8.a) and 200407290851 for ITS 3.4.7 (Beyond Scope Issue 8.b).	Pages 116, 117, 126, 127, and 137 of 632.
The change described in the response to Question 200406171026 for ITS 3.4.5 has been made. This change revises the second Condition of ITS 3.4.5 Condition D to read "No required RCS loop in operation" and to delete the third condition originally proposed.	Pages 116, 125, and 127 of 632.

Change Description	Affected Pages
The change described in the response to Question 200406171020 for ITS 3.4.5 has been made. This change revises ITS 3.4.5 LCO Note to be consistent with the wording in TSTF-286.	Page 123 of 632.
The change described in the response to Question 200406171028 for ITS 3.4.5 has been made. This change revises ITS 3.4.5 Required Action D.2 to be consistent with the wording in TSTF-286.	Page 125 of 632.
The change described in the response to Question 200406171040 for ITS 3.4.5 Bases has been made. This change revises ITS 3.4.5 ACTIONS D.1, D.2, and D.3 Bases, fourth sentence, to be consistent with the wording in TSTF-286.	Page 136 of 632.
The change described in the response to Question 200406171057 for ITS 3.4.6 has been made. This change revises ITS 3.4.6 LCO to add a Note 2 consistent with Note 2 of the ISTS 3.4.6 LCO, providing restrictions on the starting of reactor coolant pumps.	Pages 145, 147, 151, 157,158, 160, 162, and 164 of 632.
The change described in the response to Question 200406151001 for ITS 3.4.6 (Beyond Scope Issue 8.a) has been made. This change revises ITS SR 3.4.6.2 to provide a physical minimum water level requirement for the steam generators above the lower tap of the SG wide range level instrumentation.	Pages 146, 148, 155, 159, 160, and 168 of 632.
A self-identified change for ITS 3.4.6 DOC M.4 that was added in the response to Question 200406171057 has been made. This change revises the second paragraph to clearly state that the CTS provides operating restrictions on starting of the reactor coolant pumps (RCPs) only below 152°F, instead of at all times the Low Temperature Overpressure Protection (LTOP) System is required to be OPERABLE. This is acceptable because the ITS expands the Applicability for OPERABILITY of the LTOP System above 152°F.	Page 151 of 632.
The change described in the response to Question 200406171048 for ITS 3.4.6 has been made. This change revises ITS 3.4.6 LCO Note 1.a to be consistent with the wording in TSTF-286.	Page 157 of 632.
The change described in the response to Question 200406171058 for ITS 3.4.6 has been made. This change revises ITS 3.4.6 Required Action B.1 to be consistent with the wording in TSTF-286.	Page 159 of 632.
A self-identified change for ITS 3.4.6 Bases and ITS 3.4.7 Bases LCO Sections has been made. This change revises the LCO discussion for LCO Note 1 for both the ITS 3.4.6 Bases and ITS 3.4.7 Bases to allow the RHR pumps to simply be removed from operation, and not "de-energized," similar to the discussion in the ITS 3.4.8 Bases LCO Section, and to clarify that switching operations for Residual Heat Removal (RHR) System may involve either a change in RHR loop that is in operation or changing the RHR flowpath.	Pages 163 and 196 of 632.

Change Description	Affected Pages
The change described in the response to Question 200406171105 for ITS 3.4.6 Bases has been made. This change revises ITS 3.4.6 Bases for ACTIONS B.1 and B.2 to be consistent with the wording in TSTF-286.	Page 167 of 632.
The change described in the response to Question 200406171434 for ITS 3.4.7 has been made. This change revises ITS 3.4.7 LCO to add a Note 3 consistent with Note 3 of the ISTS 3.4.7 LCO, providing restrictions on the starting of reactor coolant pumps.	Pages 180, 181, 184, 187, 188, 191, and 197 of 632.
The change described in the response to Question 200407290851 for ITS 3.4.7 (Beyond Scope Issue 8.b) has been made. This change revises ITS LCO 3.4.7.b and ITS SR 3.4.7.2 to provide a physical minimum water level requirement for the steam generators above the lower tap of the SG wide range level instrumentation.	Pages 180, 181, 185, 187, 190, 191, 194, 196, 197, 199, and 201 of 632.
The change described in the response to Question 200406171428 for ITS 3.4.7 has been made. This change revises ITS 3.4.7 LCO Note 1.a to be consistent with the wording in TSTF-286.	Page 187 of 632.
The change described in the response to Question 200406171429 for ITS 3.4.7 has been made. This change revises ITS 3.4.7 Required Action C.1 to be consistent with the wording in TSTF-286.	Page 189 of 632.
The change described in the response to Question 200406171443 for ITS 3.4.7 Bases has been made. This change revises ITS 3.4.7 Bases for the LCO Note 1.a and for ACTIONS C.1 and C.2 to be consistent with the wording in TSTF-286.	Pages 195, 196, and 198 of 632.
The change described in the response to Question 200406172301 for ITS 3.4.8 has been made. This change revises ITS 3.4.8 LCO Note 1.b to be consistent with the wording in TSTF-286.	Page 215 of 632.
The change described in the response to Question 200406172302 for ITS 3.4.8 has been made. This change revises ITS 3.4.8 Required Action B.1 to be consistent with the wording in TSTF-286.	Page 217 of 632.
The change described in the response to Question 200406172306 for ITS 3.4.8 Bases has been made. This change revises ITS 3.4.8 Bases for LCO Note 1.b to be consistent with the wording in TSTF-286.	Page 220 of 632.
The change described in the response to Question 200406221810 for ITS 3.4.10 has been made. This change revises ITS 3.4.10 DOC L.1 to clarify the low temperature overpressurization protection (LTOP) arming temperatures.	Page 258 of 632.

Change Description	Affected Pages
A self-identified change for ITS 3.4.10 Bases has been made. This change revises the ITS SR 3.4.10 Bases Background Section, fourth paragraph, first sentence, to correctly state that the upper and lower pressure limits for the pressurizer safety valve setpoint are based on the ± 3% tolerance requirement, consistent with the current licensing basis and other sections of the ITS SR 3.4.10 Bases.	Page 267 of 632.
The change described in the response to Question 200406222249 for ITS 3.4.10 Bases has been made. This change provides a new JFD to justify changing ITS 3.4.10 Bases for ITS SR 3.4.10.1 from ASME, Boiler and Pressure Vessel Code, Section XI to the ASME Operation and Maintenance Standards and Guides (OM Codes).	Pages 273, 274, and 275 of 632.
A self-identified change for ITS 3.4.11, 3.4.12, 3.4.15, and 3.4.16, and CTS 3/4.4.10.1, 3/4.4.12.1, and 3/4.4.12.2, and Question 200410281525 for ITS 3.4.12, has been made. CTS Amendments 281 (Unit 1) and 265 (Unit 2) have been incorporated into the ITS submittal. This CTS change adopted the allowances of TSTF-359 and affects CTS 3.4.11 Action h (deleted), CTS 3.4.9.3 Action e (deleted), CTS 3.1.2.3 Action e (deleted), CTS 3.5.3 Action e (added), CTS Table 3.3-6 ACTION 22A.3 (modified), CTS 3.4.8 Action c (added), CTS 3.4.10.1 Action d (deleted), CTS 3.4.12.1 Action c (deleted), and CTS 3.4.12.2 Action c (deleted). The change also affects ITS 3.4.11 (deleted ACTIONS Note 2), ITS 3.4.12 (added ACTIONS Note), ITS 3.4.15 (deleted ACTIONS Note), and ITS 3.4.16 (modified Required Action Note).	Pages 280, 281, 282, 283, 286, 291, 304, 318, 319, 320, 323, 325, 326, 327, 330, 333, 334, 335, 336, 346, 372, 373, 472, 474, 475, 477, 483, 489, 501, 514, 518, 523, 527, 538, 570, 572, 579, 581, 589, and 591 of 632.
The change described in the response to Question 200406230016 for ITS 3.4.11 has been made. This change revises the CTS 3.4.11 Markup pages for Action c to annotate this portion of the Action with "Required Actions D.1 and F.1."	Pages 280 and 282 of 632.
The change described in the response to Question 200406230018 for ITS 3.4.11 has been made. This change revises the second sentence of ITS 3.4.11 JFD 5 to clarify which CTS Actions that ITS 3.4.11 Condition F is consistent with.	Page 297 of 632.
The change described in the response to Question 200406230030 for ITS 3.4.11 has been made. This change revises ITS 3.4.11 JFD 7 to provide additional justification for deleting ISTS 3.4.11 Required Actions E.1 and E.2.	Page 298 of 632.
A self-identified change for ITS 3.4.11 Bases has been made. This change revises the ITS SR 3.4.11.3 Bases to state that the portion of ITS SR 3.4.11.3 dealing with cycling the solenoid air control valves applies to all 3 pressurizer power operated relief valves (PORVs), while the portion dealing with cycling the check valve on the air accumulators only applies to the 2 of the 3 PORVs that have an accumulator and check valve, consistent with the physical design of the plant.	Page 310 of 632.

Change Description	Affected Pages
The change described in the response to Question 200406240603 for ITS 3.4.12 has not been made, since the change described in the response to Question 200409081618 for ITS 3.4.12 supersedes Question 200406240603.	None
The change described in the response to Question 200406240625 for ITS 3.4.12 has not been made, since the change described in the response to Question 200409081618 for ITS 3.4.12 supersedes Question 200406240625.	None
The change described in the response to Question 200406240634 for ITS 3.4.12 has not been made, since the change described in the response to Question 200409081618 for ITS 3.4.12 supersedes Question 200406240634.	None
The change described in the response to Question 200409081618 for ITS 3.4.12 has been made. This change replaces the originally proposed ITS 3.4.12 LCO in its entirety with a new ITS LCO 3.4.12.A describing the requirements when 1 charging pump is capable of injecting into the RCS, and a new ITS LCO 3.4.12.B describing the requirements when 2 charging pumps are capable of injecting into the RCS.	Pages 318, 320, 322, 323, 325, 327, 329, 330, 333, 334, 335, 336, 337, 338, 339, 341, 342, 343, 344, 346, 347, 348, 349, 350, 351, 353, 355, 356, 359, 361, 363, 365, 367, 368, 369, 370, 371, 372, 373, 377, 378, 379, 387, 388, and 389 of 632.
The change described in the response to Question 200406240616 for ITS 3.4.12 has been made. This change revises the Unit 2 CTS 4.5.3.2 markup page to replace reference to ITS 3.4.12 DOC A.2 with ITS 3.4.12 DOC M.6.	Page 331 of 632.
A self-identified change for ITS 3.4.12 has been made. This change makes editorial corrections to ITS 3.4.12 DOC A.3.	Page 332 of 632.
The change described in the response to Question 200406240546 for ITS 3.4.12 has been made. This change revises ITS 3.4.12 DOC M.2 to provide additional justification for adding a Condition E to ITS 3.4.12.	Page 334 of 632.
The change described in the response to Question 200410281530 for ITS 3.4.12 has been made. This change provides a new ITS 3.4.12 DOC L.6 to justify addition of ITS LCO 3.4.12.B, including ITS LCO 3.4.12.B.1 through ITS LCO 3.4.12.B.4, to allow both charging pumps to be capable of injection into the RCS under the specified conditions.	Pages 341, 342, 343, 344, 387, 388, 389, and 390 of 632.
A self-identified change for ITS 3.4.12 Bases Background and Applicable Safety Analyses Sections has been made. This change revises the discussion for the minimum number of required RCS relief valves for LTOP System OPERABILITY to specifically state that the RHR safety valve and 1 of the 2 pressurizer PORVs are necessary, rather than just "2" or a non-specified number of RCS relief valves, in ITS 3.4.12 Bases INSERTS 2A, 3A, and 11.	Pages 359, 361, and 367 of 632.

Change Description	Affected Pages
A self-identified change for ITS 3.4.12 Bases has been made. This change revises the ITS SR 3.4.12.1 Bases to replace the phrase "prevent a pump start" to "prevent RCS injection" in the third sentence. This is more appropriate since the example describes more than just actions to prevent a pump from starting as acceptable.	Page 377 of 632.
The change described in the response to Question 200410281528 for ITS 3.4.12 Bases has been made. This change revises the ITS 3.4.12 Bases for ACTIONS G.1 to clarify that this is the appropriate Required Action for not complying with the restrictions of the ITS LCO 3.4.12 Note for starting of RCPs.	Page 377 of 632.
A self-identified change for ITS 3.4.12 Bases Reference Section has been made. This change revises the reference for the LTOP System analysis (Reference 4) from ECP-N1-05 and ECP-N1-24 to the appropriate WCAPs that address the RCS pressure-temperature limit curves.	Page 384 of 632.
The change described in the response to Question 200406240702 for ITS 3.4.13 has been made. This change revises ITS 3.4.13 DOC M.1 to discuss the NRC approval of the methodology and the restriction of unidentified RCS leakage to a maximum of 0.8 gpm for Unit 1.	Page 404 of 632.
The change described in the response to Question 200406240711 for ITS 3.4.13 has been made. This change revises Unit 1 ITS 3.4.13 Required Action B.2 and the first sentence of the Unit 1 ITS 3.4.13 ACTIONS B.1 Bases to clarify that if unidentified LEAKAGE is > 1.0 gpm, to reduce unidentified LEAKAGE to less than or equal to 1.0 gpm within 4 hours.	Pages 404, 409, and 421 of 632.
The change described in the response to Question 200406240728 for ITS 3.4.13 Bases has been made. This change revises the ITS 3.4.13 Bases to include both the Indiana Michigan Power Company (I&M) letter submitting the methodology for the Unit 1 leak-before-break analysis and the NRC approval letter in the References Section.	Pages 421 and 423 of 632.
The change described in the response to Question 200406242324 for ITS 3.4.14 has been made. This change provides a new ITS 3.4.14 DOC A.7 to justify deleting the reference to "automatic" for the interlock action to prevent opening of the suction of the Residual Heat Removal (RHR) System from the RCS when the RCS pressure is above 600 psig.	Pages 432, 436, 438, 439, and 451 of 632.
A self-identified change for ITS 3.4.14 has been made. This change revises the ITS 3.4.14 Condition C, including the ITS 3.4.14 Bases Actions Section, to replace the word "automatic" with "power operated." This is a more appropriate description of these valves.	Pages 447 and 459 of 632.

Change Description	Affected Pages
A self-identified change for ITS 3.4.14 Bases has been made. This change revises the ITS 3.4.14 Bases Background Section by duplicating the discussion concerning location of the list of pressure isolation valves (PIVs) (i.e., statements that the PIVs are listed in the Technical Requirements Manual (TRM)) in the Limiting Condition for Operation (LCO) Section. This is the more appropriate ITS 3.4.14 Bases Section to describe where the list of PIVs is located.	Page 455 of 632.
The change described in the response to Question 200410141808 for ITS 3.4.15 (Beyond Scope Issue 03.e) has been made. This change withdraws the requested SR Frequency extension of 184 days for ITS SR 3.4.15.2, and adopts the CTS Table 4.3-3 SR Frequency of 92 days, for performance of a CHANNEL OPERATIONAL TEST (COT) of the required containment radioactivity monitors.	Pages 473, 474, 478, 479, 487, 493, 495, and 507 of 632.
A self-identified change for ITS 3.4.15 has been made. This change revises the ITS annotation for CTS Table 3.3-6 Instrument 1.B.ii and CTS Table 4.3-3 Instruments 2.A.iii and 2.B.iii. This change does not affect the ITS.	Pages 476 and 479 of 632.
A self-identified change for ITS 3.4.15 Bases has been made. This change revises the ITS 3.4.15 Bases LCO Section (Inserts 2B and 3) by stating that the LCO requires OPERABLE pumps and integrators, consistent with the current licensing basis requirements.	Page 502 of 632.

VOLUME 9

CNP UNITS 1 AND 2
IMPROVED TECHNICAL
SPECIFICATIONS CONVERSION

ITS SECTION 3.4
REACTOR COOLANT SYSTEM (RCS)

Revision 1

LIST OF ATTACHMENTS

1. ITS 3.4.1
2. ITS 3.4.2
3. ITS 3.4.3
4. ITS 3.4.4
5. ITS 3.4.5
6. ITS 3.4.6
7. ITS 3.4.7
8. ITS 3.4.8
9. ITS 3.4.9
10. ITS 3.4.10
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12. ITS 3.4.12
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14. ITS 3.4.14
15. ITS 3.4.15
16. ITS 3.4.16
17. Relocated/Deleted Current Technical Specifications (CTS)
18. Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ATTACHMENT 1

ITS 3.4.1, RCS Pressure, Temperature, and Flow Departure From Nucleate Boiling (DNB) Limits

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.2 POWER DISTRIBUTION LIMITS

DNB PARAMETERS

LIMITING CONDITION FOR OPERATION

LCO 3.4.1 — 3.2.5 The following DNB related parameters shall be maintained within the limits shown on Table 3.2-1:

a. Reactor Coolant System T_{avg}

b. Pressurizer Pressure

c. Reactor Coolant System Total Flow Rate

APPLICABILITY: MODE 1

ACTION:

ACTION A / ACTION B — With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours or reduce THERMAL POWER to less than [or equal to] 5 percent of RATED THERMAL POWER within the next ~~4~~ [6] hours. (L.1) (A.2)

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1, SR 3.4.1.2, SR 3.4.1.3 — 4.2.5.1 Each of the parameters of Table 3.2-1 shall be verified to be within their limits at least once per 12 hours.

~~4.2.5.2 The indicators used to determine RCS total flow rate shall be subjected to a CHANNEL CALIBRATION at least once per 18 months.~~ [Add proposed SR 3.4.1.4 Note] (LA.1) (M.1)

SR 3.4.1.4 — 4.2.5.3 The RCS total flow rate shall be determined by a ~~power balance around the steam generators~~ [precision heat balance] at least once per ~~18~~ [24] months. (LA.2) (L.2)

~~4.2.5.4 The provisions of Specification 4.0.4 shall not apply to primary flow surveillances.~~ (M.1)

ITS 3.4.1

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.2 POWER DISTRIBUTION LIMITS

TABLE 3.2-1
DNB PARAMETERS

	PARAMETER	LIMITS 4 Loops in Operation at RATED THERMAL POWER (A.3)
LCO 3.4.1	Reactor Coolant System Tavg	≤ 579.3°F* [as specified in COLR] (LA.3)
	Pressurizer Pressure	≥ 2050 psig** [as specified in COLR] (LA.3)
	Reactor Coolant System Total Flow Rate	≥ 341,100 gpm*** [Add limit specified in COLR] (LA.3)

* Indicated average of at least three OPERABLE instrument loops. (LA.4)

Applicability Note: ** Limit not applicable during either a THERMAL POWER ramp increase in excess of 5 percent RATED THERMAL POWER per minute or a THERMAL POWER step increase in excess of 10 percent RATED THERMAL POWER.

*** Indicated value. (LA.4)

ITS 3.4.1

(A.1)

ITS

POWER DISTRIBUTION LIMITS

DNB AND Tavg OPERATING PARAMETERS

LIMITING CONDITION FOR OPERATION

LCO 3.4.1 — 3.2.5 The following DNB related parameters shall be maintained within the following operational indicated limits:

a. DNB

1. Reactor Coolant System T_{avg} — Less than or equal to 578.7°F* [as specified in the COLR] (LA.3)
2. Pressurizer Pressure — Greater than or equal to 2200 psig*/** [as specified in the COLR] (LA.3)
3. Reactor Coolant System Total Flow Rate — Greater than or equal to 3[illegible],400 gpm*** [Add limit specified in COLR] (LA.3)

b. T_{avg} (LA.5)

1. Reactor Coolant System T_{avg} — Greater than or equal to 543.9°F*

APPLICABILITY: MODE 1

ACTION:

ACTION A — With any of the above parameters exceeding its limit, restore the parameter to within its limit within 2 hours

ACTION B — or reduce THERMAL POWER to less than [or equal to] (A.2) 5% of RATED THERMAL POWER within the next [illegible] [6] (L.1) hours.

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1, SR 3.4.1.2, SR 3.4.1.3 — 4.2.5.1 Each of the above parameters shall be verified to be within their limits at least once per 12 hours.

4.2.5.2 The indicators used to determine RCS total flow shall be subjected to a CHANNEL CALIBRATION at least once per 18 months. (LA.1)

[Add proposed SR 3.4.1.4 Note] (M.1)

SR 3.4.1.4 — 4.2.5.3 The RCS total flow rate shall be determined by a power balance around the steam generators [precision heat balance] (LA.2) at least once per 18 [24] (L.2) months.

4.2.5.4 The provisions of Specification 4.0.4 shall not apply to primary flow surveillances. (M.1)

* Indicated average of at least three OPERABLE instrument loops. (LA.4)

Applicability Note — ** Limit not applicable during either a THERMAL POWER ramp in excess of 5% of RATED THERMAL POWER per minute or a THERMAL POWER step in excess of 10% of RTP

*** Indicated value (LA.4)

A.1

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A.1

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A.1

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DISCUSSION OF CHANGES
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.2.5 Action requires the unit to reduce THERMAL POWER to "less than" 5% of RATED THERMAL POWER (RTP) within the next 4 hours if the DNB parameters are not restored to within limit in 2 hours. ITS 3.4.1 ACTION B requires the power reduction to "less than or equal to" 5% RTP (MODE 2) within the next 6 hours if the DNB parameters are not restored to within limit in 2 hours. This changes the CTS by allowing the unit be at 5% RTP instead of < 5% RTP. The change in the time period to reach 5% RTP is discussed in DOC L.1.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.2.5 is applicable in MODE 1, which is greater than 5% RTP. CTS 3.0.1 states that Actions are applicable during the MODES or other conditions specified for the Specification. Therefore, the CTS 3.2.5 Action to be less than 5% RTP ceases to be applicable once the unit enters MODE 2, i.e., at 5% RTP, and the Action is exited. As a result, changing the ACTION to "be in MODE 2" results in no operational difference from the CTS Action. This change is designated as administrative as it results in no technical change to the CTS.

A.3 (Unit 1 only) CTS 3.2.5 Table 3.2-1 contains a column for DNB limits during four loop operation at RATED THERMAL POWER. The ITS does not contain this detail. This changes the Unit 1 CTS by eliminating the detail that the DNB limits apply to four loop operation at RATED THERMAL POWER.

This change is acceptable because the requirements have not changed. Both the ITS and the CTS require all four loops in operation in the applicable MODE (MODE 1). This change is designated as administrative because it eliminates an option in the CTS which cannot be used.

MORE RESTRICTIVE CHANGES

M.1 CTS 4.2.5.3 states that the Reactor Coolant System (RCS) total flow rate shall be determined. CTS 4.2.5.4 states that the provisions of CTS 4.0.4 shall not apply to primary flow surveillances. ITS SR 3.4.1.4 requires measurement of the RCS total flow rate and is modified by a Note which states, "Not required to be performed until 24 hours after ≥ 90% RTP." This changes the CTS by explicitly specifying the time required to perform the Surveillance after entering MODE 1 conditions.

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DISCUSSION OF CHANGES
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

The purpose of CTS 4.2.5.3 is to accurately determine the RCS total flow rate. This change is acceptable because the new Surveillance has been evaluated to ensure that it provides an acceptable level of equipment reliability. An accurate measurement of the RCS total flow rate must be performed at full power under stable operating conditions. The Note also applies a 24 hour period after reaching 90% RTP to perform the test. This is a reasonable period to establish stable operating conditions, install the test equipment, perform the test, and analyze the results. This change is designated as more restrictive as it specifies an explicit time period to perform the test.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 4 – Removing Performance Requirements for Indication-Only Instrumentation and Alarms)* CTS 4.2.5.2 requires that the indicators which are used to determine RCS flow rate be subjected to a CHANNEL CALIBRATION at least once per 18 months. ITS 3.4.1 does not include this requirement. This changes the CTS by relocating the Surveillance Requirement to the Technical Requirements Manual (TRM).

The removal of requirements for indication-only instrumentation and alarms from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. This RCS flow rate indicators are not required to be OPERABLE to determine whether the RCS total flow rate is within limit. The requirement to determine RCS total flow rate remains in the ITS. In addition, the majority of the instrumentation (e.g., sensor) remains in the ITS as part of ITS 3.3.1 (Table 3.3.1-1 Function 10). Also, this change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is incorporated by reference into the UFSAR and any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because performance requirements for indication-only instrumentation is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.2.5.3 requires the RCS total flow rate to be determined by a power balance around the steam generators. ITS SR 3.4.1.4 requires the verification by precision heat balance that RCS total flow rate is greater than the limits. This changes the CTS by relocation of the procedural details on how to perform the heat balance (power balance around the steam generators) to the Bases and replacing it with "by a precision heat balance."

The removal of these details for performing Surveillance Requirements from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public

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DISCUSSION OF CHANGES
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

health and safety. The ITS still retains requirement to verify RCS total flow rate by using a precision heat balance. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the CTS.

LA.3 *(Type 5 – Removal of Cycle-Specific Parameter Limits from the Technical Specifications to the Core Operating Limits Report)* CTS Table 3.2-1 (Unit 1) and CTS 3.2.5 (Unit 2) place limits on DNB RCS T_{avg}, pressurizer pressure, and RCS total flow rate. ITS 3.4.1 states that the limits on RCS T_{avg} and pressurizer pressure shall not exceed the limits specified in the COLR. ITS 3.4.1 also requires RCS total flow rate to be greater than or equal to the limit specified in the COLR and that the minimum RCS total flow rate to be ≥ 341,100 gpm (Unit 1) and ≥ 366,400 gpm (Unit 2). This changes the CTS by relocating the specific values of RCS T_{avg}, pressurizer pressure, and RCS total flow rate, which must be confirmed on a cycle-specific basis, to the COLR.

The removal of these cycle-specific parameter limits from the Technical Specifications and their relocation into the COLR is acceptable because these limits are developed or utilized under NRC-approved methodologies. The NRC documented in Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits From Technical Specifications," that this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains requirements and Surveillances that verify that the cycle-specific parameter limits are being met. NRC-approved Topical Report WCAP-14483, "Generic Methodology for Expanded Core Operating Limits Report," determined that the specific values for the DNB parameters may be relocated to the COLR as long as the limiting RCS total flow limit is retained in the LCO. The LCO continues to require that the core be operated within the DNB limits. The methodologies used to develop the DNB parameters in the COLR have obtained prior approval by the NRC in accordance with Generic Letter 88-16. Also, this change is acceptable because the removed information will be adequately controlled in the COLR under the requirements provided in ITS 5.6.5, "CORE OPERATING LIMITS REPORT." ITS 5.6.5 ensures that the applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems limits, and nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analyses are met. This change is designated as a less restrictive removal of detail change because information relating to cycle-specific parameter limits is being removed from the Technical Specifications.

LA.4 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 3.2-1 Footnote * (Unit 1) and CTS 3.2.5 Footnote * (Unit 2) require the T_{avg} to be evaluated with the use of the indicated average of at least three OPERABLE instrument loops. CTS Table 3.2-1 Footnote *** (Unit 1) and CTS 3.2.5 Footnote *** (Unit 2) state that the limit specified for RCS total flow rate is the indicated value. ITS 3.4.1 does not provide these details. This changes the CTS by relocating the procedural details on how to perform the parameter comparison to the Bases.

The removal of these details for performing Surveillance Requirements from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the parameters should be met and requires them to be verified every 12 hours. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the CTS.

LA.5 (Unit 2 only) *(Type 6 - Removal of LCO, SR, or other TS requirement to the TRM, UFSAR, ODCM, QAPD, or IIP)* CTS 3.2.5.b places a lower limit on the RCS T_{avg} of 543.9 ° F in MODE 1. Unit 2 ITS 3.4.1 does not include this requirement. This changes the Unit 2 CTS by moving the RCS T_{avg} lower limit in MODE 1 from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these details from the Technical Specifications is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The purpose of Unit 2 CTS LCO 3.2.5.b is to ensure that a lower analytical limit for RCS T_{avg} assumed in the safety analyses is met. However, this variable is not specifically related to maintaining DNB within required limits, or meeting any other CTS or proposed ITS reactivity control system or power distribution limit requirement. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. The RCS T_{avg} lower limit is one of several assumptions in the safety analyses that, if not met, could affect the conclusions of the safety analyses. However, not all variables that are an initial assumption of the safety analyses are included in the Technical Specifications. It should be noted that a RCS T_{avg} lower limit is not included in Specification 3.2.5 of NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors," Revision 4, and is not included in Specification 3.4.1 of NUREG-1431, "Standard Technical Specifications - Westinghouse Plants," Revision 2. In this case, an RCS T_{avg} lower limit is already specified in CTS 3.1.1.5 (ITS 3.4.2) as a limit on RCS minimum temperature for criticality, applicable in MODE 1 and MODE 2 with $k_{eff} \geq 1.0$. RCS T_{avg} is normally maintained much higher than this lower limit, and is automatically controlled. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is incorporated by reference into the UFSAR and any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a requirement is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

LESS RESTRICTIVE CHANGES

L.1 *(Category 3 – Relaxation of Completion Time)* CTS 3.2.5 Action requires the unit to reduce THERMAL POWER to < 5% of RTP within the next 4 hours if the DNB parameters are not restored to within limit in 2 hours. ITS 3.4.1 ACTION B requires the power reduction to ≤ 5% RTP (MODE 2) within the next 6 hours if the DNB parameters are not restored to within limit in 2 hours. This changes the CTS by extending the time for the unit to be placed outside the MODE of Applicability. The change which allows the THERMAL POWER reduction to be only to 5% RTP is discussed in DOC A.2.

The purpose of the CTS 3.2.5 Action is to limit the time the unit can be outside of the DNB parameter limits and remain within the Applicability of the Specification. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. The change extends the time the unit is allowed to be outside the DNB parameter limits and be in the Applicability of the Specification. The time extension is from 4 hours to 6 hours. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L.2 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.2.5.3 requires the RCS total flow rate to be determined by a power balance around the steam generators every 18 months. ITS SR 3.4.1.4 requires the verification by precision heat balance that RCS total flow rate is greater than the limits to be performed every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2). The change to the procedural details on how to perform the test (power balance around the steam generators) is discussed in DOC LA.2.

The purpose of CTS 4.2.5.3 is to allow the installed RCS flow instrumentation to be calibrated and verifies the actual RCS flow rate is within limit. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for this precision heat balance is acceptable because during the operating cycle reactor flow is indicated and alarmed, and instruments are channel checked for confirmation of flow conditions. The instruments that support the indication and trip functions have been evaluated for calibration extension using failure analysis and drift verification. There is a high confidence that these instruments will remain

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DISCUSSION OF CHANGES
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

functional and accurate for the full 24-month interval. Therefore any changes to indicated flow would be readily detected. Since elbow taps are used for flow differential pressure, there are few conditions which could disrupt flow without the significant change causing a low flow trip. Based on the inherent system and component reliability and the testing performed during the operating cycle, including CHANNEL CHECKS and CHANNEL OPERATIONAL TESTS (COTs) associated with the reactor coolant flow instrumentation, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

LCO 3.2.5
Table 3.2-1 (Unit 1 only)

LCO 3.4.1 RCS DNB parameters for pressurizer pressure, RCS average temperature, and RCS total flow rate shall be within the limits specified below:

a. Pressurizer pressure is greater than or equal to the limit specified in the COLR, ; (1)

b. RCS average temperature is less than or equal to the limit specified in the COLR, and ; (1)

c. RCS total flow rate ≥ [284,000] gpm and greater than or equal to the limit specified in the COLR. INSERT 1 (2)

APPLICABILITY: MODE 1.

- NOTE -

Pressurizer pressure limit does not apply during either: (3)

Table 3.2-1 Footnote **

a. THERMAL POWER ramp > 5% RTP per minute, or ; (1)

b. THERMAL POWER step > 10% RTP.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action	A. One or more RCS DNB parameters not within limits.	A.1 Restore RCS DNB parameter(s) to within limit.	2 hours
Action	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 2.	6 hours

1

INSERT 1

is greater than or equal to the limit specified in the COLR. The minimum RCS total flow rate shall be ≥ 341,100 gpm (Unit 1) and ≥ 366,400 gpm (Unit 2).

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CTS

SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY
4.2.5.1	SR 3.4.1.1	Verify pressurizer pressure is greater than or equal to the limit specified in the COLR.	12 hours
4.2.5.1	SR 3.4.1.2	Verify RCS average temperature is less than or equal to the limit specified in the COLR.	12 hours INSERT 2
4.2.5.1	SR 3.4.1.3	Verify RCS total flow rate is ≥ [284,000] gpm and greater than or equal to the limit specified in the COLR.	12 hours
4.2.5.3	SR 3.4.1.4	- NOTE - Not required to be performed until 24 hours after ≥ [90]% RTP. Verify by precision heat balance that RCS total flow rate is ≥ [284,000] gpm and greater than or equal to the limit specified in the COLR.	INSERT 3 [18] months 24

① ①

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1

INSERT 2

341,100 gpm (Unit 1) and $\geq$ 366,400 gpm (Unit 2)

1

INSERT 3

341,100 gpm (Unit 1) and $\geq$ 366,400 gpm (Unit 2)

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

2. ISTS LCO 3.4.1.c specifies that RCS total flow rate be ≥ [284,000] gpm and greater than or equal to the limit specified in the COLR. ITS 3.4.1.c specifies that RCS total flow rate be greater than or equal to the limit specified in the COLR, and additionally specifies that "The minimum RCS total flow rate shall be ≥ 341,100 gpm (Unit 1) and ≥ 366,400 gpm (Unit 2)." This changes the ISTS by clearly specifying that the COLR limit is the primary RCS total flow rate limit that applies, and that the specific RCS total flow rate value is specifically the minimum value that may be specified in the COLR. In addition, the brackets have been removed and the proper plant specific information/value has been provided. This is acceptable since the value specified in the COLR is required to be greater than or equal to the limit specified in the ITS (i.e., ≥ 341,100 gpm for Unit 1 and ≥ 366,400 gpm for Unit 2), unless prior NRC permission is obtained to lower the ITS limit, and will therefore always be the most limiting value that should be used to determine compliance with ITS LCO 3.4.1.c.

3. Editorial/grammatical error corrected.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.1 RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

BASES

BACKGROUND

These Bases address requirements for maintaining RCS pressure, temperature, and flow rate within limits assumed in the safety analyses. The safety analyses (Ref. 1) of normal operating conditions and transients anticipated operational occurrences assume initial conditions within the normal steady state envelope. The limits placed on RCS pressure, temperature, and flow rate ensure that the minimum departure from nucleate boiling ratio (DNBR) will be met for each of the transients analyzed. INSERT 1 (1)

The RCS pressure limit is consistent with operation within the nominal operational envelope. Pressurizer pressure indications are averaged to come up with a value for comparison to the limit. A lower pressure will cause the reactor core to approach DNB limits.

The RCS coolant average temperature limit is consistent with full power operation within the nominal operational envelope. Indications of INSERT 2 temperature are averaged to determine a value for comparison to the limit. A higher average temperature will cause the core to approach DNB limits.

The RCS flow rate normally remains constant during an operational fuel cycle with all pumps running. The minimum RCS flow limit corresponds to that assumed for DNB analyses. Flow rate indications are averaged to come up with a value for comparison to the limit. A lower RCS flow will cause the core to approach DNB limits.

Operation for significant periods of time outside these DNB limits increases the likelihood of a fuel cladding failure in a DNB limited event.

APPLICABLE SAFETY ANALYSES

The requirements of this LCO represent the initial conditions for DNB limited transients analyzed in the plant unit safety analyses (Ref. 1). The safety analyses have shown that transients initiated from the limits of this LCO will result in meeting the DNBR criterion. This is the acceptance limit for the RCS DNB parameters. Changes to the unit that could impact these parameters must be assessed for their impact on the DNBR criteria. The transients analyzed for include loss of coolant flow events and dropped or stuck rod rod misalignment events. A key assumption for the analysis of these events is that the core power distribution is within the limits of (1)

(1) **INSERT 1**

of at least three OPERABLE instrument loops

(1) **INSERT 2**

at least three OPERABLE instrument loops

BASES

APPLICABLE SAFETY ANALYSES (continued)

LCO 3.1.6, "Control Bank Insertion Limits," LCO 3.2.3, "AXIAL FLUX DIFFERENCE (AFD)," and LCO 3.2.4, "QUADRANT POWER TILT RATIO (QPTR)."

The pressurizer pressure limit and RCS average temperature limit specified in the COLR correspond to the analytical limits used in the safety analyses, with allowance for measurement uncertainty.

INSERT 3

The RCS DNB parameters satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii). (1)

LCO

This LCO specifies limits on the monitored process variables - pressurizer pressure, RCS average temperature, and RCS total flow rate - to ensure the core operates within the limits assumed in the safety analyses. These variables are contained in the COLR to provide operating and analysis flexibility from cycle to cycle. However, the minimum RCS flow, usually based on maximum analyzed steam generator tube plugging, is retained in the TS LCO. Operating within these limits will result in meeting the DNBR criterion in the event of a DNB limited transient. (3)

RCS total flow rate contains a measurement error based on performing a precision heat balance and using the result to calibrate the RCS flow rate indicators. Potential fouling of the feedwater venturi, which might not be detected, could bias the result from the precision heat balance in a nonconservative manner. Therefore, a penalty for undetected fouling of the feedwater venturi raises the nominal flow measurement allowance for no fouling. (1)

(power balance around the steam generators)

Any fouling that might bias the flow rate measurement greater than the penalty for undetected fouling of the feedwater venturi can be detected by monitoring and trending various plant performance parameters. If detected, either the effect of the fouling shall be quantified and compensated for in the RCS flow rate measurement or the venturi shall be cleaned to eliminate the fouling. unit (1)

The numerical values for pressure, temperature, and flow rate specified in the COLR are given for the measurement location and have been adjusted for instrument error. (1)

pressurizer; RCS average; RCS total

APPLICABILITY

In MODE 1, the limits on pressurizer pressure, RCS coolant average temperature, and RCS flow rate must be maintained during steady state operation in order to ensure DNBR criteria will be met in the event of an

(1) **INSERT 3**

Pressure, Temperature, and Flow DNB Limits

BASES

APPLICABILITY (continued)

unplanned loss of forced coolant flow or other DNB limited transient. In all other MODES, the power level is low enough that DNB is not a concern.

A Note has been added to indicate the limit on pressurizer pressure is not applicable during short term operational transients such as a THERMAL POWER ramp increase > 5% RTP per minute or a THERMAL POWER step increase > 10% RTP. These conditions represent short term perturbations where actions to control pressure variations might be counterproductive. Also, since they represent transients initiated from power levels < 100% RTP, an increased DNBR margin exists to offset the temporary pressure variations.

The DNBR limit is provided in SL 2.1.1, "Reactor Core SLs." The conditions which define the DNBR limit are less restrictive than the limits of this LCO, but violation of a Safety Limit (SL) merits a stricter, more severe Required Action. Should a violation of this LCO occur, the operator must check whether or not an SL may have been exceeded. (5)

ACTIONS

A.1

RCS pressure and RCS average temperature are controllable and measurable parameters. With one or both of these parameters not within LCO limits, action must be taken to restore parameter(s). (2)

RCS total flow rate is not a controllable parameter and is not expected to vary during steady state operation. If the indicated RCS total flow rate is below the LCO limit, power must be reduced, as required by Required Action B.1, to restore DNB margin and eliminate the potential for violation of the accident analysis bounds.

The 2 hour Completion Time for restoration of the parameters provides sufficient time to adjust plant parameters, to determine the cause for the off normal condition, and to restore the readings within limits, and is based on plant operating experience.

B.1

If Required Action A.1 is not met within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. (1)
To achieve this status, the plant must be brought to at least MODE 2 within 6 hours. In MODE 2, the reduced power condition eliminates the potential for violation of the accident analysis bounds. The Completion (1)

BASES

ACTIONS (continued)

Time of 6 hours is reasonable to reach the required plant unit conditions in an orderly manner. (1)

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

INSERT 4 (2)

Since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for pressurizer pressure is sufficient to ensure the pressure can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.

SR 3.4.1.2

INSERT 5 (2)

Since Required Action A.1 allows a Completion Time of 2 hours to restore parameters that are not within limits, the 12 hour Surveillance Frequency for RCS average temperature is sufficient to ensure the temperature can be restored to a normal operation, steady state condition following load changes and other expected transient operations. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess for potential degradation and to verify operation is within safety analysis assumptions.

SR 3.4.1.3

INSERT 6 (2)

The 12 hour Surveillance Frequency for RCS total flow rate is performed using the installed flow instrumentation. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess potential degradation and to verify operation within safety analysis assumptions.

SR 3.4.1.4

Measurement of RCS total flow rate by performance of a precision calorimetric heat balance once every (18) 24 months allows the installed RCS flow instrumentation to be calibrated and verifies the actual RCS flow rate is greater than or equal to the minimum required RCS flow rate. (5) (3)

The Frequency of (18) 24 months reflects the importance of verifying flow after a refueling outage when the core has been altered, which may have caused an alteration of flow resistance. INSERT 7 (6)

(2) **INSERT 4**

Verfication that pressurizer pressure is greater than or equal to the limit specified in the COLR ensures that the initial conditions of the safety analyses are met.

(2) **INSERT 5**

Verfication that the RCS average temperature is less than or equal to the limit specified in the COLR ensures that the initial conditions of the safety analyses are met.

(2) **INSERT 6**

Verfication that the RCS total flow rate is greater than or equal to the limits ensures that the initial condition of the safety analyses are met.

(6) **INSERT 7**

and has been shown by operating experience to be acceptable

BASES

SURVEILLANCE REQUIREMENTS (continued)

This SR is modified by a Note that allows entry into MODE 1, without having performed the SR, and placement of the unit in the best condition for performing the SR. The Note states that the SR is not required to be performed until 24 hours after ≥ [90%] RTP. This exception is appropriate since the heat balance requires the plant unit to be at a minimum of [90%] RTP to obtain the stated RCS flow accuracies. The Surveillance shall be performed within 24 hours after reaching [90%] RTP. (4) (3) (1) (5) (4) (3)

REFERENCES

1. (U)FSAR, Section [15]. Chapter 14 (1) (3)

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.1 BASES, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. These changes are made for consistency with similar phrases in other parts of the ITS Bases and/or consistency with the ITS.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. The Bases are revised to reflect changes made to the ITS.

5. This paragraph in the ISTS 3.4.1 Bases Applicability is discussing a Safety Limit (SL). The ITS 3.4.1 Bases Applicability section does not include this paragraph. This changes the ISTS 3.4.1 Bases by deleting information in the Bases not found in the actual ITS 3.4.1 Applicability statement and unrelated to describing why ITS 3.4.1 is applicable in the specified MODES and conditions. This is acceptable because the purpose of the Bases Applicability section is to describe why an LCO is applicable in the MODES or other conditions specified in the Applicability section of the actual Specification. SLs have specific Applicability requirements and actions that are defined in ITS Chapter 2.0, "Safety Limits (SLs)." In addition, the statement in the paragraph "Should a violation of this LCO occur, the operator must check whether or not an SL may have been exceeded" is specifying an action that is not required in ISTS 3.4.1. No comparable ACTION in ISTS 3.4.1 requires a check of whether or not the SL is being violated. Thus, if this action is not performed, then the operators could misinterpret the statement and conclude that the Technical Specifications, and specifically this LCO, are being violated. Thus, the requirement to verify the SL has not been violated, while arguably a good practice in this case, is not required by the actual Specification since it is already required by ITS 2.1.1, "Reactor Core SLs."

6. The reason for the Frequency is not accurate and does not reflect the requirements in the actual Surveillance Requirement. The actual Surveillance Requirement does not require performance after a refueling outage when the core has been altered; it is required every 24 months (18 months in the ISTS). Therefore, the reason has been modified to be consistent with other Surveillance Requirements with a similar Frequency.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.1, RCS PRESSURE, TEMPERATURE, AND FLOW DNB LIMITS

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.4.2, RCS Minimum Temperature for Criticality

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.2

A.1

ITS

REACTIVITY CONTROL SYSTEMS

MINIMUM TEMPERATURE FOR CRITICALITY

LIMITING CONDITION FOR OPERATION

LCO 3.4.2 — 3.1.1.5 The Reactor Coolant System lowest operating loop temperature (Tavg) shall be ≥ 541°F when the reactor is critical.

APPLICABILITY: Modes 1 and 2#*.

ACTION:

ACTION A — With a Reactor Coolant System operating loop temperature (Tavg) < 541°F, restore (Tavg) to within its limit within 15 minutes or be in HOT STANDBY within the next 15 minutes.

30

MODE 2 with keff < 1.0

A.2

A.3

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1 — 4.1.1.5 The Reactor Coolant System temperature (Tavg) shall be determined to be ≥ 541°F:

a. Within 15 minutes prior to achieving reactor criticality, and

b. At least once per 30 minutes when the reactor is critical and the Reactor Coolant System Tavg is less than 543°F or when the low Tavg alarm is inoperable.

12 hours

L.1

*See Special Test Exception 3.10.3

A.4

Applicability — #With K_{eff} ≥ 1.0.

ITS 3.4.2

A.1

ITS

REACTIVITY CONTROL SYSTEMS

MINIMUM TEMPERATURE FOR CRITICALITY

LIMITING CONDITION FOR OPERATION

LCO 3.4.2 — 3.1.1.5 The Reactor Coolant System lowest operating loop temperature (T_{avg}) shall be ≥ 541°F.

APPLICABILITY: MODES 1 and 2#.

ACTION:

ACTION A — With a Reactor Coolant System operating loop temperature (T_{avg}) < 541°F, ~~restore (T_{avg}) to within its limit within 15 minutes or~~ be in ~~HOT STANDBY~~ [MODE 2 with keff < 1.0] within ~~the next 15~~ [30] minutes. (A.2, A.3)

SURVEILLANCE REQUIREMENTS

SR 3.4.2.1 — 4.1.1.5 The Reactor Coolant System temperature (T_{avg}) shall be determined to be ≥ 541°F:

~~a. Within 15 minutes prior to achieving reactor criticality, and~~

~~b. At least once per 30 minutes when the reactor is critical and the Reactor Coolant System T_{avg} is less than 551°F with the T_{avg}-T_{ref} Deviation Alarm not reset.~~ [12 hours] (L.1)

Applicability — #With K_{eff} ≥ 1.0.

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DISCUSSION OF CHANGES
ITS 3.4.2, RCS MINIMUM TEMPERATURE FOR CRITICALITY

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.1.1.5 Action states that with a Reactor Coolant System operating loop temperature (T_{avg}) < 541°F, to "restore (T_{avg}) to within its limit within 15 minutes or be in HOT STANDBY within the next 15 minutes." ITS 3.4.2, ACTION A, states that with T_{avg} in one or more RCS loops not within limit, be in MODE 2 with k_{eff} < 1.0 within 30 minutes. This changes the CTS by eliminating the redundant and unnecessary requirement to restore T_{avg} to within its limit within 15 minutes. The change associated with entering MODE 2 with k_{eff} < 1.0 instead of HOT STANDBY is discussed in DOC A.3.

This change is acceptable because it results in no technical change to the Technical Specifications. Although CTS 3.1.1.5 Action appears to only allow 15 minutes to restore the parameter to within the limit, it actually allows the entire 30 minutes to either restore the parameter or to be in Hot Standby (essentially outside the Applicability of CTS 3.1.1.5). In addition, CTS 3.1.1.5 Action only requires actual steps to begin reducing reactor power at the beginning of the last 15 minutes of the 30-minute interval. However, CTS 3.0.2 states that "In the event the Limiting Condition for Operation is restored prior to the specified interval, completion of the ACTION Statement is not required." Therefore, for this specific case, if the parameter is restored between 15 minutes and 30 minutes after the Limiting Condition for Operation (LCO) parameter is not met, completion of the CTS 3.1.1.5 Action to be in MODE 2 is not required. Thus, 30 minutes is essentially allowed for either the parameter to be restored to within limit or the unit to be in MODE 2 (i.e., only one of the two CTS Actions must be met within 30 minutes). The CTS 3.0.2 requirement is retained in proposed ITS LCO 3.0.2. Therefore, this change does not expand the total time interval allowed to restore the parameter, as a 30-minute interval is already essentially allowed by the CTS. This change is designated as administrative as it results in no technical change to the CTS.

A.3 CTS 3.1.1.5 Action states that with a Reactor Coolant System operating loop temperature (T_{avg}) < 541°F, to restore T_{avg} to within its limit within 15 minutes or "be in HOT STANDBY within the next 15 minutes." ITS 3.4.2, ACTION A, states that with T_{avg} in one or more RCS loops not within limit, be in MODE 2 with k_{eff} < 1.0 within 30 minutes. This changes the CTS requirement to enter HOT STANDBY to enter MODE 2 with k_{eff} < 1.0. Other changes to this CTS Action are discussed in DOC A.2.

This change is acceptable because it results in no technical change to the Technical Specifications. CTS 3.1.1.5 is applicable in MODE 1 and MODE 2 with

DISCUSSION OF CHANGES
ITS 3.4.2, RCS MINIMUM TEMPERATURE FOR CRITICALITY

$k_{eff} \geq 1.0$. CTS 3.0.1 states that Actions are applicable during the MODES or other conditions specified for the Specification. Therefore, the CTS 3.1.1.5 Action to enter MODE 3 ceases to be applicable once the unit enters MODE 2 with $k_{eff} < 1.0$, and the Action is exited. As a result, changing the ACTION to "be in MODE 2 with $k_{eff} < 1.0$" results in no operational difference from the CTS Action. This change is designated as administrative as it results in no technical change to the CTS.

A.4 The Applicability of CTS 3.1.1.5 (Unit 1 only) is modified by Footnote *, which states "See Special Test Exception 3.10.3." The ITS 3.4.2 Applicability does not contain the footnote or a reference to the Special Test Exception.

The purpose of the footnote reference is to alert the user that a Special Test Exception exists that may modify the Applicability of the Specification. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L.1 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.1.1.5 states that the RCS T_{avg} shall be determined to be $\geq$ 541°F within 15 minutes prior to achieving reactor criticality, and every 30 minutes when the reactor is critical and the RCS T_{avg} < 545°F (Unit 1) and < 551°F (Unit 2) or when the low T_{avg} alarm is inoperable (Unit 1) or with the T_{avg} - T_{ref} deviation alarm not reset (Unit 2). ITS SR 3.4.2.1 requires RCS T_{avg} in each loop to be verified $\geq$ 541°F every 12 hours. This changes the CTS by deleting the within 15 minutes prior to achieving criticality Frequency and the Surveillance Frequencies based on the condition of the reactor (critical), the reactor coolant temperature, and when the low T_{avg} alarm is inoperable (Unit 1) or the T_{avg}-T_{ref} deviation alarm not reset (Unit 2), and replacing them with a periodic 12 hour Frequency.

DISCUSSION OF CHANGES
ITS 3.4.2, RCS MINIMUM TEMPERATURE FOR CRITICALITY

The purpose of CTS 4.1.1.5 is to ensure RCS T_{avg} is within limit when the reactor is critical. The requirement is that RCS T_{avg} be $\geq$ 541°F, and is required to be met when the unit is operating in MODE 2 with $k_{eff} \geq 1.0$ and MODE 1. Based on ITS SR 3.0.4, this would require the SR to be met within 12 hours prior to entry into MODE 2 with $k_{eff} \geq 1.0$ or before the reactor is critical. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of assurance. The 12 hours Frequency is considered frequent enough to prevent inadvertent violation of the LCO. In the approach to criticality, the reactor coolant pumps are adding heat to the RCS, so the conditions before and after criticality are similar. The approach to criticality is a carefully controlled evolution during which RCS temperature is closely monitored. Therefore, 12 hours is frequent enough for the Technical Specifications to require recording of T_{avg} prior to criticality given that it is being carefully watched. The inoperability of an alarm or an alarm not reset does not increase the probability of RCS temperature (T_{avg}) being outside its limit. The alarms are for indication only and are not credited in any safety analyses. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.2 RCS Minimum Temperature for Criticality

LCO 3.1.1.5

LCO 3.4.2 Each RCS loop average temperature (T_{avg}) shall be ≥ [541]°F. (1)

APPLICABILITY: MODE 1,
MODE 2 with k_{eff} ≥ 1.0.

ACTIONS

Action

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. T_{avg} in one or more RCS loops not within limit.	A.1	Be in MODE 2 with k_{eff} < 1.0.	30 minutes

(2)

SURVEILLANCE REQUIREMENTS

4.1.1.5

SURVEILLANCE		FREQUENCY
SR 3.4.2.1	Verify RCS T_{avg} in each loop ≥ [541]°F.	12 hours

(1)

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.2, RCS MINIMUM TEMPERATURE FOR CRITICALITY

1. The brackets are removed and the proper plant specific information/value is provided.

2. Typographical/grammatical error corrected.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.2 RCS Minimum Temperature for Criticality

BASES

BACKGROUND

This LCO is based upon meeting several major considerations before the reactor can be made critical and while the reactor is critical.

The first consideration is moderator temperature coefficient (MTC), LCO 3.1.3, "Moderator Temperature Coefficient (MTC)." In the transient and accident analyses, the MTC is assumed to be in a range from slightly positive to negative and the operating temperature is assumed to be within the nominal operating envelope while the reactor is critical. The LCO on minimum temperature for criticality helps ensure the plant (unit) is operated consistent with these assumptions. (1)

The second consideration is the protective instrumentation. Because certain protective instrumentation (e.g., excore neutron detectors) can be affected by moderator temperature, a temperature value within the nominal operating envelope is chosen to ensure proper indication and response while the reactor is critical.

The third consideration is the pressurizer operating characteristics. The transient and accident analyses assume that the pressurizer is within its normal startup and operating range (i.e., saturated conditions and steam bubble present). It is also assumed that the RCS temperature is within its normal expected range for startup and power operation. Since the density of the water, and hence the response of the pressurizer to transients, depends upon the initial temperature of the moderator, a minimum value for moderator temperature within the nominal operating envelope is chosen.

The fourth consideration is that the reactor vessel is above its minimum nil ductility reference temperature when the reactor is critical.

APPLICABLE SAFETY ANALYSES

Although the RCS minimum temperature for criticality is not itself an initial condition assumed in Design Basis Accidents (DBAs), the closely aligned temperature for hot zero power (HZP) is a process variable that is an initial condition of DBAs, such as the (uncontrolled) rod cluster control assembly (RCCA) (bank) withdrawal, ~~RCCA ejection, and main steam line break accidents~~ INSERT 1 performed at zero power that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier. (1)

(1) **INSERT 1**

from a subcritical condition, excessive heat removal due to feedwater malfunctions, and rupture of control rod drive mechanism housing (RCCA ejection)

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BASES

APPLICABLE SAFETY ANALYSES (continued)

All low power safety analyses assume initial RCS loop temperatures ≥ the HZP temperature of 547°F (Ref. 1). The minimum temperature for criticality limitation provides a small band, 6°F, for critical operation below HZP. This band allows critical operation below HZP during plant startup and does not adversely affect any safety analyses since the MTC is not significantly affected by the small temperature difference between HZP and the minimum temperature for criticality.

The RCS minimum temperature for criticality satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO	Compliance with the LCO ensures that the reactor will not be made or maintained critical (k_{eff} ≥ 1.0) at a temperature less than a small band below the HZP temperature, which is assumed in the safety analysis. Failure to meet the requirements of this LCO may produce initial conditions inconsistent with the initial conditions assumed in the safety analysis.
APPLICABILITY	In MODE 1 and MODE 2 with k_{eff} ≥ 1.0, LCO 3.4.2 is applicable since the reactor can only be critical (k_{eff} ≥ 1.0) in these MODES. The special test exception of LCO 3.1.8, "PHYSICS TESTS Exceptions - MODE 2," permits PHYSICS TESTS to be performed at ≤ 5% RTP with RCS loop average temperatures slightly lower than normally allowed so that fundamental nuclear characteristics of the core can be verified. In order for nuclear characteristics to be accurately measured, it may be necessary to operate outside the normal restrictions of this LCO. For example, to measure the MTC at beginning of cycle, it is necessary to allow RCS loop average temperatures to fall below $T_{no\ load}$, which may cause RCS loop average temperatures to fall below the temperature limit of this LCO.
ACTIONS	A.1 If the parameters that are outside the limit cannot be restored, 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 MODE 2 with K_{eff} < 1.0 within 30 minutes. Rapid reactor shutdown can be readily and practically achieved within a 30 minute period. The allowed time is reasonable, based on operating experience, to reach MODE 2 with K_{eff} < 1.0 in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS	SR 3.4.2.1 RCS loop average temperature is required to be verified at or above [541]°F every 12 hours. The SR to verify RCS loop average temperatures every 12 hours takes into account indications and alarms that are continuously available to the operator in the control room and is consistent with other routine Surveillances which are typically performed once per shift. In addition, operators are trained to be sensitive to RCS temperature during approach to criticality and will ensure that the minimum temperature for criticality is met as criticality is approached.
REFERENCES	1. (U)FSAR, Section [15.0.3]. 14.1.1 ① ④

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.2 BASES, RCS MINIMUM TEMPERATURE FOR CRITICALITY

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The discussion in the Applicability Section is deleted since the special test exception LCOs are not normally discussed in the Bases of other LCOs.

3. Editorial/grammatical error corrected.

4. The brackets have been removed and the proper plant specific information provided.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.2, RCS MINIMUM TEMPERATURE FOR CRITICALITY

There are no specific NSHC discussions for this Specification.

ATTACHMENT 3

ITS 3.4.3, RCS Pressure and Temperature Limits

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.3

ITS

(A.1)

REACTOR COOLANT SYSTEM

3/4.4.9 PRESSURE/TEMPERATURE LIMITS

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.4.3

3.4.9.1 The Reactor Coolant System (except the pressurizer) temperature and pressure shall be limited in accordance with the limit lines shown on Figures 3.4-2 and 3.4-3 during heatup, cooldown, criticality, and inservice leak and hydrostatic testing with: (LA.1) (A.2)

a. A maximum heatup of 60°F in any one hour period,

b. A maximum cooldown of 100°F in any one hour period, and

c. A maximum temperature change of ≤ 5°F in any one hour period, during hydrostatic testing operations above system design pressure.

APPLICABILITY: At all times.*

ACTION:

Add proposed Conditions A and C Notes (A.3)

ACTIONS A and C

With any of the above limits exceeded, restore the temperature and/or pressure to within the limit within 30 minutes; perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operations or be in at least HOT STANDBY within the next 6 hours and reduce the RCS Tavg and pressure to less than 200°F and 500 psig, respectively, within the following 30 hours. (A.4) (LA.2)

ACTION B

Add proposed Required Actions A.2 and C.2 Completion Times (M.1)

* See Special Test Exception 3.10.3 (A.5)

ITS 3.4.3

A.1

ITS

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.9.1

SR 3.4.3.1 a. The Reactor Coolant System temperature and pressure shall be determined to be within the limits at least once per 30 minutes during system heatup, cooldown, and inservice leak and hydrostatic testing operations.

b. The Reactor Coolant System temperature and pressure conditions shall be determined to be to the right of the criticality limit line within 15 minutes prior to achieving reactor criticality. L.1

c. The reactor vessel material irradiation surveillance specimens shall be removed and examined, to determine changes in material properties, at the intervals shown in Table 4.4-5. The results of these examinations shall be used to update Figures 3.4-2 and 3.4-3. A.6

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ITS 3.4.3

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

Figure 3.4.3-1

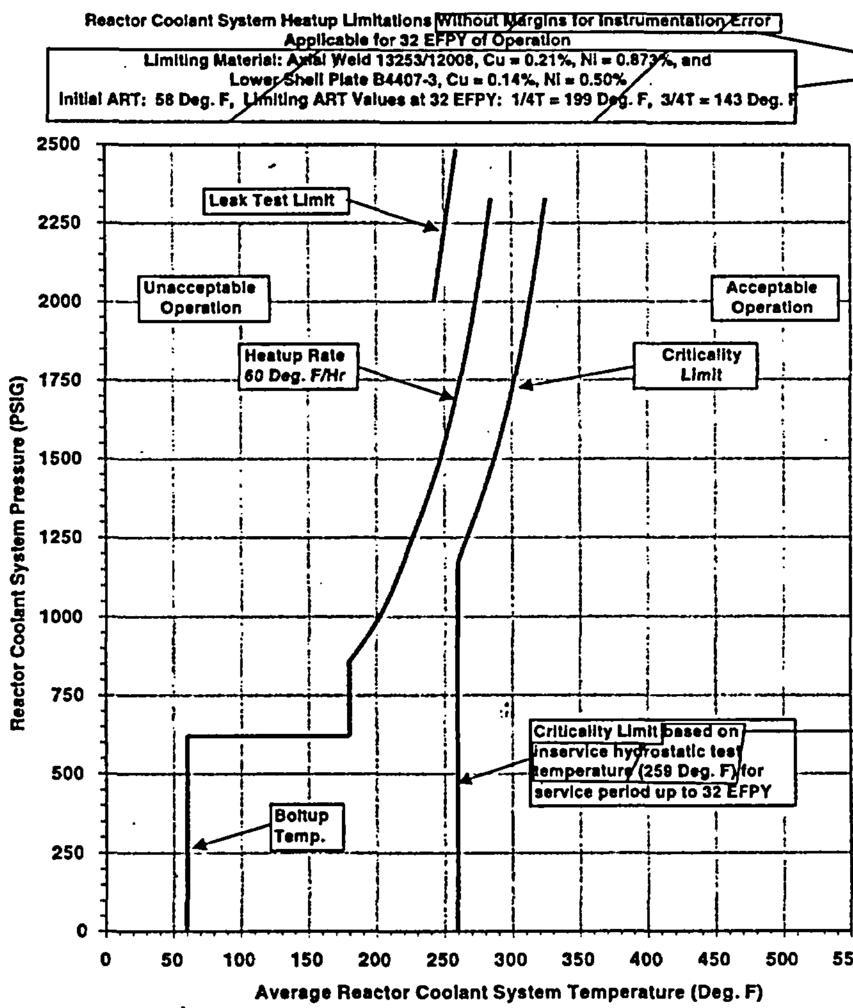


FIGURE 3.4-2
REACTOR COOLANT SYSTEM PRESSURE - TEMPERATURE LIMITS VERSUS
60°F/HR RATE, CRITICALITY LIMIT, BOLTUP LIMIT, AND LEAK TEST LIMIT

ITS 3.4.3

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

Reactor Coolant System Cooldown Limitations Without Margins for Instrumentation Error
Applicable for 32 EFPY of Operation
Limiting Material: Axial Weld 13253/12008, Cu = 0.21%, Ni = 0.873%, and
Lower Shell Plate B4407-3, Cu = 0.14%, Ni = 0.50%
Initial ART: 58 Deg. F, Limiting ART Values at 32 EFPY: 1/4T = 199 Deg. F, 3/4T = 143 Deg. F

L.2

Figure 3.4.3-2

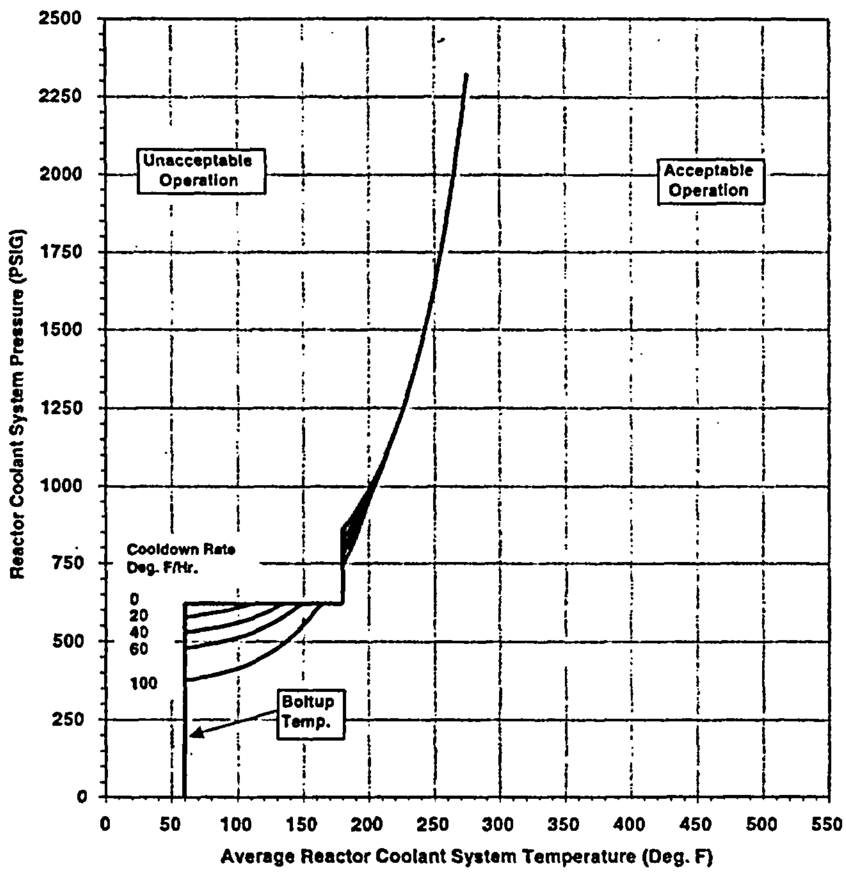


FIGURE 3.4-3
REACTOR COOLANT SYSTEM PRESSURE – TEMPERATURE LIMITS VERSUS COOLDOWN RATES

ITS 3.4.3

(A.1)

TABLE 4.4-_

REACTOR VESSEL MATERIAL IRRADIATION SURVEILLANCE SCHEDULE

SPECIMEN	REMOVAL INTERVAL
Capsule T	1.25 EFPY
Capsule X	3 EFPY
Capsule Y	5 EFPY
Capsule U	9 EFPY
Capsule S	32 EFPY
Capsules V, W, Z	Standby

(A.6)

ITS 3.4.3

A.1

ITS

REACTOR COOLANT SYSTEM

3/4.4.9 PRESSURE/TEMPERATURE LIMITS

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.4.3 — 3.4.9.1 The Reactor Coolant System (except the pressurizer) temperature and pressure shall be limited in accordance with the limit lines shown on Figures 3.4-2 and 3.4-3 during heatup, cooldown, criticality, and inservice leak and hydrostatic testing with: (LA.1) (A.2)

a. A maximum heatup of 60°F in any one hour period.

b. A maximum cooldown of 100°F in any one hour period.

c. A maximum temperature of less than or equal to 5°F in any one hour period during inservice hydrostatic and leak testing operations above the heatup and cooldown limit curves.

APPLICABILITY: At all times.

ACTION: — Add proposed Conditions A and C Notes (A.3)

ACTIONS A and C — With any of the above limits exceeded, restore the temperature and/or pressure within the limit within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the fracture toughness properties of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operation or be (A.4) (LA.2)

ACTION B — in at least HOT STANDBY within the next 6 hours and reduce the RCS T_{avg} and pressure to less than 200°F and 500 psig, respectively, within the following 30 hours.

Add proposed Required Actions A.2 and C.2 Completion Times (M.1)

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1 — 4.4.9.1.1 The Reactor Coolant System temperature and pressure shall be determined to be within the limits at least once per 30 minutes during system heatup, cooldown, and inservice leak and hydrostatic testing operations.

4.4.9.1.2 The reactor vessel material irradiation surveillance specimens shall be removed and examined, to determine changes in material properties, at the intervals shown in Table 4.4-5. The results of these examinations shall be used to update Figures 3.4-2 and 3.4-3. (A.6)

A.1

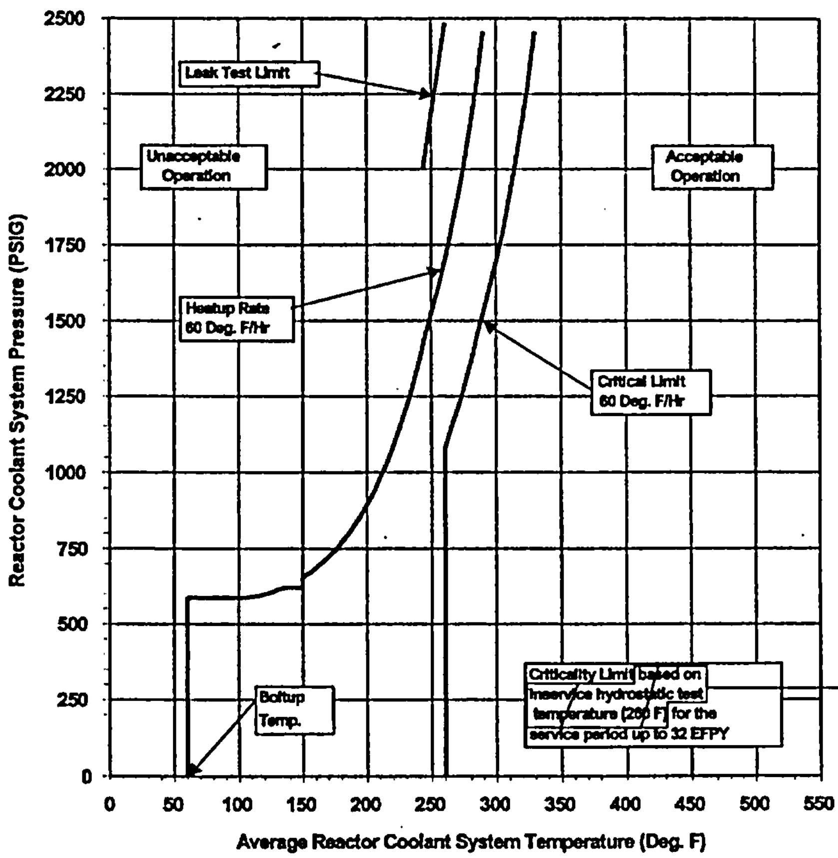
ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

Reactor Coolant System Heatup Limitations Without Margins for Instrumentation Error
Applicable for 32 EFPY of Operation
Limiting Material: Intermediate Shell Plate C5556-2, Cu = 0.16%, Ni = 0.57%
Initial ART: 58 Deg. F, Limiting ART Values at 32 EFPY: 1/4T = 200 Deg. F, 3/4T = 169 Deg. F

L.2

Figure 3.4.3-1



L.2

FIGURE 3.4-2
REACTOR COOLANT SYSTEM PRESSURE - TEMPERATURE LIMITS FOR 60 °F/HR RATE, CRITICALITY LIMIT, BOLTUP LIMIT, AND LEAK TEST LIMIT

ITS 3.4.3

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

Figure 3.4.3-2

Reactor Coolant System Cooldown Limitations Without Margins for Instrumentation Error
Applicable for 32 EFPY of Operation
Limiting Material: Intermediate Shell Plate C5556-2, Cu = 0.15%, Ni = 0.57%
Initial ART: 58 Deg.F, Limiting ART Values at 32 EFPY: 1/4T = 200 Deg. F, 3/4T = 169 Deg. F

L.2

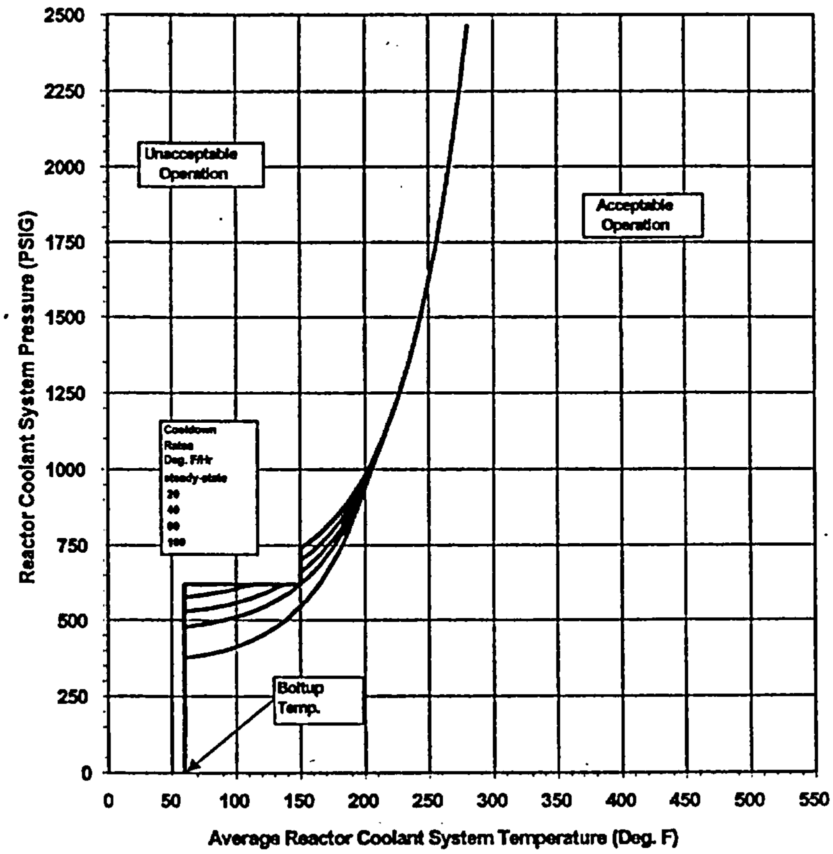


FIGURE 3.4-3
REACTOR COOLANT SYSTEM PRESSURE - TEMPERATURE, LIMITS FOR VARIOUS COOLDOWN RATES

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A.1

TABLE 4.4-5

REACTOR VESSEL MATERIAL IRRADIATION SURVEILLANCE SCHEDULE

SPECIMEN	REMOVAL INTERVAL
1. Capsule T	1 EFPY
2. Capsule Y	3 EFPY
~~3. Capsule X~~	5 EFPY
4. Capsule U	~~9 EFPY~~
5. Capsule S	32 EFPY
6. Capsules V, W, Z	Standby

A.6

DISCUSSION OF CHANGES
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.9.1 states that the RCS temperature and pressure shall be limited "during heatup, cooldown, criticality, and inservice leak and hydrostatic testing." CTS 3.4.9.1 is applicable at all times. ITS 3.4.3 states that the RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained. ITS 3.4.3 is applicable at all times. This changes the CTS by eliminating the LCO requirement that the limits must be met during heatup, cooldown, criticality, and inservice leak and hydrostatic testing.

This change is acceptable because the CTS and ITS limits are applicable at all times, including during heatup, cooldown, criticality, and inservice leak and hydrostatic testing. Stating that the limits are applicable during heatup, cooldown, and inservice leak and hydrostatic testing in the LCO presents an apparent conflict with the Applicability which states that the limits apply at all times. This change is designated as administrative as it is an editorial change to eliminate an apparent conflict in the CTS.

A.3 CTS 3.4.9.1 Action states that with any of the P/T limits exceeded, restore the temperature and/or pressure to within the limit within 30 minutes; perform an analysis to determine the effects of the out-of limit condition on the fracture toughness properties of the RCS; and determine that the RCS remains acceptable for continued operations. ITS 3.4.3, Conditions A and C state that when the requirements of the LCO are not met, the parameters must be restored to within limits and it must be determined that the RCS is acceptable for continued operation. ITS 3.4.3, Conditions A and C are modified by a Note which requires the determination that the RCS is acceptable for continued operation to be performed whenever the Condition is entered. This changes the CTS by explicitly stating that a determination that the RCS is acceptable for continued operation must be performed whenever the condition is entered. Other changes to the Actions are described in other DOCs.

This change is acceptable because it is the current understanding and application of the CTS Action. The CTS 3.4.9.1 Action is currently interpreted as requiring a determination that the RCS is acceptable for continued operation whenever the LCO is not met. This change is designated as editorial as it clarifies the current understanding of the CTS requirement.

A.4 CTS 3.4.9.1 Action states that with any of the P/T limits exceeded, restore the temperature and/or pressure to within the limit within 30 minutes; perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the RCS; determine that the RCS remains acceptable for

DISCUSSION OF CHANGES
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

continued operations or be in at least hot standby within the next 6 hours and reduce the RCS T_{avg} and pressure to less than 200°F and 500 psig, respectively, within the following 30 hours. ITS 3.4.3, ACTION C, states that with the requirements of the LCO not met any time in other than MODE 1, 2, 3, or 4, to initiate immediate action to restore the parameter(s) to within limits and determine the RCS is acceptable for continued operation prior to entering MODE 4.

This change is acceptable because this change reflects an enhanced presentation of the existing intent. The CTS 3.4.9.1 Action to "restore...within 30 minutes" is proposed to be revised to "initiate action to restore ...Immediately" for conditions other than MODES 1, 2, 3, and 4. The existing Action would appear to provide a half hour in which pressure and temperature requirements could exceed the limits, even if capable of being returned to within limits. Also, if the parameters are incapable of being restored to within the limits within 30 minutes, the existing Action would appear to result in the requirement of a Licensee Event Report. The intent of the Action is believed to be more appropriately presented in ITS 3.4.3 Required Action C.1. This interpretation of the intent is supported by the Westinghouse Standard Technical Specifications, NUREG-1431, Rev. 2. This change is designated as administrative as it reflects an enhanced presentation of the existing intent.

A.5 (Unit 1 only) The Applicability of CTS 3.4.9.1 is modified by Footnote *, which states "See Special Test Exception 3.10.3." The ITS 3.4.3 Applicability does not contain the footnote or a reference to the Special Test Exception. This changes the Unit 1 CTS by deleting a cross-reference to the Special Test Exception.

The purpose of the footnote reference is to alert the user that a Special Test Exception exists which may modify the Applicability of the Specification. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative as it incorporates an ITS convention with no technical change to the CTS.

A.6 CTS 4.4.9.1.c (Unit 1) and CTS 4.4.9.1.2 (Unit 2) state that the reactor vessel material irradiation surveillance specimens shall be removed and examined to determine changes in material properties at the intervals shown in Table 4.4-5. The results of these examinations shall be used to update the P/T limit curves. ITS 3.4.3 does not contain this Surveillance nor the Table. This changes the CTS by deleting the reactor vessel material irradiation Surveillance Requirement.

This change is acceptable because the Surveillance is unnecessary and repetitive. The unit is required by applicable regulations to remove material irradiation surveillance specimens and generate P/T curves in accordance with 10 CFR 50, Appendix H. Therefore, the Surveillance serves no purpose and is removed. This change is designated as administrative as it eliminates a requirement that is duplicative of a regulatory requirement in the CFR.

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DISCUSSION OF CHANGES
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.9.1 Action states that if the P/T limits are exceeded, an analysis must be performed to determine if the RCS remains acceptable for continued operation. No time limit is given for the performance of this analysis. ITS 3.4.3 Required Action A.2 states that when the LCO is not met in MODES 1, 2, 3, or 4, an evaluation is required to be performed to determine if the RCS is acceptable for continued operation within 72 hours. ITS 3.4.3 Required Action C.2 states that when the LCO is not met any time in other than MODE 1, 2, 3, or 4, an evaluation is required to be performed to determine if the RCS is acceptable for continued operation prior to entering MODE 4. This changes the CTS by specifying a finite time to complete the analysis.

This change is acceptable because it provides adequate time to evaluate exceeding the LCO requirements. The Completion Time of 72 hours is considered reasonable for operation in MODES 1, 2, 3, and 4 because P/T limits are based on very conservative flaw assumptions and large factors of safety. The Completion Time of "prior to entering MODE 4" during operations other than MODE 1, 2, 3, or 4 is considered reasonable since it would prevent entry into the operating MODES, and is consistent with current LCO 3.0.4. This change is designated as more restrictive as it provides a limited time to perform an action for which the CTS provides no time limit.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.4.9.1 states that the RCS (except the pressurizer) temperature and pressure shall be limited. The LCO also contains limits on RCS heatup and cooldown rates. ITS 3.4.3 states that the RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within limits. This changes the CTS by moving the exclusion of the pressurizer from the LCO to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains P/T limits on the RCS. Neither the CTS or the ITS P/T limits apply to the pressurizer. It is the ITS convention to state this detail of the LCO in the ITS Bases. This detail of the LCO is not required to be in the Technical Specifications in order to provide adequate protection of the public health and safety. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS 3.4.9.1 Action states that with any of the P/T limits exceeded, to perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the RCS and to determine that the RCS remains acceptable for continued operations. ITS 3.4.3, ACTIONS A and C state that with the requirements of the LCO not met, restore the parameter(s) to within limit(s) and determine the RCS is acceptable for continued operation. This changes the CTS by moving the requirement to perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the RCS to the Bases.

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to determine that the RCS remains acceptable for continued operation and this detail of how the determination is made is not required to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The requirement to perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the RCS is a step in determining that the RCS remains acceptable for continued operation. Therefore, this detail on how the determination is made is moved to the Bases, which provides additional detail on how the determination should be made. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 5 – Deletion of Surveillance Requirement)* (Unit 1 only) CTS 4.4.9.1.b requires the RCS temperature and pressure conditions to be determined to be to the right of the criticality limit line within 15 minutes prior to achieving reactor criticality. ITS 3.4.3 does not include this requirement. This changes the Unit 1 CTS by deleting the Surveillance.

The purpose of CTS 4.4.9.1.b is to ensure the criticality limit curve is met. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the criticality limit curve is met to meet the LCO requirements on P/T limits. Thus, appropriate Technical Specification Surveillances continue to be performed in a manner and at a Frequency necessary to give confidence that the criticality limit curve is met. The CTS 4.4.9.1.b Surveillance has been deleted since ITS SR 3.4.2.1 will continue to ensure the criticality limit is met. ITS SR 3.4.2.1 requires the verification of RCS T_{avg} every 12 hours. The requirement is that RCS T_{avg} in each loop be $\geq$ 541°F and is required to be met when the unit is operating in MODE 2 with $k_{eff} \geq 1.0$ and MODE 1. Based on ITS SR 3.0.4, this would require the SR to be met within 12 hours prior to entry into a MODE 2 with $k_{eff} \geq 1.0$ or before the reactor is critical. The criteria for RCS T_{avg} is acceptable since it bounds the

DISCUSSION OF CHANGES
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

criticality limit curve throughout the operating pressure range of the RCS. Although CTS 4.4.9.1.b requires the Surveillance to be performed within 15 minutes of criticality, the Surveillance Frequency of ITS SR 3.4.2.1 is considered acceptable. The 12 hours Frequency is considered frequent enough to prevent inadvertent violation of the LCO. In the approach to criticality, the reactor coolant pumps are adding heat to the RCS, so the conditions before and after criticality are similar. The approach to criticality is a carefully controlled evolution during which RCS temperature is closely monitored. Therefore, 12 hours is frequent enough for the Technical Specifications to require recording of T_{avg} prior to criticality given that it is being carefully watched. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.2 *(Category 1 – Relaxation of LCO Requirements)* CTS Figures 3.4-2 and 3.4-3 describe in the Header that the P/T curves are generated without margins for instrument error, and describe the limiting material, initial ART value, and the limiting ART value that are used to determine the P/T limits. CTS Figure 3.4-2 also states (in the figure portion) that the criticality limit is based on inservice hydrostatic test temperature of 259°F (Unit 1) and 260°F (Unit 2). The ITS Figures 3.4.3-1 and 3.4.3-2 do not include this information. This changes the CTS by deleting this information from the CTS.

The purpose of this information is to provide additional detail as to how the P/T curves were generated. However, deleting this information is acceptable because it is not necessary to be listed in the Figures in order to properly use the Figures. ITS 3.4.3 requires the Figure limits to be met. The details as to how the Figures are generated is not needed to comply with the LCO. The ITS 3.4.3 Bases describes that the Figures were generated to comply with the applicable regulatory requirements of 10 CFR 50, Appendix G and ASME Section III, Appendix G. Therefore, since CNP is required to comply with 10 CFR 50, Appendix G and ASME Section III, Appendix G, this additional information is not required. This change is designated as less restrictive because certain details related to how the LCO was generated are being deleted.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.3 RCS Pressure and Temperature (P/T) Limits

3.4.9.1

LCO 3.4.3 RCS pressure, RCS temperature, and RCS heatup and cooldown rates shall be maintained within the limits specified in the PTLR.

INSERT 1 ①

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. - NOTE - Required Action A.2 shall be completed whenever this Condition is entered. Requirements of LCO not met in MODE 1, 2, 3, or 4.	A.1 Restore parameter(s) to within limits. AND A.2 Determine RCS is acceptable for continued operation.	30 minutes 72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5 with RCS pressure < [500] psig.	6 hours 36 hours ②
C. - NOTE - Required Action C.2 shall be completed whenever this Condition is entered. Requirements of LCO not met any time in other than MODE 1, 2, 3, or 4.	C.1 Initiate action to restore parameter(s) to within limits. AND	Immediately

Action (A), Action (B), Action (C)

1 **INSERT 1**

Figures 3.4.3-1 and 3.4.3-2 with:

a. A maximum heatup of 60°F in any one hour period;
b. A maximum cooldown of 100°F in any one hour period; and
c. A maximum temperature change of ≤ 5°F in any one hour period, during hydrostatic testing operations above system design pressure.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2 Determine RCS is acceptable for continued operation.	Prior to entering MODE 4

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.3.1	- NOTE - Only required to be performed during RCS heatup and cooldown operations and RCS inservice leak and hydrostatic testing. Verify RCS pressure, RCS temperature, and RCS heatup and cooldown rates are within the limits specified in the PTLR.	30 minutes

4.4.9.1.a

①

Figures 3.4-2 and 3.4-3 ← INSERT 2a - 2d ①

(1) INSERT 2a

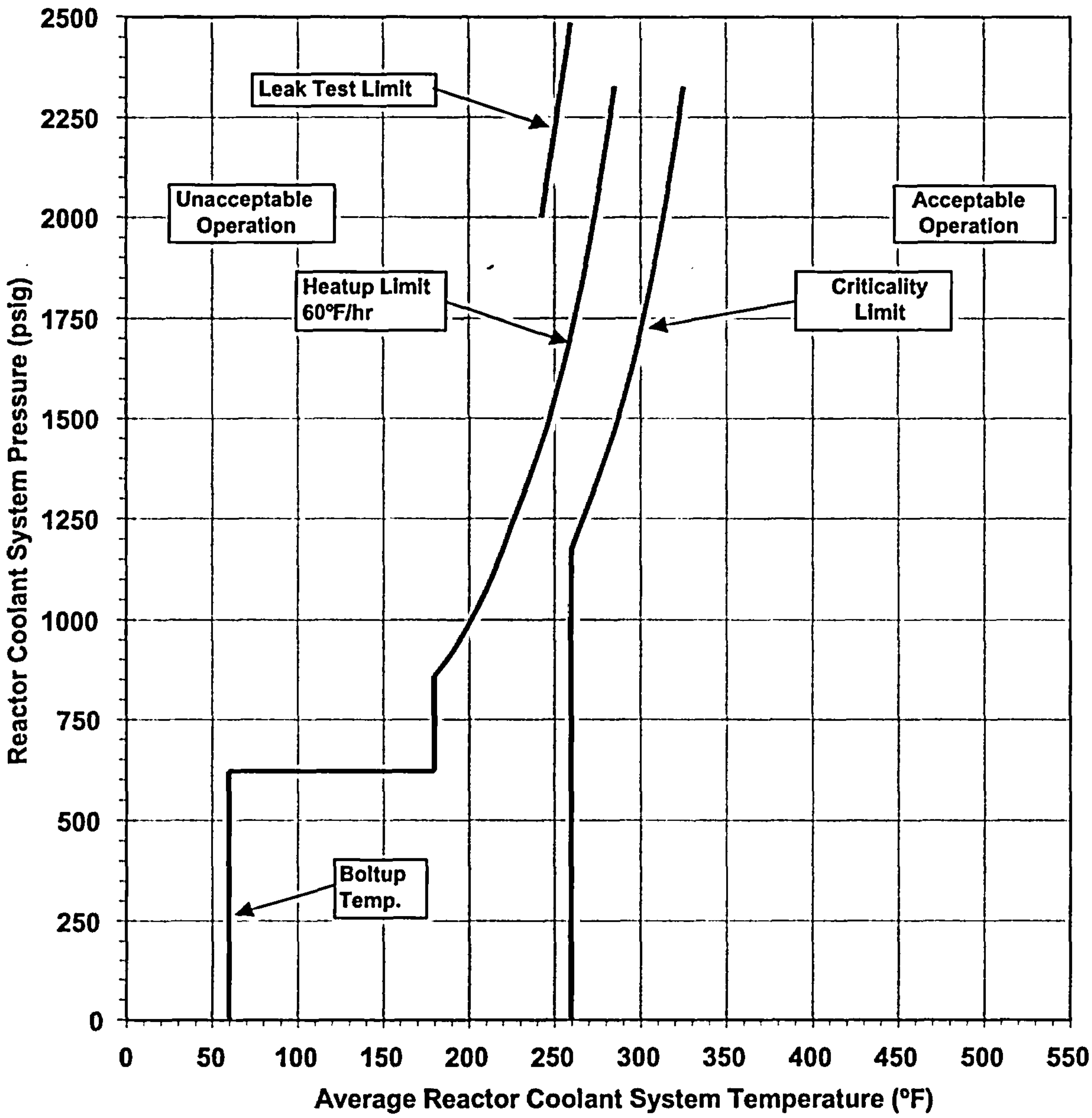

Figure 3.4.3-1
Reactor Coolant System Pressure versus Temperature Limits - Heatup Limit, Criticality Limit, and Leak Test Limit
(Applicable for service period up to 32 EFPY)
<Unit 1>

(1) INSERT 2b

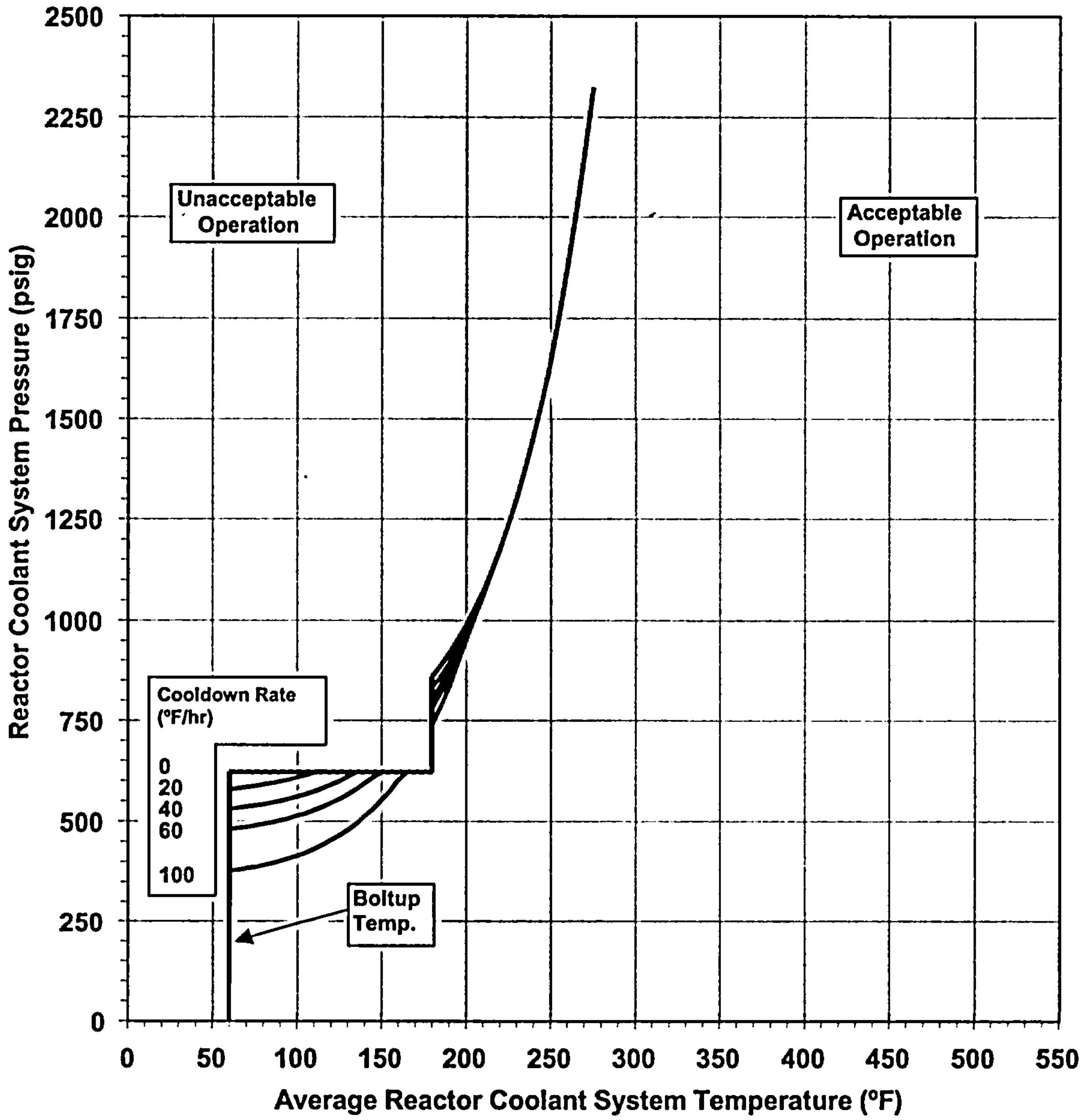

Figure 3.4.3-2
Reactor Coolant System Pressure versus Temperature Limits -
Various Cooldown Rates Limits
(Applicable for service period up to 32 EFPY)
<Unit 1>

(1) INSERT 2c

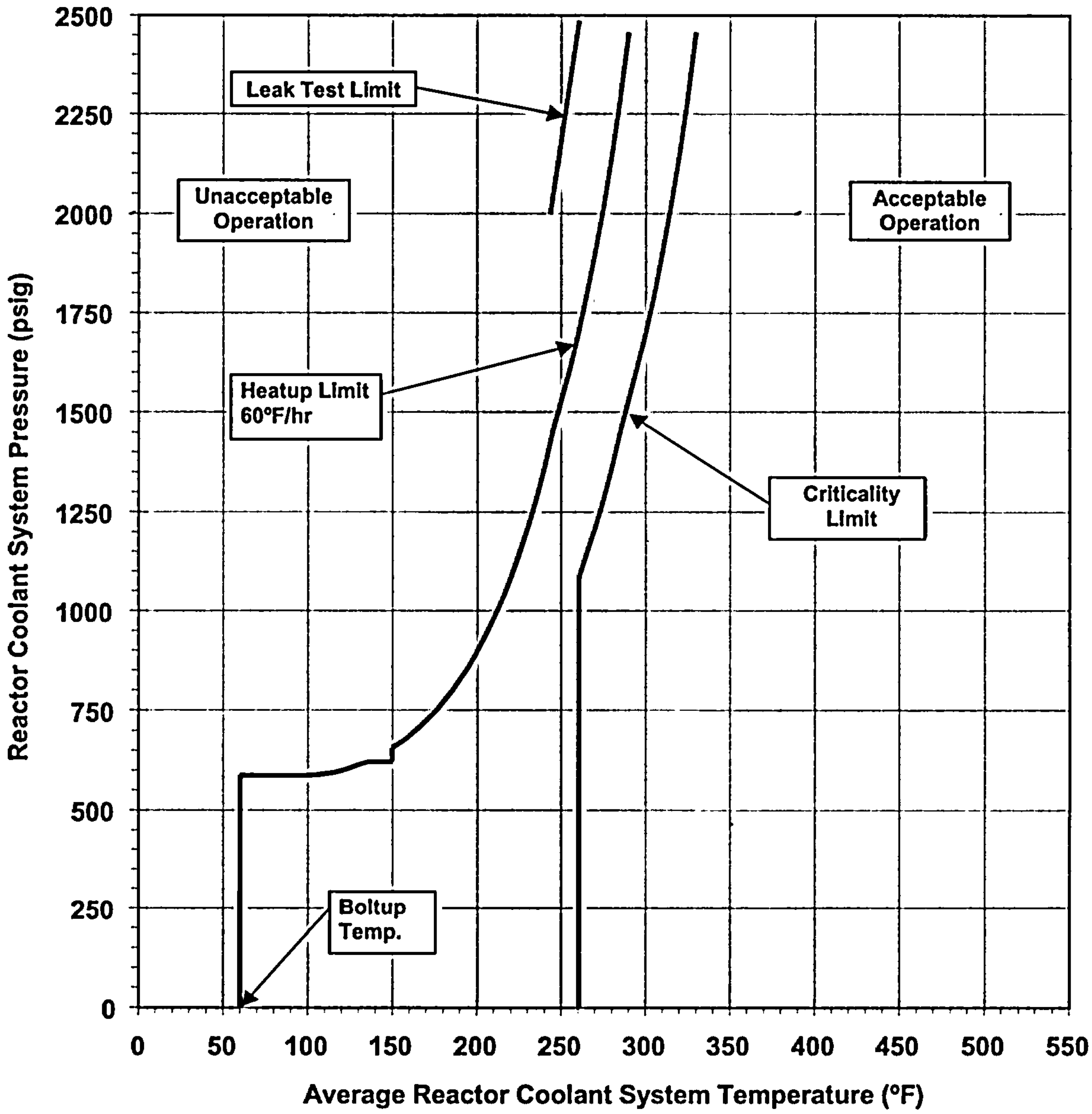

Figure 3.4.3-1
Reactor Coolant System Pressure versus Temperature Limits -
Heatup Limit, Criticality Limit, and Leak Test Limit
(Applicable for service period up to 32 EFPY)
<Unit 2>

(1) INSERT 2d

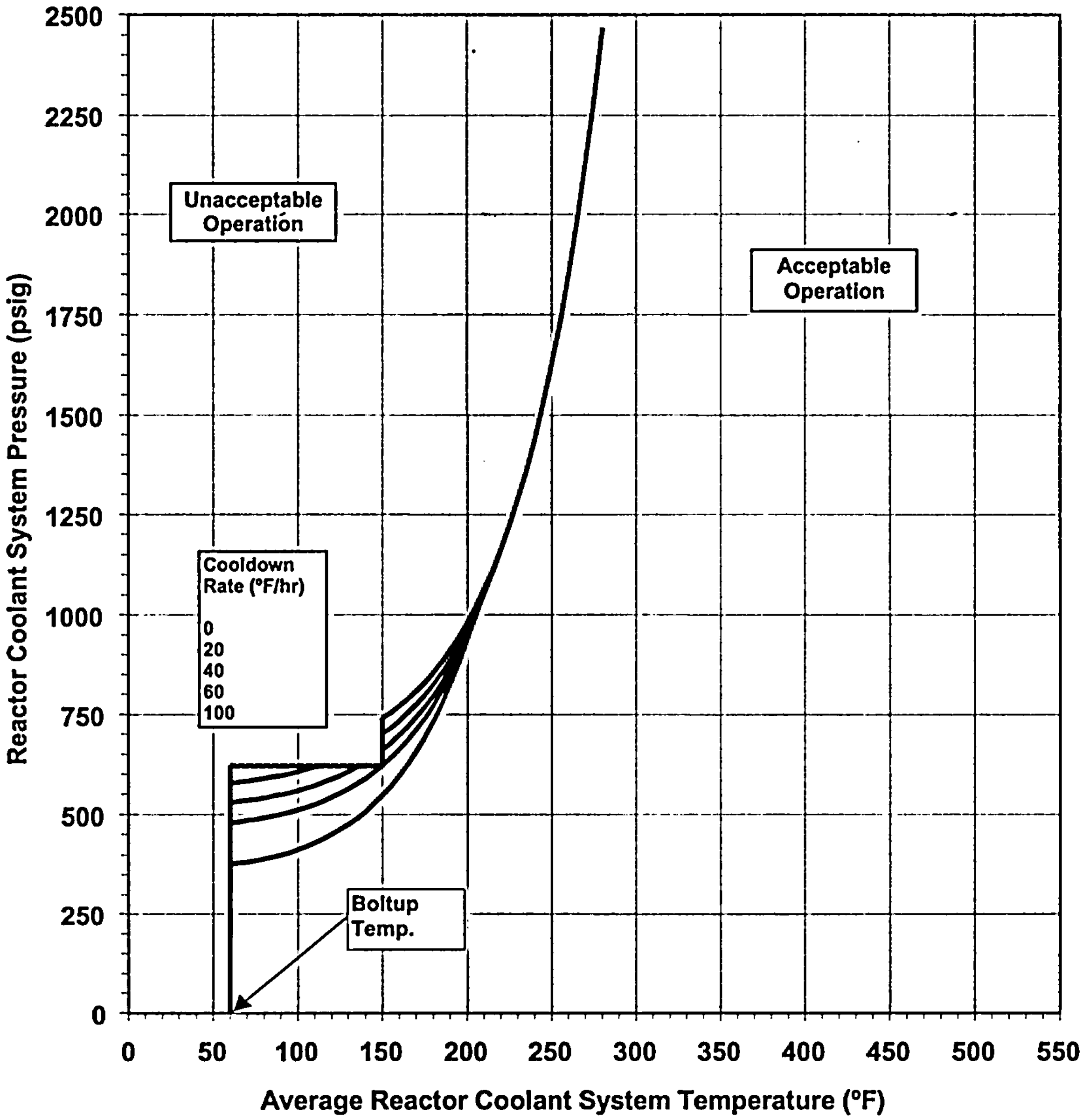

Figure 3.4.3-2
Reactor Coolant System Pressure versus Temperature Limits -
Various Cooldown Rates Limits
(Applicable for service period up to 32 EFPY)
<Unit 2>

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

1. CNP is not adopting a Pressure Temperature Limits Report (PTLR) and is retaining in the ITS the limits on heatup, cooldown, and inservice leak and hydrostatic testing, and data for maximum rate of change of reactor coolant temperature.

2. The brackets are removed and the proper plant specific information/value is provided.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.3 RCS Pressure and Temperature (P/T) Limits

BASES

BACKGROUND

All components of the RCS are designed to withstand effects of cyclic loads due to system pressure and temperature changes. These loads are introduced by startup (heatup) and shutdown (cooldown) operations, power transients, and reactor trips. This LCO limits the pressure and temperature changes during RCS heatup and cooldown, within the design assumptions and the stress limits for cyclic operation.

This LCO The PTLR contains P/T limit curves criticality for heatup, cooldown, inservice leak and hydrostatic (ISLH) testing, and data for the maximum rate of change of reactor coolant temperature (Ref. 1). (1)

Each P/T limit curve defines an acceptable region for normal operation. The usual use of the curves is operational guidance during heatup or cooldown maneuvering, when pressure and temperature indications are monitored and compared to the applicable curve to determine that operation is within the allowable region.

The LCO establishes operating limits that provide a margin to brittle failure of the reactor vessel and piping of the reactor coolant pressure boundary (RCPB). The vessel is the component most subject to brittle failure, and the LCO limits apply mainly to the vessel. The limits do not apply to the pressurizer, which has different design characteristics and operating functions.

10 CFR 50, Appendix G (Ref. 2), requires the establishment of P/T limits for specific material fracture toughness requirements of the RCPB materials. Reference 2 requires an adequate margin to brittle failure during normal operation, anticipated operational occurrences, and system hydrostatic tests. It mandates the use of the American Society of Mechanical Engineers (ASME) Code, Section III, Appendix G (Ref. 3).

The neutron embrittlement effect on the material toughness is reflected by increasing the nil ductility reference temperature (RT_{NDT}) as exposure to neutron fluence increases.

The actual shift in the RT_{NDT} of the vessel material will be established periodically by removing and evaluating the irradiated reactor vessel material specimens, in accordance with ASTM E 185 (Ref. 4) and Appendix H of 10 CFR 50 (Ref. 5). The operating P/T limit curves will be

BASES

BACKGROUND (continued)

adjusted, as necessary, based on the evaluation findings and the recommendations of Regulatory Guide 1.99 (Ref. 6).

The P/T limit curves are composite curves established by superimposing limits derived from stress analyses of those portions of the reactor vessel and head that are the most restrictive. At any specific pressure, temperature, and temperature rate of change, one location within the reactor vessel will dictate the most restrictive limit. Across the span of the P/T limit curves, different locations are more restrictive, and, thus, the curves are composites of the most restrictive regions.

The heatup curve represents a different set of restrictions than the cooldown curve because the directions of the thermal gradients through the vessel wall are reversed. The thermal gradient reversal alters the location of the tensile stress between the outer and inner walls.

The criticality limit curve includes the Reference 2 requirement that it be ≥ 40°F above the heatup curve or the cooldown curve, and not less than the minimum permissible temperature for ISLH testing. However, the criticality curve is not operationally limiting; a more restrictive limit exists in LCO 3.4.2, "RCS Minimum Temperature for Criticality."

The consequence of violating the LCO limits is that the RCS has been operated under conditions that can result in brittle failure of the RCPB, possibly leading to a nonisolable leak or loss of coolant accident. In the event these limits are exceeded, an evaluation must be performed to determine the effect on the structural integrity of the RCPB components. The ASME Code, Section XI, Appendix E (Ref. 7), provides a recommended methodology for evaluating an operating event that causes an excursion outside the limits.

APPLICABLE SAFETY ANALYSES

The P/T limits are not derived from Design Basis Accident (DBA) analyses. They are prescribed during normal operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause nonductile failure of the RCPB, an unanalyzed condition. Reference 1 establishes the methodology for determining the P/T limits. Although the P/T limits are not derived from any DBA, the P/T limits are acceptance limits since they preclude operation in an unanalyzed condition.

RCS P/T limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

The two elements of this LCO are:

a. The limit curves for heatup, cooldown, criticality, and ISLH testing and

b. Limits on the rate of change of temperature.

The LCO limits apply to all components of the RCS, except the pressurizer. These limits define allowable operating regions and permit a large number of operating cycles while providing a wide margin to nonductile failure.

The limits for the rate of change of temperature control the thermal gradient through the vessel wall and are used as inputs for calculating the heatup, cooldown, and ISLH testing P/T limit curves. Thus, the LCO for the rate of change of temperature restricts stresses caused by thermal gradients and also ensures the validity of the P/T limit curves.

Violating the LCO limits places the reactor vessel outside of the bounds of the stress analyses and can increase stresses in other RCPB components. The consequences depend on several factors, as follow:

a. The severity of the departure from the allowable operating P/T regime or the severity of the rate of change of temperature,

b. The length of time the limits were violated (longer violations allow the temperature gradient in the thick vessel walls to become more pronounced), and

c. The existences, sizes, and orientations of flaws in the vessel material.

APPLICABILITY

The RCS P/T limits LCO provides a definition of acceptable operation for prevention of nonductile failure in accordance with 10 CFR 50, Appendix G (Ref. 2). Although the P/T limits were developed to provide guidance for operation during heatup or cooldown (MODES 3, 4, and 5) or ISLH testing, their Applicability is at all times in keeping with the concern for nonductile failure. The limits do not apply to the pressurizer.

During MODES 1 and 2, other Technical Specifications provide limits for operation that can be more restrictive than or can supplement these P/T limits. LCO 3.4.1, "RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits," LCO 3.4.2, "RCS Minimum Temperature for Criticality," and Safety Limit 2.1, "Safety Limits," also provide operational restrictions for pressure and temperature and

BASES

APPLICABILITY (continued)

maximum pressure. Furthermore, MODES 1 and 2 are above the temperature range of concern for nonductile failure, and stress analyses have been performed for normal maneuvering profiles, such as power ascension or descent.

ACTIONS

A.1 and A.2

Operation outside the P/T limits during MODE 1, 2, 3, or 4 must be corrected so that the RCPB is returned to a condition that has been verified by stress analyses.

The 30 minute Completion Time reflects the urgency of restoring the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

Besides restoring operation within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify the RCPB integrity remains acceptable and must be completed before continuing operation. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, new analyses, or inspection of the components. (3) within 72 hours (3) INSERT 1 (2)

ASME Code, Section XI, Appendix E (Ref. 7), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

The 72 hour Completion Time is reasonable to accomplish the evaluation. The evaluation for a mild violation is possible within this time, but more severe violations may require special, event specific stress analyses or inspections. A favorable evaluation must be completed before continuing to operate. (3)

Condition A is modified by a Note requiring Required Action A.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action A.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

2 **INSERT 1**

The evaluation must include an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the RCS.

BASES

ACTIONS (continued)

B.1 and B.2

If a Required Action and associated Completion Time of Condition A are not met, the plant must be placed in a lower MODE because either the RCS remained in an unacceptable P/T region for an extended period of increased stress or a sufficiently severe event caused entry into an unacceptable region. Either possibility indicates a need for more careful examination of the event, best accomplished with the RCS at reduced pressure and temperature. In reduced pressure and temperature conditions, the possibility of propagation with undetected flaws is decreased.

If the required restoration activity cannot be accomplished within 30 minutes, Required Action B.1 and Required Action B.2 must be implemented to reduce pressure and temperature.

If the required evaluation for continued operation cannot be accomplished within 72 hours or the results are indeterminate or unfavorable, action must proceed to reduce pressure and temperature as specified in Required Action B.1 and Required Action B.2. A favorable evaluation must be completed and documented before returning to operating pressure and temperature conditions.

Pressure and temperature are reduced by bringing the plant to MODE 3 within 6 hours and to MODE 5 with RCS pressure < 500 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.

C.1 and C.2

Actions must be initiated immediately to correct operation outside of the P/T limits at times other than when in MODE 1, 2, 3, or 4, so that the RCPB is returned to a condition that has been verified by stress analysis.

The immediate Completion Time reflects the urgency of initiating action to restore the parameters to within the analyzed range. Most violations will not be severe, and the activity can be accomplished in this time in a controlled manner.

(3) **INSERT 1A**

resulted in a determination that the RCS is or may be

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BASES

ACTIONS (continued)

Besides restoring operation within limits, an evaluation is required to determine if RCS operation can continue. The evaluation must verify that the RCPB integrity remains acceptable and must be completed prior to entry into MODE 4. Several methods may be used, including comparison with pre-analyzed transients in the stress analyses, or inspection of the components. INSERT 2 (2)

ASME Code, Section XI, Appendix E (Ref. 7), may be used to support the evaluation. However, its use is restricted to evaluation of the vessel beltline.

Condition C is modified by a Note requiring Required Action C.2 to be completed whenever the Condition is entered. The Note emphasizes the need to perform the evaluation of the effects of the excursion outside the allowable limits. Restoration alone per Required Action C.1 is insufficient because higher than analyzed stresses may have occurred and may have affected the RCPB integrity.

SURVEILLANCE REQUIREMENTS

SR 3.4.3.1

Verification that operation is within the PTLR limits is required every 30 minutes when RCS pressure and temperature conditions are undergoing planned changes. This Frequency is considered reasonable in view of the control room indication available to monitor RCS status. Also, since temperature rate of change limits are specified in hourly increments, 30 minutes permits assessment and correction for minor deviations within a reasonable time. (1)

Surveillance for heatup, cooldown, or ISLH testing may be discontinued when the definition given in the relevant plant procedure for ending the activity is satisfied.

This SR is modified by a Note that only requires this SR to be performed during system heatup, cooldown, and ISLH testing. No SR is given for criticality operations because LCO 3.4.2 contains a more restrictive requirement.

REFERENCES

1. WCAP-7924-A, April 1975. INSERT 3 (2)
2. 10 CFR 50, Appendix G.
3. ASME, Boiler and Pressure Vessel Code, Section III, Appendix G.

(2) **INSERT 2**

The evaluation must include an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the RCS.

(2) **INSERT 3**

WCAP-15878, Rev. 0, dated December 2002 (Unit 1) and WCAP-15047, Rev. 2, dated May 2002 (Unit 2)

BASES

REFERENCES (continued)

4. ASTM E 185-82, July 1982.
5. 10 CFR 50, Appendix H.
6. Regulatory Guide 1.99, Revision 2, May 1988.
7. ASME, Boiler and Pressure Vessel Code, Section XI, Appendix E.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.3 BASES, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

1. Changes are made to reflect those changes made to the Specification.
2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
3. Changes are made to reflect the ISTS.
4. The brackets have been removed and the proper plant specific information/value has been provided.
5. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI-03, Section 5.1.3.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.3, RCS PRESSURE AND TEMPERATURE (P/T) LIMITS

There are no specific NSHC discussions for this Specification.

ATTACHMENT 4

ITS 3.4.4, RCS Loops - MODES 1 and 2

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

(A.1)

ITS

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

LCO 3.4.4 3.4.1.1 All reactor coolant loops shall be [OPERABLE and] in operation. (A.2)

APPLICABILITY: MODES 1 and 2[*] (A.3)

ACTION:

ACTION A With less than the above required reactor coolant loops in operation, be in at least HOT STANDBY within [1] [6] hour. (L.1)

SURVEILLANCE REQUIREMENT

SR 3.4.4.1 4.4.1.1 The above required reactor coolant loops shall be verified to be in operation [and circulating reactor coolant] at least once per 12 hours. (LA.1)

[*See Special Test Exception 3.10.5] (A.3)

ITS 3.4.4

A.1

ITS

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 REACTOR COOLANT LOOPS AND COOLANT CIRCULATION

STARTUP AND POWER OPERATION

LIMITING CONDITION FOR OPERATION

LCO 3.4.4 — 3.4.1.1 All reactor coolant loops shall be [OPERABLE and] in operation. (A.2)

APPLICABILITY: MODES 1 and 2.[#] (A.3)

ACTION:

ACTION A — With less than the above required reactor coolant loops in operation, be in at least HOT STANDBY within [1] [6] hour. (L.1)

SURVEILLANCE REQUIREMENT

SR 3.4.4.1 — 4.4.1.1 The above required reactor coolant loops shall be verified to be in operation [and circulating reactor coolant] at least once per 12 hours. (LA.1)

[#See Special Test Exception 3.10.4] (A.3)

D. C. Cook - Unit 2 — 3/4 4-1 — Amendment No. 59

DISCUSSION OF CHANGES
ITS 3.4.4, RCS LOOPS - MODES 1 AND 2

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.1.1 states that all reactor coolant loops shall be in operation. ITS 3.4.4 states that four RCS loops shall be OPERABLE and in operation. This changes the CTS by requiring the RCS loops to be OPERABLE.

This change is acceptable because it is consistent with the current use and understanding of the LCO. It is not sufficient for a RCS loop to be in operation if it is not capable of performing its safety function (i.e., OPERABLE). This change is designated as administrative as it clarifies the current understanding of a requirement.

A.3 The Applicability of CTS 3.4.1.1 (Unit 1) is modified by footnote * that states "See Special Test Exception 3.10.5." The Applicability of CTS 3.4.1.1 (Unit 2) is modified by footnote * that states "See Special Test Exception 3.10.4." The ITS 3.4.4 Applicability does not contain the footnotes or a reference to the Special Test Exceptions.

The purpose of the footnote references is to alert the user that a Special Test Exception exists that may modify the Applicability of the Specification. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative as it incorporates an ITS convention with no technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 - Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.1.1 states that the required reactor coolant loops shall be verified to be in operation and circulating reactor coolant at least once per 12 hours. ITS SR 3.4.4.1 states that each RCS loop shall be verified to be in operation every 12 hours. This changes the CTS by moving the

DISCUSSION OF CHANGES
ITS 3.4.4, RCS LOOPS - MODES 1 AND 2

Surveillance requirement to verify that the reactor coolant loops are circulating reactor coolant to the Bases.

The removal of this detail for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement that a RCS loop be in operation. This will require recirculation of reactor coolant since the ITS Bases specify that verification that a reactor coolant loop is in operation includes flow rate, temperature, or pump status monitoring, which helps ensure that forced flow is providing heat removal. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 3 - Relaxation of Completion Time)* CTS 3.4.1.1 Action states that when the reactor coolant loop requirements are not met, the unit must be in HOT STANDBY within 1 hour. ITS 3.4.4 ACTION A states that when the RCS loop requirements are not met, the unit must be in MODE 3 within 6 hours. This changes the CTS by relaxing the Completion Time from 1 hour to 6 hours.

The purpose of CTS 3.4.1.1 Action is to require a unit shutdown if the necessary reactor coolant flow is not available. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. Operating experience has shown that 6 hours is a reasonable time to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. It is likely that failure to meet the LCO requirements will lead to a reactor trip on low flow. However, if the LCO is not met for a reason that does not lead to a reactor trip, then 6 hours to transition from full power operation to MODE 3 is consistent with the Completion Time provided for a loss of safety function for other systems and with LCO 3.0.3. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.4 RCS Loops - MODES 1 and 2

LCO 3.4.1.1 LCO 3.4.4 [Four] RCS loops shall be OPERABLE and in operation. (1)

APPLICABILITY: MODES 1 and 2.

ACTIONS

Action

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of LCO not met.	A.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

4.4.1.1

SURVEILLANCE	FREQUENCY
SR 3.4.4.1 Verify each RCS loop is in operation.	12 hours

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.4, RCS LOOPS - MODES 1 AND 2

1. The brackets are removed and the proper plant specific information/value is provided.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.4 RCS Loops - MODES 1 and 2

BASES

BACKGROUND

The primary function of the RCS is removal of the heat generated in the fuel due to the fission process, and transfer of this heat, via the steam generators (SGs), to the secondary plant.

The secondary functions of the RCS include:

a. Moderating the neutron energy level to the thermal state, to increase the probability of fission;

b. Improving the neutron economy by acting as a reflector;

c. Carrying the soluble neutron poison, boric acid;

d. Providing a second barrier against fission product release to the environment; and

e. Removing the heat generated in the fuel due to fission product decay following a unit shutdown.

3 5

The reactor coolant is circulated through [four] loops connected in parallel to the reactor vessel, each containing an SG, a reactor coolant pump (RCP), and appropriate flow and temperature instrumentation for both control and protection. The reactor vessel contains the clad fuel. The SGs provide the heat sink to the isolated secondary coolant. The RCPs circulate the coolant through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and prevent fuel damage. This forced circulation of the reactor coolant ensures mixing of the coolant for proper boration and chemistry control. 1

APPLICABLE SAFETY ANALYSES

Safety analyses contain various assumptions for the design bases accident initial conditions including RCS pressure, RCS temperature, reactor power level, core parameters, and safety system setpoints. The important aspect for this LCO is the reactor coolant forced flow rate, which is represented by the number of RCS loops in service.

Both transient and steady state analyses have been performed to establish the effect of flow on the departure from nucleate boiling (DNB). The transient and accident analyses for the plant unit have been performed assuming [four] RCS loops are in operation. The majority of the plant unit 1 2

BASES

APPLICABLE SAFETY ANALYSES (continued)

safety analyses are based on initial conditions at high core power or zero power. The accident analyses that are most important to RCP operation are the [four] pump coastdown, single pump locked rotor, single pump [broken shaft or coastdown], and rod withdrawal events (Ref. 1). ① ②

Steady state DNB analysis has been performed for the [four] RCS loop operation. For [four] RCS loop operation, the steady state DNB analysis, which generates the pressure and temperature Safety Limit (SL) (i.e., the departure from nucleate boiling ratio (DNBR) limit) assumes a maximum power level of 109% RTP. This is the design overpower condition for [four] RCS loop operation. The value for the accident analysis setpoint of the nuclear overpower (high flux) trip is 107% and is based on an analysis assumption that bounds possible instrumentation errors. The DNBR limit defines a locus of pressure and temperature points that result in a minimum DNBR greater than or equal to the critical heat flux correlation limit. ② ① INSERT 1 ②

The plant is designed to operate with all RCS loops in operation to maintain DNBR above the SL, during all normal operations and anticipated transients. By ensuring heat transfer in the nucleate boiling region, adequate heat transfer is provided between the fuel cladding and the reactor coolant. ②

RCS Loops - MODES 1 and 2 satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require an adequate forced flow rate for core heat removal. Flow is represented by the number of RCPs in operation for removal of heat by the SGs. To meet safety analysis acceptance criteria for DNB, [four] pumps are required at rated power. ③ ①

An OPERABLE RCS loop consists of an OPERABLE RCP in operation providing forced flow for heat transport and an OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program. ④

APPLICABILITY

In MODES 1 and 2, the reactor is critical and thus has the potential to produce maximum THERMAL POWER. Thus, to ensure that the assumptions of the accident analyses remain valid, all RCS loops are required to be OPERABLE and in operation in these MODES to prevent DNB and core damage.

(2) **INSERT 1**

These analyses establish allowable RCS loop average temperature and ΔT for the minimum measured flow and power distribution as a function of RCS pressure. These analyses also establish a locus of power, pressure, and temperature conditions for which the departure from nucleate boiling ratio (DNBR) is equal to its Safety Limit value. The area of permissible operation is bounded by the combination of assumed reactor trips for Power Range Neutron Flux - High, Overtemperature ΔT, Overpower ΔT, Pressurizer Pressure - Low, and Pressurizer Pressure - High Functions. The difference between the reactor trip values assumed in the safety analyses and the nominal reactor trip setpoints provides an allowance for instrumentation channel error and setpoint error.

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BASES

APPLICABILITY (continued)

The decay heat production rate is much lower than the full power heat rate. As such, the forced circulation flow and heat sink requirements are reduced for lower, noncritical MODES as indicated by the LCOs for MODES 3, 4, and 5.

Operation in other MODES is covered by:

LCO 3.4.5, "RCS Loops - MODE 3,"
LCO 3.4.6, "RCS Loops - MODE 4,"
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled,"
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled,"
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6), and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1

If the requirements of the LCO are not met, the Required Action is to reduce power and bring the plant to MODE 3. This lowers power level and thus reduces the core heat removal needs and minimizes the possibility of violating DNB limits.

The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging safety systems.

SURVEILLANCE REQUIREMENTS

SR 3.4.4.1

This SR requires verification every 12 hours that each RCS loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal while maintaining the margin to DNB. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.

REFERENCES

1. FSAR, Section 15.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.4 BASES, RCS LOOPS - MODES 1 AND 2

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Typographical/grammatical error corrected.

4. Changes have been made to be consistent with changes made to the Specification.

5. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.4, RCS LOOPS - MODES 1 AND 2

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.4.5, RCS Loops - MODE 3

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A.1

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

LCO 3.4.5 3.4.1.2 a. The reactor coolant loops listed below shall be OPERABLE and in operation as required by items b, c, and d:

1. Reactor Coolant Loop 1 and its associated steam generator and reactor coolant pump,

2. Reactor Coolant Loop 2 and its associated steam generator and reactor coolant pump,

3. Reactor Coolant Loop 3 and its associated steam generator and reactor coolant pump,

4. Reactor Coolant Loop 4 and its associated steam generator and reactor coolant pump. LA.1

b. At least two of the above coolant loops shall be OPERABLE and at least one loop in operation if the reactor trip breakers are in the open position, or the control rod drive system is not capable of rod withdrawal.* LA.2

c. At least three [two] of the above coolant loops shall be OPERABLE and in operation when the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal. L.1 LA.2

d. At least three of the above coolant loops shall be OPERABLE and in operation above P-12. (Refer to Technical Specification 3.3.2.1, Table 3.3-3 for instrumentation requirements.) L.2

APPLICABILITY: MODE 3

A.2 M.1

LCO 3.4.5 Note

* All reactor coolant pumps may be de-energized [removed from operation] for up to 1 hour [per 8 hour period] provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration**, and (2) core outlet temperature is maintained at least 10°F below saturation temperature. ← Add proposed LCO Note part c L.3 A.2

** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2. L.3

ITS 3.4.5

ITS

A.1

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

ACTION A — a. With [one] less than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours. (M.2)

ACTION B

ACTION C — b. With [one] less than the number of operating coolant loops required by item c above, restore the required number of coolant loops within 2 hours or open the reactor trip breakers. (A.3) (LA.2) [Add proposed Required Actions C.1 and D.1] (M.2)

Required Action D.1 — [immediately]

c. With less than the number of operating coolant loops required by item d above, restore the required number of coolant loops within 2 hours or lower the reactor coolant system temperature below P-12. (L.2)

[OR Two required RCS loops inoperable] (M.2)

ACTION D — d. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System** and immediately initiate corrective action to return the required coolant loop to operation. (L.3)

[Add proposed Required Action D.1] (M.2)

SURVEILLANCE REQUIREMENTS

[Add proposed SR 3.4.5.3 NOTE] (L.4)

SR 3.4.5.3 — 4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

SR 3.4.5.1 — 4.4.1.2.2 At least one cooling loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours. (LA.3)

[Add proposed SR 3.4.5.2] (M.3)

** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2. (L.3)

ITS

A.1

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION

LCO 3.4.5

3.4.1.2 a. The reactor coolant loops listed below shall be OPERABLE and in operation as required by items b, c, and d:

1. Reactor Coolant Loop 1 and its associated steam generator and reactor coolant pump,

2. Reactor Coolant Loop 2 and its associated steam generator and reactor coolant pump,

3. Reactor Coolant Loop 3 and its associated steam generator and reactor coolant pump,

4. Reactor Coolant Loop 4 and its associated steam generator and reactor coolant pump.

LA.1

b. At least two of the above coolant loops shall be OPERABLE and at least one loop in operation if the reactor trip breakers are in the open position, or the control rod drive system is not capable of rod withdrawal.*

LA.2

c. At least three (two) of the above coolant loops shall be OPERABLE and in operation when the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal.

L.1

LA.2

d. At least three of the above coolant loops shall be OPERABLE and in operation above P-12. (Refer to Technical Specification 3.3.2.1, Table 3.3-3 for instrumentation requirements.)

L.2

APPLICABILITY: MODE 3

A.2

M.1

LCO 3.4.5 Note

* All reactor coolant pumps may be de-energized (removed from operation) for up to 1 hour (per 8 hour period) provided (1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration**, and (2) core outlet temperature is maintained at least 10°F below saturation temperature. ← Add proposed LCO Note part c

L.3

A.2

** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2.

L.3

D. C. COOK - UNIT 2 3/4 4-2 AMENDMENT NO. 82,107

ITS 3.4.5

ITS

A.1

REACTOR COOLANT SYSTEM

HOT STANDBY

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

ACTION A / ACTION B — a. With less [one] than the above required reactor coolant loops OPERABLE, restore the required loops to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours. (M.2)

ACTION C / Required Action D.1 — b. With less [one] than the number of operating coolant loops required by item c above, restore the required number of coolant loops within [immediately] 2 hours or open the reactor trip breakers. (A.3) (LA.2) ← Add proposed Required Actions C.1 and D.1 (M.2)

c. With less than the number of operating coolant loops required by item d above, restore the required number of coolant loops within 2 hours or lower the reactor coolant system temperature below P-12. (L.2)

ACTION D [OR Two required RCS loops inoperable] (M.2) — d. With no reactor coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System** and immediately initiate corrective action to return the required coolant loop to operation. (L.3)

← Add proposed Required Action D.1 (M.2)

SURVEILLANCE REQUIREMENTS

← Add proposed SR 3.4.5.3 NOTE (L.4)

SR 3.4.5.3 — 4.4.1.2.1 At least the above required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

SR 3.4.5.1 — 4.4.1.2.2 At least one cooling loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours. (LA.3)

← Add proposed SR 3.4.5.2 (M.3)

** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2. (L.3)

D. C. COOK - UNIT 2 3/4 4-2a AMENDMENT NO. 82, 107

DISCUSSION OF CHANGES
ITS 3.4.5, RCS LOOPS - MODE 3

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.1.2 Footnote * allows all reactor coolant pumps to be de-energized. ITS LCO 3.4.5 Note allows all reactor coolant pumps to be removed from operation. This changes the word "de-energized" to "removed from operation." In addition, CTS 3.4.1.2 Footnote * only modifies the LCO portion dealing with the requirements when the Control Rod Drive System is not capable of rod withdrawal; the allowance is not applicable when the Control Rod Drive System is capable of rod withdrawal. In the ITS LCO 3.4.5 Note, this is specifically stated as part c of the Note. This changes the CTS by clearly stating when the allowance can be used, with respect to the condition of the Rod Control System.

The purpose of CTS 3.4.1.2 Footnote * is to allow the pumps to not meet the requirement of CTS LCO 3.4.1.2.b to be in operation. The change better reflects the deviation to the LCO. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3.4.1.2 Action b requires the restoration of the required number of coolant loops within 2 hours or to open the reactor trip breakers. ITS 3.4.5 Required Actions C.1 and D.1 require the Rod Control System to be placed in a condition incapable of rod withdrawal. This changes the CTS by not explicitly stating the requirement to restore the RCS loop to an operating condition. The change from open the reactor trip breakers to place the Rod Control System in a condition incapable of rod withdrawal is covered by DOC LA.2.

This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS LCO 3.4.1.2.b states that at least two reactor coolant loops shall be OPERABLE and at least one must be in operation. This requirement is modified by Footnote * that states that all reactor coolant pumps may be de-energized for up to 1 hour. ITS 3.4.5 contains the same allowance, but limits the use of the 1 hour exception to once per 8 hour period.

DISCUSSION OF CHANGES
ITS 3.4.5, RCS LOOPS - MODE 3

The purpose of the 1 hour allowance is to allow a reactor coolant loop to be removed from operation in order to place another loop in service. This change is acceptable because it helps ensure that boron stratification and inadequate decay heat removal do not occur should multiple 1 hour periods be required. This change is designated as more restrictive because it limits the allowance to 1 hour per 8 hour period, and that restriction does not currently exist.

M.2 CTS 3.4.1.2 Action a states that when less than the required reactor coolant loops are OPERABLE, the required loops must be restored to OPERABLE status within 72 hours. CTS 3.4.1.2 Action b states that with less than the number of operating coolant loops required by item c (of the LCO statement), restore the required number of coolant loops within 2 hours or open the reactor trip breakers. CTS 3.4.1.2 Action d states that when no reactor coolant loops are in operation, all operations involving a reduction in boron concentration of the RCS must be suspended and action must be initiated to return the required loop to operation. ITS 3.4.5 ACTION A specifies the Required Action for one required RCS loop inoperable. The Required Action is to restore the RCS loop to OPERABLE status within 72 hours. ITS 3.4.5 ACTION C specifies the Required Action for one required RCS loop not in operation with Rod Control System capable of rod withdrawal. The Required Action is to place the Rod Control System in a condition incapable of rod withdrawal within 2 hours. ITS 3.4.5 ACTION D specifies the Required Actions for two required RCS loops inoperable and for no required RCS loop in operation (i.e., two required RCS loops not in operation with Rod Control System capable of rod withdrawal or the required RCS loop not in operation with Rod Control System not capable of rod withdrawal). The Required Actions are to immediately place the Rod Control System in a condition incapable of rod withdrawal, immediately suspend operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1, and to immediately initiate action to restore one RCS loop to OPERABLE status and operation. This changes the CTS by revising the Actions to immediately require actions to be taken when two required RCS loops are inoperable or two RCS loops are not in operation when the Rod Control System is capable of rod withdrawal.

This change is acceptable because it provides appropriate actions for a loss of all OPERABLE RCS loops. If both required RCS loops are inoperable, allowing 72 hours to restore an RCS loop to OPERABLE status is inappropriate because the loops may not be able to remove the decay heat generated by the reactor. Immediate action is necessary. Also, the inadvertent rod withdrawal accident assumes two cooling loops are in operation. With no loops in operation, inadvertent rod withdrawal must be prevented. This change is designated as more restrictive because it requires immediate action instead of allowing time for restoration.

M.3 CTS 3.4.1.2 specifies requirements for reactor coolant loops to be OPERABLE with each loop consisting of an RCS loop, its associated steam generator, and its reactor coolant pump. However, CTS 3/4.1.2 does not define the OPERABILITY requirements for the steam generator or provide any associated Surveillance Requirements. ITS SR 3.4.5.2 requires verification that each required steam generator has a secondary side water level above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)

DISCUSSION OF CHANGES
ITS 3.4.5, RCS LOOPS - MODE 3

every 12 hours. This changes the CTS by defining the OPERABILITY requirements for a steam generator, with respect to this Specification.

This change is acceptable because the reactor coolant system loops cannot remove decay heat from the reactor without a heat sink in the steam generators. The ITS Bases also state that the SR is met if the narrow range level instrument indicates ≥ 6% or if the wide range level instrument indicates ≥ 79%. This change is designated as more restrictive because it applies new requirements to the steam generators.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.4.1.2 contains a description of what constitutes an OPERABLE RCS loop. ITS 3.4.5 does not include this description of what constitutes an OPERABLE RCS loop. This changes the CTS by moving the details of what constitutes an OPERABLE RCS loop to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains a requirement for the RCS loops to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 3.4.1.2.b specifies requirements for RCS loops when the reactor trip breakers are in the open position or the control rod drive system is not capable of rod withdrawal. CTS 3.4.1.2.c specifies requirements for RCS loops when the reactor trip breakers are in the closed position and the control rod drive system is capable of rod withdrawal. With less than the number of operating RCS loops required by CTS LCO 3.4.1.2.c, CTS 3.4.1.2 Action b requires the restoration of the required RCS loops within 2 hours or to open the reactor trip breakers. ITS LCO 3.4.5.a specifies requirements for the RCS loops when the Rod Control System is capable of rod withdrawal. ITS LCO 3.4.5.b specifies requirements for the RCS loops when the Rod Control System is not capable of rod withdrawal. ITS 3.4.5 ACTION C requires the Rod Control System to be placed in a condition incapable of rod withdrawal when one required RCS loop is not in operation with the Rod Control System capable of rod withdrawal. ITS 3.4.5 ACTION D specifies the same Required Action (Required

Action D.1). This changes the CTS by moving the details on how to place the Rod Control System in a state capable or incapable of rod withdrawal (i.e., by using the reactor trip breakers) from the Technical Specifications to the Bases.

The removal of these details for performing actions from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still continues to specify requirements on the RCS depending on the status of the Rod Control System's capability to withdraw rods. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.1.2.2 states that at least one required reactor coolant loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours. ITS SR 3.4.5.1 states that the required reactor coolant loops shall be verified to be in operation every 12 hours. This changes the CTS by moving the requirement to verify that the reactor coolant loops are circulating reactor coolant to the Bases.

The removal of this detail for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement that a reactor coolant loop be in operation, and a loop that is in operation will be circulating reactor coolant. As described in the ITS Bases, verification that a reactor coolant loop is in operation includes flow rate, temperature, or pump status monitoring. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.4.1.2.c requires at least three RCS loops to be OPERABLE and in operation when the reactor trip breakers are in the closed position and the control rod drive system is capable of rod withdrawal. ITS LCO 3.4.5 requires two RCS loops to be OPERABLE and ITS LCO 3.4.5.a requires two RCS loops to be in operation when the Rod Control System is capable of rod withdrawal. This changes the CTS by reducing the required number of RCS loops to be OPERABLE and in operation when the Rod Control System is capable of rod withdrawal from three to two.

DISCUSSION OF CHANGES
ITS 3.4.5, RCS LOOPS - MODE 3

The purpose of CTS 3.4.1.2 is to ensure the appropriate number of RCS loops are OPERABLE and in operation to support the safety analysis associated with the uncontrolled rod cluster control assembly bank withdrawal event from a subcritical condition. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. This change reduces the required number of RCS loops to be OPERABLE and in operation when the Rod Control System is capable of rod withdrawal from three to two and modifies the Required Actions accordingly. The original licensing basis for both Unit 1 and Unit 2 required only two loops to be OPERABLE and in operation. The Unit 2 Technical Specifications were amended (Amendment No. 82) to reflect accident analysis assumptions used in fuel cycle 6. The cycle 6 reactor core represented a transition from Westinghouse Electric Company manufactured fuel to Exxon Nuclear Company manufactured fuel. The analysis for control rod withdrawal events assumed a minimum of three reactor coolant pumps in operation. As such, the Unit 2 Technical Specifications were revised to reflect the analysis. To establish consistency between the Unit 1 Technical Specifications and the Unit 2 Technical Specifications, the Unit 1 Technical Specifications were amended (Amendment No. 120) to require a minimum of three reactor coolant loops in operation when the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal. Although the Unit 1 analysis only required two coolant loops, three coolant loops in operation was considered conservative with respect to the safety analysis. Prior to cycle 8 for Unit 2, fresh reload fuel was again furnished by Westinghouse using the Vantage 5 fuel assembly design. The safety analysis for the Vantage 5 reactor core only assumed two coolant loops in operation for the uncontrolled rod cluster control assembly bank withdrawal event. However, neither the Technical Specifications for Unit 2, nor the Technical Specifications for Unit 1, were revised to reflect the latest analysis. Therefore, the proposed change presented is consistent with current analysis and consistent with NUREG-1431. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.2 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.4.1.2.d requires at least three RCS loops to be OPERABLE and in operation above P-12. CTS 3.4.1.2 Action c requires the restoration of the required number of coolant loops within 2 hours or lower the RCS temperature below P-12. ITS LCO 3.4.5 does not include these requirements. This changes the CTS by deleting the requirements for three RCS loops when the unit is operating above P-12.

According to License Amendment No. 120 for Unit 1 and Amendment No. 107 for Unit 2, the purpose of CTS 3.4.1.2.d is to assure that the requirements of CTS Table 3.3-3, Engineered Safety Features Actuation System, may be met. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. The requirements to have at least three RCS Loops OPERABLE and in operation above P-12 has been deleted. CTS Table 3.3-3 requires the Steam Flow in Two Steam Lines – High and the Steam Line Pressure – Low Functions to be OPERABLE in MODES 1, 2, and 3 at and above the P-12 interlock. Both of these Functions provide requirements for only three and four RCS loop operation. These requirements have been changed in ITS 3.3.2 as indicated in the Discussion of Changes for ITS 3.3.2. These Functions will be applicable with any configuration of the RCS loops. Therefore reference to the instrumentation Specifications is not necessary. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.3 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.2 Footnote * states that all reactor coolant pumps may be de-energized for up to 1 hour provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration. However, CTS LCO 3.4.1.2 Footnote ** clarifies that for purpose of this Specification, addition of water from the refueling water storage tank (RWST) does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.8.b.2. CTS 3.4.1.2 Action d states that when no reactor coolant loops are in operation, all operations involving a reduction in boron concentration of the RCS must be suspended. CTS 3.4.1.2 Action d, Footnote **, also provides the same clarification as is in CTS LCO 3.4.1.2 Footnote **. The ITS LCO 3.4.5 Note states that all reactor coolant pumps may be removed from operation provided no operations are permitted that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1," SHUTDOWN MARGIN (SDM)." ITS 3.4.5 Required Action D.2 states that operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1 must be suspended. This relaxes the CTS Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1. The detail concerning the RWST boron concentration is also deleted.

The purpose of CTS 3.4.1.2 Footnote * and of CTS 3.4.1.2, including Action d Footnote **, is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.4 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.4.1.2.1 states that the required reactor coolant pumps, if not in operation, shall be determined to be OPERABLE by verifying correct breaker

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DISCUSSION OF CHANGES
ITS 3.4.5, RCS LOOPS - MODE 3

alignment and indicated power availability. ITS SR 3.4.5.3 requires verification of correct breaker alignment and indicated power availability to each required pump. It is modified by a Note that states "Not required to be performed until 24 hours after a required pump is not in operation." This changes the CTS by not requiring the SR to be performed until 24 hours after a pump is taken out of operation.

The purpose of CTS 4.4.1.2.1 is to ensure that the standby reactor coolant pump is ready to operate. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The Note provides time to perform the Surveillance to verify correct breaker alignment and indicated power availability. Without the Note, the Surveillance would not be met immediately after taking a pump out of operation. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.1.2 — LCO 3.4.5 — [Two] RCS loops shall be OPERABLE and either: ①

a. [Two] RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal; or ① ②

b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

LCO 3.4.1.2.b Note *

- NOTE -

All reactor coolant pumps may be ~~not in~~ (removed from) operation for ≤ 1 hour per 8 hour period provided: TSTF-438

a. No operations are permitted that would cause introduction (of coolant) into the RCS ~~coolant~~ with boron concentration less than required to meet the ~~SDM~~ ("SHUTDOWN MARGIN (SDM)") of LCO 3.1.1 (requirements); ~~and~~ ②

b. Core outlet temperature is maintained at least 10°F below saturation temperature. (; and) ③

INSERT 1

APPLICABILITY: MODE 3.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action a	A. One [required] RCS loop inoperable.	A.1	Restore required RCS loop to OPERABLE status.	72 hours	①
Action a	B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 4.	12 hour(s)	②

(3) **INSERT 1**

c. The Rod Control System is not capable of rod withdrawal.

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
Action b C. One required RCS loop not in operation with Rod Control System capable of rod withdrawal.	C.1	Restore required RCS loop to operation.	1 hour
	OR		
	C.2 1	Place the Rod Control System in a condition incapable of rod withdrawal.	2 hours 5 2
Actions b and d D. Two required RCS loops inoperable.	D.1	Place the Rod Control System in a condition incapable of rod withdrawal.	Immediately
OR	AND		
No required RCS loops in operation.			
	D.2	Suspend operations that would cause introduction of coolant into the RCS coolant with boron concentration less than required to meet the requirements SDM of LCO 3.1.1.	Immediately
	AND		
	D.3	Initiate action to restore one RCS loop to OPERABLE status and operation.	Immediately

1 4 1 1 5 1 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.4.1.2.2 SR 3.4.5.1	Verify required RCS loops are in operation.	12 hours

above the lower tap of the SG wide range level instrumentation by ≥420 inches (Unit 1) and ≥418.77 inches (Unit 2)

CTS

6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
DOC M.3 SR 3.4.5.2	Verify steam generator secondary side water levels are ≥ [17]% for required RCS loops.	12 hours
4.4.1.2.1 SR 3.4.5.3	- NOTE - Not required to be performed until 24 hours after a required pump is not in operation.	
	Verify correct breaker alignment and indicated power are available to each required pump.	7 days

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.5, RCS LOOPS - MODE 3

1. The brackets are removed and the proper plant specific information/value is provided.

2. Typographical/grammatical error corrected and editorial change made for enhanced clarity.

3. A provision has been added to the ISTS LCO 3.4.5 Note to require the Rod Control System not to be capable of rod withdrawal. This change is consistent with the current licensing basis.

4. ISTS 3.4.5 Required Action C.1 requires restoration of the required RCS loop to operation or the placement of the Rod Control System in a condition incapable of rod withdrawal. The Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 4.1.6.g, states "A Required Action which requires restoration, such that the Condition is no longer met, is considered superfluous. It is only included if it would be the only Required Action for the Condition or it is needed for presentation clarity." Neither exception applies in this case. Therefore, Required Action C.1 is deleted and the subsequent Required Action renumbered.

5. ISTS 3.4.5 ACTION D has been revised to clearly cover the Conditions of the LCO it is intended to cover. ISTS 3.4.5 ACTION C covers the situation for one required RCS loop not in operation with Rod Control System capable of rod withdrawal. ISTS 3.4.5 Condition D (second condition) is intended to cover the remaining situations when the required RCS loops are not in operation. The appropriate conditions that need to be covered are a) two required RCS loops not in operation with the Rod Control System capable of rod withdrawal, and b) one required RCS loop not in operation with Rod Control System not capable of rod withdrawal. As such, ISTS 3.4.5 Condition D has been revised similar to that in the previous revision of NUREG-1431 (Rev. 1). The new second Condition is "No required RCS loop in operation." This ensures both of the above conditions (a and b) are covered, and ensures that when one required RCS loop is not in operation with Rod Control System capable of rod withdrawal, only ITS 3.4.5 Condition C is entered."

6. The SG water level value has been changed from referencing a specific instrument to referencing a required level above the lower tap of the SG wide range level instrumentation. This will allow the wide range level or narrow range level instrument (or other qualified indicator) to be used to ensure proper SG water level. This proposed water level will ensure the U-tubes are covered, which is the intent of the current wide range level instrument value.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.5 RCS Loops - MODE 3

BASES

BACKGROUND

In MODE 3, the primary function of the reactor coolant is removal of decay heat and transfer of this heat, via the steam generator (SG), to the secondary plant fluid. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

The reactor coolant is circulated through [four] RCS loops, connected in parallel to the reactor vessel, each containing an SG, a reactor coolant pump (RCP), and appropriate flow, pressure, level, and temperature instrumentation for control, protection, and indication. The reactor vessel contains the clad fuel. The SGs provide the heat sink. The RCPs circulate the water through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and prevent fuel damage. ①

In MODE 3, RCPs are used to provide forced circulation for heat removal during heatup and cooldown. The MODE 3 decay heat removal requirements are low enough that a single RCS loop with one RCP running is sufficient to remove core decay heat. However, [two] RCS loops are required to be OPERABLE to ensure redundant capability for decay heat removal. INSERT 1 ① ②

APPLICABLE SAFETY ANALYSES

Whenever the reactor trip breakers (RTBs) are in the closed position and the control rod drive mechanisms (CRDMs) are energized, an inadvertent rod (bank) withdrawal from subcritical, resulting in a power excursion, is possible. Such a transient could be caused by a malfunction of the rod control system. In addition, the possibility of a power excursion due to the ejection of an inserted control rod is possible with the breakers closed or open. Such a transient could be caused by the mechanical failure of a CRDM. ② ②

Therefore, in MODE 3 with the Rod Control System capable of rod withdrawal, accidental control rod (bank) withdrawal from subcritical is postulated and requires at least [two] RCS loops to be OPERABLE and in operation to ensure that the accident analyses limits are met. For those conditions when the Rod Control System is not capable of rod withdrawal, two RCS loops are required to be OPERABLE, but only one RCS loop is required to be in operation to be consistent with MODE 3 accident analyses. ①

(2) **INSERT 1**

When the Rod Control System is capable of rod withdrawal then two RCS loops must be OPERABLE and in operation.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Failure to provide decay heat removal may result in challenges to a fission product barrier. The RCS loops are part of the primary success path that functions or actuates to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops - MODE 3 satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). ②

LCO

The purpose of this LCO is to require that at least two RCS loops be OPERABLE. In MODE 3 with the Rod Control System capable of rod withdrawal, two RCS loops must be in operation. Two RCS loops are required to be in operation in MODE 3 with the Rod Control System capable of rod withdrawal due to the postulation of a power excursion because of an inadvertent control rod bank withdrawal. The required number of RCS loops in operation ensures that the Safety Limit criteria will be met for all of the postulated accidents. ① ① ②

When the Rod Control System is not capable of rod withdrawal, only one RCS loop in operation is necessary to ensure removal of decay heat from the core and homogenous boron concentration throughout the RCS. An additional RCS loop is required to be OPERABLE to ~~ensure that safety analyses limits are met~~ provide redundancy. ② TSTF-438

The Note permits all RCPs to be removed from operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to ~~perform tests that are designed to validate various accident analyses values. One of these tests is validation of the pump coastdown curve used as input to a number of accident analyses including a loss of flow accident. This test is generally performed in MODE 3 during the initial startup testing program, and as such should only be performed once. If, however, changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values of the coastdown curve must be revalidated by conducting the test again. Another test performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow.~~ INSERT 2 ②

~~The no flow test may be performed in MODE 3, 4 or 5 and requires that the pumps be stopped for a short period of time. The Note permits the stopping of the pumps in order to perform this test and validate the assumed analysis values. As with the validation of the pump coastdown curve, this test should be performed only once unless the flow characteristics of the RCS are changed.~~ The 1 hour time period specified is adequate to ~~perform the desired tests~~ switch the RCS loops, and operating experience has

(2) **INSERT 2**

permit an RCS pump to be de-energized when switching operation from one RCS loop to another.

BASES

LCO (continued)

shown that boron stratification is not a problem during this short period with no forced flow.

Utilization of the Note is permitted provided the following conditions are met, along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration with coolant at boron concentrations less than required to assure the SDM of LCO 3.1.1, thereby maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation and

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

An OPERABLE RCS loop consists of one OPERABLE RCP and one OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level specified in SR 3.4.5.2. An RCP is OPERABLE if it is capable of being powered and is able to provide forced flow if required.

APPLICABILITY

In MODE 3, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. The most stringent condition of the LCO, that is, two RCS loops OPERABLE and two RCS loops in operation, applies to MODE 3 with the Rod Control System capable of rod withdrawal. The least stringent condition, that is, two RCS loops OPERABLE and one RCS loop in operation, applies to MODE 3 with the Rod Control System not capable of rod withdrawal.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2,"
LCO 3.4.6, "RCS Loops - MODE 4,"
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled,"
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled,"
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6), and

(4) **INSERT 3**

c. The Rod Control System is not capable of rod withdrawal to avoid an accidental control rod bank withdrawal.

(7) **INSERT 3A**

. A SG is OPERABLE if it meets the requirements of

BASES

APPLICABILITY (continued)

LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6). ④ ⑥

ACTIONS

A.1

If one required RCS loop is inoperable, redundancy for heat removal is lost. The Required Action is restoration of the required RCS loop to OPERABLE status within the Completion Time of 72 hours. This time allowance is a justified period to be without the redundant, nonoperating loop because a single loop in operation has a heat transfer capability greater than that needed to remove the decay heat produced in the reactor core and because of the low probability of a failure in the remaining loop occurring during this period. ①

B.1

If restoration for Required Action A.1 is not possible within 72 hours, the unit must be brought to MODE 4. In MODE 4, the unit may be placed on the Residual Heat Removal System. The additional Completion Time of 12 hours is compatible with required operations to achieve cooldown and depressurization from the existing plant conditions in an orderly manner and without challenging plant systems. unit ②

C.1 and C.2 ① ④

If one required RCS loop is not in operation, and the Rod Control System is capable of rod withdrawal, the Required Action is either to restore the required RCS loop to operation or to place the Rod Control System in a condition incapable of rod withdrawal (e.g., de-energize all CRDMs by opening the RTBs or de-energizing the motor generator (MG) sets). When the Rod Control System is capable of rod withdrawal, it is postulated that a power excursion could occur in the event of an inadvertent control rod withdrawal. This mandates having the heat transfer capacity of two RCS loops in operation. If only one loop is in operation, the Rod Control System must be rendered incapable of rod withdrawal. The Completion Times of 1 hour to restore the required RCS loop to operation or defeat the Rod Control System is adequate to perform these operations in an orderly manner without exposing the unit to risk for an undue time period. ④ ② bank ⑥ ④ ①

BASES

ACTIONS (continued)

D.1, D.2, and D.3

If two required RCS loops are inoperable or required RCS loop not in operation, except as during conditions permitted by the Note in the LCO section, the Rod Control System must be placed in a condition incapable of rod withdrawal (e.g., all CRDMs must be de-energized by opening the RTBs or de-energizing the MG sets). All operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended, and action to restore one of the RCS loops to OPERABLE status and operation must be initiated. Boron dilution requires forced circulation for proper mixing, and opening the RTBs or de-energizing the MG sets removes the possibility of an inadvertent rod withdrawal. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.5.1

This SR requires verification every 12 hours that the required loops are in operation. Verification includes flow rate, temperature, and pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS loop performance.

SR 3.4.5.2

SR 3.4.5.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is ≥ [17]% for required RCS loops. If the SG secondary side narrow range water level is < [17]%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink for removal of the decay heat. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to a loss of SG level.

(4)

INSERT 4

with Rod Control System capable of rod withdrawal, or required RCS loop not in operation with Rod Control System not capable of rod withdrawal

(4)

INSERT 4A

above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)

(2)

INSERT 4B

The water level can be verified by either the wide range or the narrow range level instruments. A narrow range level instrument ≥ 6% or a wide range level instrument ≥ 79% ensures the Surveillance Requirement limit is met.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.5.3

Verification that each required RCP is OPERABLE ensures that safety analyses limits are met. The requirement also ensures that an additional RCP can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power availability to each required RCP. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. (5)

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation. INSERT 5 (5)

REFERENCES None.

(5) **INSERT 5**

This is acceptable because proper breaker alignment and power availability are ensured if a pump is operating.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.5 BASES, RCS LOOPS - MODE 3

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

4. Changes are made to reflect those changes made to the ISTS.

5. The Bases of ISTS SR 3.4.5.3 state that "Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability." The Note to SR 3.4.5.3 clearly states that the SR is only required to be performed after a required pump is not in operation. Therefore, the SR does not need to be performed for operating pumps and the statement that there is an alternative method of verification is not necessary. The statement is essentially justifying why the Note to the SR is allowed. As such, a similar statement has been added to the paragraph describing the Note allowance.

6. Typographical/grammatical error corrected.

7. Editorial change made for enhanced clarity.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.5, RCS LOOPS - MODE 3

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 6

ITS 3.4.6, RCS Loops MODE 4

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.6

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

LCO 3.4.6

3.4.1.3 a. The coolant loops listed below shall be OPERABLE and in operation as required by items b and c:

1. Reactor Coolant Loop 1 and its associated steam generator and reactor coolant pump,*
2. Reactor Coolant Loop 2 and its associated steam generator and reactor coolant pump,*
3. Reactor Coolant Loop 3 and its associated steam generator and reactor coolant pump,*
4. Reactor Coolant Loop 4 and its associated steam generator and reactor coolant pump,*
5. Residual Heat Removal - East,
6. Residual Heat Removal - West,

LA.1

b. At least two of the above coolant loops shall be OPERABLE and at least one loop in operation. If the reactor trip breakers are in the open position, or the control rod drive system is not capable of rod withdrawal.**

L.1

c. At least three of the above reactor coolant loops shall be OPERABLE and in operation when the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal.

APPLICABILITY: MODE 4

* Operability of a reactor coolant loop(s) does not require an OPERABLE auxiliary feedwater system.

A.2

M.1

LCO 3.4.6 Note 1

per 8 hour period

** All reactor coolant pumps and residual heat removal pumps may be de-energized for up to 1 hour provided 1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration***, and 2) core outlet temperature is maintained at least 10°F below saturation temperature.

removed from operation

A.3

L.2

*** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2.

Add proposed LCO 3.4.6 Note 2

M.4

ITS 3.4.6

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

ACTIONS A and B — a. With [one] less than the above required coolant loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible; [Add proposed Required Action A.2 Note] (L.3) be in COLD SHUTDOWN within [20] [24] hours. [Add proposed Required Actions B.2 and B.2] (M.2)

b. With less than the number of operating coolant loops required by item c above, restore the required number of coolant loops within 2 hours or open the reactor trip breakers. (L.1)

ACTION B — c. With no coolant loop in operation, [suspend all operations involving a reduction in boron concentration of the Reactor Coolant System***] (L.2) and immediately initiate corrective action to return the required coolant loop to operation.

SURVEILLANCE REQUIREMENTS

[4.4.1.3.1 The required residual heat removal loop(s) shall be determined OPERABLE per Specification 4.0.5.] (A.4)

SR 3.4.6.3 — 4.4.1.3.2 The required reactor coolant pump(s), [or RHR] (M.3) [if not in operation,] shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability. [Not required to be performed until 24 hours after a required pump is not in operation] (L.4)

SR 3.4.6.2 — 4.4.1.3.3 The required steam generator(s) shall be determined OPERABLE by verifying secondary side level to be [greater than or equal to 76% of wide range instrument span] [above the lower tap of the SG wide range level instrumentation by ≥ 420 inches] (L.5) at least once per 12 hours.

SR 3.4.6.1 — 4.4.1.3.4 At least one coolant loop shall be verified to be in operation [and circulating reactor coolant] (LA.2) at least once per 12 hours.

[*** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2.] (L.2)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

HOT SHUTDOWN

LIMITING CONDITION FOR OPERATION

LCO 3.4.6 3.4.1.3 a. The coolant loops listed below shall be OPERABLE and in operation as required by items b and c:

1. Reactor Coolant Loop 1 and its associated steam generator and reactor coolant pump,*
2. Reactor Coolant Loop 2 and its associated steam generator and reactor coolant pump,*
3. Reactor Coolant Loop 3 and its associated steam generator and reactor coolant pump,*
4. Reactor Coolant Loop 4 and its associated steam generator and reactor coolant pump,*
5. Residual Heat Removal - East,
6. Residual Heat Removal - West

LA.1

b. At least two of the above coolant loops shall be OPERABLE and at least one loop in operation if the reactor trip breakers are in the open position, or the control rod drive system is not capable of rod withdrawal.**

L.1

c. At least three of the above reactor coolant loops shall be OPERABLE and in operation when the reactor trip system breakers are in the closed position and the control rod drive system is capable of rod withdrawal.

APPLICABILITY: MODE 4

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* Operability of a reactor coolant loop(s) does not require an OPERABLE auxiliary feedwater system.

A.2

M.1

LCO 3.4.6 Note 1 — per 8 hour period

** All reactor coolant pumps and residual heat removal pumps may be de-energized [removed from operation] for up to 1 hour provided 1) no operations are permitted that would cause dilution of the reactor coolant system boron concentration***, and 2) core outlet temperature is maintained at least 10°F below saturation temperature.

A.3

L.2

*** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2.

Add proposed LCO 3.4.6 Note 2 — M.4

ITS 3.4.6

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

(M.2)

Add proposed Required Action A.2 Note (L.3)

ACTIONS A and B — a. With [one] less than the above required loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible; be in COLD SHUTDOWN within [20] [24] hours.

Add proposed Required Actions B.1 and B.2

b. With less than the number of operating coolant loops required by item c above, restore the required number of coolant loops within 2 hours or open the reactor trip breakers. (L.3) (L.1)

ACTION B — c. With no coolant loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System*** and immediately initiate corrective action to return the required coolant loop to operation. (L.2)

SURVEILLANCE REQUIREMENTS

4.4.1.3.1 The required residual heat removal loop(s) shall be determined OPERABLE per Specification 4.0.5. (A.4)

(M.3)

SR 3.4.6.3 — 4.4.1.3.2 The required reactor coolant pump(s) [or RHR], If not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability.

Not required to be performed until 24 hours after a required pump is not in operation (L.4)

SR 3.4.6.2 — 4.4.1.3.3 The required steam generator(s) shall be determined OPERABLE by verifying secondary side level to be greater than or equal to 76% of wide range instrument span at least once per 12 hours.

SR 3.4.6.1 — 4.4.1.3.4 At least one coolant loop shall be verified to be in operation and circulating reactor coolant at least once per 12 hours. (LA.2)

above the lower tap of the SG wide range level instrumentation by ≥ 418.77 inches (L.5)

*** For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.8.b.2. (L.2)

DISCUSSION OF CHANGES
ITS 3.4.6, RCS LOOPS - MODE 4

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.1.3 Footnote * states that the OPERABILITY of a reactor coolant loop does not require an OPERABLE Auxiliary Feedwater System. ITS LCO 3.4.6 does not include this detail. This changes the CTS by deleting the detail that OPERABILITY of the reactor coolant loops do not require an OPERABLE auxiliary feedwater system.

The purpose of the CTS 3.4.1.3 is to provide requirements for the RCS loops. However, the Auxiliary Feedwater (AFW) System is not normally part of the OPERABILITY requirements for an RCS loop. The AFW System requirements are covered in ITS 3.7.5. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3.4.1.3 Footnote ** allows all reactor coolant pumps to be de-energized. ITS LCO 3.4.6 Note 1 allows all reactor coolant pumps and RHR pumps to be removed from operation. This changes the word "de-energized" to "removed from operation."

The purpose of CTS 3.4.1.3 Footnote ** is to allow the pumps to not meet the requirement of CTS LCO 3.4.1.3 to be in operation. The change better reflects the deviation to the LCO. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 4.4.1.3.1 states that the required residual heat removal loop(s) shall be determined OPERABLE per Specification 4.0.5, the inservice testing Surveillance Requirements for ASME Code Class 1, 2, and 3 components. ITS 3.4.6 does not contain this explicit Surveillance Requirement. This changes the CTS by deleting the explicit requirement to perform the inservice testing Surveillance Requirements for ASME Code Class 1, 2, and 3 component.

The purpose of CTS 4.4.1.3.1 is to ensure the appropriate inservice testing Surveillance Requirements for ASME Code Class 1, 2, and 3 components are performed for the required residual heat removal loops. The inservice testing requirements of CTS 4.0.5 are retained in ITS 5.5.6, "Inservice Testing Program." See the Discussion of Changes for ITS 5.5 for any changes to the requirements of CTS 4.0.5. The explicit cross reference is not necessary because when the system is determined to be inoperable when tested in accordance with the inservice testing program, the plant procedures will require the RHR System to be declared inoperable and the appropriate ITS 3.4.6 ACTIONS will be entered when applicable. This change is designated as administrative because it does not result in technical changes to the CTS.

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DISCUSSION OF CHANGES
ITS 3.4.6, RCS LOOPS - MODE 4

MORE RESTRICTIVE CHANGES

M.1 CTS LCO 3.4.1.3.b states that at least two coolant loops shall be OPERABLE and at least one must be in operation. This requirement is modified by Footnote ** that states that all reactor coolant pumps and residual heat removal pumps may be de-energized for up to 1 hour. ITS 3.4.6 contains the same allowance, but limits the use of the 1 hour exception to once per 8 hour period.

The purpose of the 1 hour allowance is to allow a coolant loop to be removed from operation in order to place another loop in service. This change is acceptable because it helps ensure that boron stratification and inadequate decay heat removal do not occur should multiple 1 hour periods be required. This change is designated as more restrictive because it limits an allowance to 1 hour per 8 hour period, and that restriction does not currently exist.

M.2 CTS 3.4.1.3 Action a states that with less than the above required coolant loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status. ITS 3.4.6 ACTION A specifies the Required Action for one required loop inoperable. The Required Action is to immediately initiate action to restore a second loop to OPERABLE status. ITS 3.4.6 ACTION B specifies the Required Actions for when two required loops are inoperable. The Required Actions are to immediately suspend operations that would cause introduction into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1, and to initiate action to restore one loop to OPERABLE status and operation. This changes the CTS by revising the actions to immediately require actions to be taken when two required loops are inoperable.

This change is acceptable because it provides appropriate actions for two required cooling loops inoperable. Under these conditions, immediate action is necessary to ensure certain unit transients do not occur, and action is taken immediately to restore one loop to OPERABLE status to be able to remove the decay heat generated by the reactor. This change is designated as more restrictive because it requires immediate action in conditions for which the CTS does not require these actions.

M.3 CTS 4.4.1.3.2 states that the required reactor coolant pump(s), if not in operation, shall be determined OPERABLE by verifying correct breaker alignment and indicated power availability. ITS SR 3.4.6.3 requires verification that correct breaker alignment and indicated power are available to the required pump not in operation. ITS LCO 3.4.6 allows a combination of reactor coolant pumps and RHR pumps. This changes the CTS by requiring verification of correct breaker alignment and indicated power availability on required RHR pumps that are not in operation.

The purpose of the CTS is to ensure a standby pump is available to provide RCS cooling should the operating pump fail. This change is acceptable because the verification of proper breaker alignment and power availability ensures that an additional reactor coolant pump or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. This

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change is designated as more restrictive because it requires performance of the Surveillance on RHR pumps in addition to reactor coolant pumps.

M.4 The CTS do not include operating restrictions for starting reactor coolant pumps (RCPs) in MODE 4. However, CTS 3.4.1.4 Footnote ***, applicable in MODE 5 with reactor coolant loops filled, does provide a restriction that specifies that a reactor coolant pump shall not be started with one or more of the Reactor Coolant System (RCS) cold leg temperatures less than or equal to 152°F unless certain conditions exist. ITS 3.4.6 NOTE 2 includes the operating restrictions of this Footnote. This changes the CTS by requiring this operating restriction in MODE 4.

The purpose of CTS 3.4.1.4 Footnote *** is to provide operating restrictions on starting RCPs with one or more RCS cold leg temperatures ≤ 152 °F. The RCPs may be started with RCS cold leg temperature ≤ 152 °F if either the secondary side water temperature of each SG is < 50 °F above each RCS cold leg temperature or the pressurizer water level is < 62%. This change is acceptable because it will prevent a low temperature overpressurization event due to a thermal transient when a RCP is started. This change is designated as more restrictive because it expands the applicable MODES of this operating restriction.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.4.1.3 contains a description of what constitutes an OPERABLE reactor coolant loop and RHR loop. ITS 3.4.6 does not include this description of what constitutes an OPERABLE reactor coolant or RHR loop. This changes the CTS by moving the details of what constitutes an OPERABLE reactor coolant or RHR loop to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the coolant loops be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.1.3.4 states that at least one coolant loop shall be verified to be in operation and "circulating reactor coolant" at least once per 12 hours. ITS SR 3.4.6.1 states that an RHR or RCS loop shall be verified to be in operation every 12 hours. This changes the CTS by moving the requirement to verify that the coolant loop is circulating reactor coolant to the Bases.

The removal of this detail for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement that a reactor coolant loop be in operation. As described in the ITS Bases, verification that a reactor coolant loop is in operation includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 CTS LCO 3.4.1.3.c requires at least three reactor coolant loops to be in operation when the reactor trip breakers are in the closed position and the control rod drive system is capable of rod withdrawal. CTS 3.4.1.3 Action b specifies the compensatory actions for less than the number of required OPERABLE or operating coolant loops specified in CTS LCO 3.4.1.3.c. ITS LCO 3.4.6 requires two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops to be OPERABLE, and one loop to be in operation. This changes the CTS by deleting more restrictive coolant loop requirements based on the status of the Rod Control System. In addition, due to this change, the CTS LCO 3.4.1.3.b reference to the position of the reactor trip breakers or the capability of the control rod drive system is deleted.

The purpose of CTS 3.4.1.3, as described in the CTS Bases, is to ensure that sufficient RCS flow and cooling are provided for decay heat removal. In addition, the purpose of the CTS LCO 3.4.1.3.c requirement is to ensure the appropriate number of coolant loops are OPERABLE and in operation to support the safety analysis associated with the uncontrolled rod cluster control assembly bank withdrawal event from a subcritical condition. The original licensing basis for both Unit 1 and Unit 2 required two coolant loops to be OPERABLE and one loop to be in operation in MODE 4. The second reactor coolant pump (RCP) was included for single failure considerations. Requirements to ensure the assumptions for an uncontrolled rod cluster control assembly bank withdrawal event were only included in CTS 3.4.1.2, the MODE 3 RCS loops Technical Specification. This was consistent with the initial RCS temperature and pressure assumptions for the uncontrolled rod cluster control assembly bank withdrawal event, which corresponded to MODE 3. The Unit 2 Technical Specifications were amended (Amendment No. 82) in cycle 6 to reflect a transition from fuel manufactured by Westinghouse Electric Company to fuel manufactured by Exxon

Nuclear Company. As a part of this Amendment, requirements related to the number of RCPs required to be in operation were included in both the MODE 3 and MODE 4 RCS loop Technical Specifications (CTS 3.4.1.2 and CTS 3.4.1.3) to correspond to the initial condition of the Exxon Nuclear Company uncontrolled rod cluster control assembly bank withdrawal event. For consistency, the Unit 1 Technical Specifications were revised (Amendment No. 120) in a like manner, even though fuel manufactured by Exxon Nuclear Company was never used in Unit 1. Prior to cycle 8 for Unit 2, fresh reload fuel was again furnished by Westinghouse Electric Company using the Vantage 5 fuel assembly design. However, the CNP Technical Specifications were not amended to reflect the less restrictive assumptions of the Westinghouse uncontrolled rod cluster control assembly bank withdrawal event analysis. This change was not made because the requirements in the CTS were conservative relative to the initial conditions assumed in the Westinghouse analysis (i.e., the Exxon Nuclear Company uncontrolled rod cluster control assembly bank withdrawal event analysis assumed 3 RCPs in operation while the Westinghouse analysis for the same event assumes only 2 RCPs are in operation). CNP is now revising the CTS to be consistent with the current analysis, including only requiring Technical Specifications to control an uncontrolled rod cluster control assembly bank withdrawal event from a shutdown condition in MODE 3. This change is acceptable for the following reasons: a) It ensures alignment between the CNP Technical Specifications and the initial conditions assumed in the current uncontrolled rod cluster control assembly bank withdrawal event analysis; and b) It establishes consistency between the CNP Technical Specifications and the ISTS (NUREG-1431, ISTS LCO 3.4.6) and associated ISTS Bases, which do not assume an uncontrolled rod cluster control assembly bank withdrawal event in MODE 4. This is also consistent with the initial accident assumptions required by NUREG-0800, Section 15.4.1 (which discusses the review requirements for an uncontrolled rod cluster control assembly bank withdrawal event), and is consistent with the original CNP licensing basis prior to the transition to fuel manufactured by Exxon Nuclear Company (which did not require Technical Specifications to cover an uncontrolled rod cluster control assembly bank withdrawal event in MODE 4). This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.2 *(Category 4 – Relaxation of Required Action)* CTS LCO 3.4.1.3 Footnote ** states that all reactor coolant pumps and RHR pumps may be de-energized for up to 1 hour provided no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration. However, CTS LCO 3.4.1.3 Footnote *** clarifies that for purposes of this Specification, addition of water from the refueling water storage tank (RWST) does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.8.b.2. CTS 3.4.1.3 Action c states that when no coolant loops are in operation, all operations involving a reduction in boron concentration of the RCS must be suspended. CTS 3.4.1.3 Action c Footnote *** also provides the same clarification as is in CTS LCO 3.4.1.3 Footnote ***. The ITS LCO 3.4.6 Note states that all reactor coolant pumps and RHR pumps may be removed from operation provided no operations are permitted that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1,

DISCUSSION OF CHANGES
ITS 3.4.6, RCS LOOPS - MODE 4

"SHUTDOWN MARGIN (SDM)." ITS 3.4.6 Required Action B.1 states that operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1 must be suspended. This relaxes the CTS Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1.

The purpose of the CTS LCO 3.4.1.3 Footnote *** and CTS 3.4.1.3 Action c is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.3 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.3 Action a states that with less than the required coolant loops OPERABLE, the unit must be placed in COLD SHUTDOWN within 20 hours. ITS 3.4.6 Required Action A.2 states that when one required loop is inoperable, the unit must be placed in MODE 5 within 24 hours, but only if an RHR loop is OPERABLE. This changes the CTS by providing an exception to the requirement to be in MODE 5 and allowing 24 hours instead of 20 hours to reach MODE 5.

The purpose of CTS 3.4.1.3 Action a is to require the unit to be brought to a MODE in which the LCO does not apply. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. The revised actions provide appropriate compensatory measures for an inoperable loop. The CTS requires a cooldown to MODE 5 even if no RHR loops are OPERABLE (i.e., the only OPERABLE loop is an RCS loop.) With only an RCS loop OPERABLE, it is safer to stay in MODE 4 so that the steam generators can be used to remove decay heat. If a cooldown to MODE 5 is required, allowing 24 hours instead of 20 hours is consistent with the times provided in other Specifications, including ITS LCO 3.0.3, to transition from MODE 4 to MODE 5 and is a reasonable time to reach MODE 5 from MODE 4 in an orderly manner and without challenging unit

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DISCUSSION OF CHANGES
ITS 3.4.6, RCS LOOPS - MODE 4

systems. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.4 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.4.1.3.2 states that the required reactor coolant pump(s), if not in operation, shall be determined to be OPERABLE once per 7 days by verifying correct breaker alignments and indicated power availability. ITS SR 3.4.6.3 requires verification of correct breaker alignment and indicated power availability to the required pump that is not in operation every 7 days. It is modified by a Note that states "Not required to be performed until 24 hours after a required pump is not in operation." This changes the CTS by not requiring the SR to be performed until 24 hours after a pump is taken out of operation.

The purpose of CTS 4.4.1.3.2 is to ensure that the standby pump is ready to operate. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The Note provides time to perform the Surveillance to verify correct breaker alignment and indicated power availability. Without the Note, the Surveillance would not be met immediately after taking a pump out of operation. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.5 CTS 4.4.1.3.3 states that the required steam generator(s) shall be determined OPERABLE by verifying secondary side water level is greater than or equal to 76% of wide range instrument span. ITS SR 3.4.6.2 requires verification that the steam generator (SG) secondary side water levels are above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2) for the required RCS loops steam generators. This changes the CTS by changing the requirement to specifically state the required water level as referenced to a specific point external to the steam generators instead of using a specific indication from one instrument.

The purpose of CTS 4.4.1.3.3 is to provide assurance that the SG water level is above the top of the U-tubes. The change is acceptable since the proposed SG level will continue to ensure that the SG water level is above the top of the U-tubes, ensuring that an adequate secondary side heat sink is maintained. This requirement is also consistent with the NRC Safety Evaluation Report (SER) for License Amendments 224 (Unit 1) and 208 (Unit 2), dated November 27, 1998, which stated that the requirement is to ensure the U-tubes are covered. Also, as stated in the NRC SER, the current value, based on the wide range level instrument, is a conservative value. The ITS will continue to require a periodic check to ensure proper SG levels are maintained, and the Bases states that one method for verifying the SG water level is within the limit is to verify the SG water level is ≥ 79% wide range level instrument span (a second method using a SG water level ≥ 6% narrow range level instrument is also being included in the Bases). This change is defined as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6	LCO 3.4.6	Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

LCO 3.4.6 Note **

- NOTES -

1. All reactor coolant pumps (RCPs) and RHR pumps may be not in (removed from) operation for ≤ 1 hour per 8 hour period provided: ① TSTF-438

   a. No operations are permitted that would cause introduction (of coolant) into the RCS coolant with boron concentration less than required to meet the SDM (requirements) of LCO 3.1.1, and ③ "SHUTDOWN MARGIN (SDM)" ② ③

   b. Core outlet temperature is maintained at least 10°F below saturation temperature.

Doc M.4

2. No RCP shall be started with any RCS cold leg temperature ≤ [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] unless the secondary side water temperature of each steam generator (SG) is ≤ [50]°F above each of the RCS cold leg temperatures. INSERT 1 ①

APPLICABILITY: MODE 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a	A. One required loop inoperable.	A.1 Initiate action to restore a second loop to OPERABLE status. AND	Immediately

1

INSERT 1

Reactor coolant pumps shall not be started with one or more RCS cold leg temperatures ≤ 152°F unless the pressurizer water level is < 62% or the secondary water temperature of each steam generator is < 50°F above each of the RCS cold leg temperatures.

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a		A.2 - NOTE - Only required if RHR loop is ~~operable~~.		(5)
Action b		Be in ~~Mode~~ 5.	24 hours	(5)
Actions a and c	B. Two required loops inoperable. OR Required loop not in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS ~~coolant~~ with boron concentration less than required to meet the requirements ~~SDM~~ of LCO 3.1.1. AND B.2 Initiate action to restore one loop to OPERABLE status and operation.	Immediately Immediately	(2) (5)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.4.1.3.4	SR 3.4.6.1	Verify required RHR or RCS loop is in operation.	12 hours	
4.4.1.3.3	SR 3.4.6.2	Verify SG secondary side water levels are ~~≥ [17]%~~ above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2) for required RCS loops.	12 hours	(4)
4.4.1.3.2	SR 3.4.6.3	- NOTE - Not required to be performed until 24 hours after a required pump is not in operation. Verify correct breaker alignment and indicated power are available to each required pump.	7 days	

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.6, RCS LOOPS - MODE 4

1. The NOTE has been revised to be consistent with the current licensing basis as stated in CTS 3.4.1.4 Footnote ***.

2. Editorial change made for enhanced clarity.

3 These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

4. The SG water level value has been changed from referencing a specific instrument to referencing a required level above the lower tap of the SG wide range level instrumentation. This will allow the wide range level or narrow range level instrument (or other qualified indicator) to be used to ensure proper SG water level. This proposed water level will ensure the U-tubes are covered, which is the intent of the current wide range level instrument value.

5. Typographical/grammatical error corrected.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 RCS Loops - MODE 4

BASES

BACKGROUND

In MODE 4, the primary function of the reactor coolant is the removal of decay heat and the transfer of this heat to either the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

The reactor coolant is circulated through (four) RCS loops connected in parallel to the reactor vessel, each loop containing an SG, a reactor coolant pump (RCP), and appropriate flow, pressure, level, and temperature instrumentation for control, protection, and indication. The RCPs circulate the coolant through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and to prevent boric acid stratification. (1)

In MODE 4, either RCPs or RHR loops can be used to provide forced circulation. The intent of this LCO is to provide forced flow from at least one RCP or one RHR loop for decay heat removal and transport. The flow provided by one RCP loop or RHR loop is adequate for decay heat removal. The other intent of this LCO is to require that two paths be available to provide redundancy for decay heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 4, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RCS and RHR loops provide this circulation.

RCS Loops - MODE 4 satisfies Criterion 4 (3) of 10 CFR 50.36(c)(2)(ii). (2)

LCO

The purpose of this LCO is to require that at least two loops be OPERABLE in MODE 4 and that one of these loops be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS loops and RHR loops. Any one loop in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop is required to be OPERABLE to provide redundancy for heat removal.

Note 1 permits all RCPs or RHR pumps to be (removed from) operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are designed to validate various accident analyses values. One of (TSTF-438) (2) (3)

INSERT 1

(3) **INSERT 1**

the RCS pump or RHR pump to be removed from operation when switching operation from one RCS loop, or RHR loop or flowpath, to another

BASES

LCO (continued)

the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits the stopping of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

switch the loops

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by initial startup test procedures:

the

a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentrations less than required to meet SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation, and

the requirements

INSERT 2

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires that the secondary side water temperature of each SG be ≤ [50]°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature ≤ [275]°F [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR]. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

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or the pressurizer water level be < 62%

An OPERABLE RCS loop comprises an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level specified in SR 3.4.6.2.

INSERT 3

and

INSERT 4

Similarly for the RHR System, an OPERABLE RHR loop comprises an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RCPs and RHR pumps are

(2) **INSERT 2**

"SHUTDOWN MARGIN (SDM),"

(5) **INSERT 3**

. A SG is OPERABLE if it meets the requirements of

(2) **INSERT 4**

(either the east or west)

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BASES

LCO (continued)

OPERABLE if they are capable of being powered and are able to provide forced flow if required.

APPLICABILITY

In MODE 4, this LCO ensures forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. One loop of either RCS or RHR provides sufficient circulation for these purposes. However, two loops consisting of any combination of RCS and RHR loops are required to be OPERABLE to meet single failure considerations.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2,"
LCO 3.4.5, "RCS Loops - MODE 3,"
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled,"
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled,"
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6), and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1

If one required loop is inoperable, redundancy for heat removal is lost. Action must be initiated to restore a second RCS or RHR loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

A.2

If restoration is not accomplished and an RHR loop is OPERABLE, the unit must be brought to MODE 5 within 24 hours. Bringing the unit to MODE 5 is a conservative action with regard to decay heat removal. With only one RHR loop OPERABLE, redundancy for decay heat removal is lost and, in the event of a loss of the remaining RHR loop, it would be safer to initiate that loss from MODE 5 rather than MODE 4. The Completion Time of 24 hours is a reasonable time, based on operating experience, to reach MODE 5 from MODE 4 in an orderly manner and without challenging plant systems.

BASES

ACTIONS (continued)

This Required Action is modified by a Note which indicates that the unit must be placed in MODE 5 only if a RHR loop is OPERABLE. With no RHR loop OPERABLE, the unit is in a condition with only limited cooldown capabilities. Therefore, the actions are to be concentrated on the restoration of a RHR loop, rather than a cooldown of extended duration.

B.1 and B.2

If two required loops are inoperable or a required loop is not in operation, except during conditions permitted by Note 1 in the LCO section, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RCS or RHR loop to OPERABLE status and operation must be initiated. The required margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The immediate Completion Times reflect the importance of maintaining operation for decay heat removal. The action to restore must be continued until one loop is restored to OPERABLE status and operation.

requirements ② operations that would cause

SURVEILLANCE REQUIREMENTS

SR 3.4.6.1

This SR requires verification every 12 hours that the required RCS or RHR loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RCS and RHR loop performance.

and circulating reactor coolant ③

SR 3.4.6.2

SR 3.4.6.2 requires verification of SG OPERABILITY. SG OPERABILITY is verified by ensuring that the secondary side narrow range water level is ≥ [17]%. If the SG secondary side narrow range water level is < [17]%, the tubes may become uncovered and the associated loop may not be capable of providing the heat sink necessary for removal of decay heat. The 12 hour Frequency is considered adequate in view of other

INSERT 5 ② ④ INSERT 6 ③

(2) **INSERT 5**

above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)

(3) **INSERT 6**

The water level can be verified by either the wide range or the narrow range level instruments. A narrow range level instrument ≥ 6% or a wide range level instrument ≥ 79% ensures the Surveillance Requirement limit is met.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

indications available in the control room to alert the operator to the loss of SG level.

SR 3.4.6.3

Verification that each required pump is OPERABLE ensures that an additional RCS or RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. (6) The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation. ← INSERT 7 (6)

REFERENCES None.

(6) **INSERT 7**

This is acceptable because proper breaker alignment and power availability are ensured if a pump is operating.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.6 BASES, RCS LOOPS - MODE 4

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. Changes are made to reflect those changes made to the ISTS.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

5. Editorial change made for enhanced clarity.

6. The Bases of ISTS SR 3.4.6.3 state that "Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability." The Note to SR 3.4.6.3 clearly states that the SR is only required to be performed after a required pump is not in operation. Therefore, the SR does not need to be performed for operating pumps and the statement that there is an alternative method of verification is not necessary. The statement is essentially justifying why the Note to the SR is allowed. As such, a similar statement has been added to the paragraph describing the Note allowance.

7. Grammatical error correcteed.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.6, RCS LOOPS - MODE 4

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L.1

CNP is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below is the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS LCO 3.4.1.3.c requires at least three reactor coolant loops to be in operation when the reactor trip breakers are in the closed position and the control rod drive system is capable of rod withdrawal. CTS 3.4.1.3 Action b specifies the compensatory actions for less than the number of required OPERABLE or operating coolant loops specified in CTS LCO 3.4.1.3.c. ITS LCO 3.4.6 requires two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops to be OPERABLE, and one loop to be in operation. This changes the CTS by deleting more restrictive coolant loop requirements based on the status of the Rod Control System. In addition, due to this change, the CTS LCO 3.4.1.3.b reference to the position of the reactor trip breakers or the capability of the control rod drive system is deleted.

The purpose of CTS 3.4.1.3, as described in the CTS Bases, is to ensure that sufficient RCS flow and cooling are provided for decay heat removal. In addition, the purpose of the CTS LCO 3.4.1.3.c requirement is to ensure the appropriate number of coolant loops are OPERABLE and in operation to support the safety analysis associated with the uncontrolled rod cluster control assembly bank withdrawal event from a subcritical condition. The original licensing basis for both Unit 1 and Unit 2 required two coolant loops to be OPERABLE and one loop to be in operation in MODE 4. The second reactor coolant pump (RCP) was included for single failure considerations. Requirements to ensure the assumptions for an uncontrolled rod cluster control assembly bank withdrawal event were only included in CTS 3.4.1.2, the MODE 3 RCS loops Technical Specification. This was consistent with the initial RCS temperature and pressure assumptions for the uncontrolled rod cluster control assembly bank withdrawal event, which corresponded to MODE 3. The Unit 2 Technical Specifications were amended (Amendment No. 82) in cycle 6 to reflect a transition from fuel manufactured by Westinghouse Electric Company to fuel manufactured by Exxon Nuclear Company. As a part of this Amendment, requirements related to the number of RCPs required to be in operation were included in both the MODE 3 and MODE 4 RCS loop Technical Specifications (CTS 3.4.1.2 and CTS 3.4.1.3) to correspond to the initial condition of the Exxon Nuclear Company uncontrolled rod cluster control assembly bank withdrawal event. For consistency, the Unit 1 Technical Specifications were revised (Amendment No. 120) in a like manner, even though fuel manufactured by Exxon Nuclear Company was never used in Unit 1. Prior to cycle 8 for Unit 2, fresh reload fuel was again furnished by Westinghouse Electric Company using the Vantage 5 fuel assembly design. However, the CNP Technical Specifications were not amended to reflect the less restrictive assumptions of the Westinghouse uncontrolled rod cluster control assembly bank withdrawal event analysis. This change was not made because the requirements in the CTS were conservative relative to the initial conditions assumed in the Westinghouse analysis (i.e., the Exxon Nuclear Company uncontrolled rod cluster control assembly bank withdrawal event analysis assumed 3 RCPs in operation while the Westinghouse analysis for the same event assumes only 2 RCPs are in operation).

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.6, RCS LOOPS - MODE 4

CNP is now revising the CTS to be consistent with the current analysis, including only requiring Technical Specifications to control an uncontrolled rod cluster control assembly bank withdrawal event from a shutdown condition in MODE 3. This change is acceptable for the following reasons: a) It ensures alignment between the CNP Technical Specifications and the initial conditions assumed in the current uncontrolled rod cluster control assembly bank withdrawal event analysis; and b) It establishes consistency between the CNP Technical Specifications and the ISTS (NUREG-1431, ISTS LCO 3.4.6) and associated ISTS Bases, which do not assume an uncontrolled rod cluster control assembly bank withdrawal event in MODE 4. This is also consistent with the initial accident assumptions required by NUREG-0800, Section 15.4.1 (which discusses the review requirements for an uncontrolled rod cluster control assembly bank withdrawal event), and is consistent with the original CNP licensing basis prior to the transition to fuel manufactured by Exxon Nuclear Company (which did not require Technical Specifications to cover an uncontrolled rod cluster control assembly bank withdrawal event in MODE 4). This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed change deletes the dependence of coolant loop requirements on the capability of Rod Control System to be able to withdraw control rods and revises the LCO and actions consistent with the initial licensing basis and also consistent with the ISTS. This change will not affect the probability of an accident, since the OPERABILITY or operation of coolant loops is not considered as an initiator of an analyzed accident. The consequences of an analyzed accident will be bounded by the UFSAR analysis. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed change deletes the dependence of coolant loop requirements on the capability of Rod Control System to be able to withdraw control rods, and revises the LCO and actions consistent with the initial licensing basis and consistent with the ISTS. This change will not physically alter the plant (no new or different type of equipment will be installed), and no new or revised operator actions are proposed. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.6, RCS LOOPS - MODE 4

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

   Response: No.

   The proposed change deletes the dependence of coolant loop requirements on the capability of Rod Control System to be able to withdraw control rods, and revises the LCO and actions consistent with the initial licensing basis and consistent with the ISTS. The margin of safety is not affected by this change because the safety analysis assumptions are not affected. The UFSAR analysis will bound the consequences of an uncontrolled rod cluster control assembly bank withdrawal event. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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

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DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.6, RCS LOOPS - MODE 4

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L.5

CNP is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below is the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 4.4.1.3.3 states that the required steam generator(s) shall be determined OPERABLE by verifying secondary side water level is greater than or equal to 76% of wide range instrument span. ITS SR 3.4.6.2 requires verification that the steam generator (SG) secondary side water levels are above the top of the U-tubes for the required RCS loops. This changes the CTS by changing the requirement to specifically state the required water level as referenced to a specific point inside the steam generators in lieu of using a specific indication from one instrument.

The purpose of CTS 4.4.1.3.3 is to provide assurance that the SG water level is above the top of the U-tubes. The change is acceptable since the proposed SG level will continue to ensure that the SG water level is above the top of the U-tubes, ensuring that an adequate secondary side heat sink is maintained. This requirement is also consistent with the NRC Safety Evaluation Report (SER) for Amendments 224 (Unit 1) and 208 (Unit 2), dated November 27, 1998, which stated that the requirement is to ensure the U-tubes are covered. Also, as stated in the NRC SER, the current value, based on the wide range instrument, is a conservative value. The ITS will continue to require a periodic check to ensure proper SG levels are maintained, and the Bases states that one method for verifying the SG water level is within the limit is to verify the SG water level is ≥ 76% wide range instrument span (a second method, using the narrow range instrument, is also being included in the Bases). This change is defined as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed change deletes the requirement that the steam generator secondary side water level limit be referenced to a wide range instrument level, and allows the limit to be referenced to a specific point inside the steam generator. This change will not affect the probability of an accident, since the steam generator wide range instrument is not considered as an initiator of an analyzed accident. The consequences of an analyzed accident are not affected by this change since the steam generator water level is still required to be maintained above the top of the U-tubes, consistent with the purpose of maintaining a specific wide range water level. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed change deletes the requirement that the steam generator secondary side water level limit be referenced to a wide range instrument level, and allows the limit to be referenced to a specific point inside the steam generator. This change will not physically alter the plant (no new or different type of equipment will be installed), and no new or revised operator actions are proposed. The changes in the method to verify steam generator water level is above the top of the U-tubes is consistent with plant design and capability. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   Response: No.

   The proposed change deletes the requirement that the steam generator secondary side water level limit be referenced to a wide range instrument level, and allows the limit to be referenced to a specific point inside the steam generator. The margin of safety is not affected by this change because the safety analysis assumptions are not affected. The SG water level is still required to be maintained above the top of the U-tubes, ensuring that an adequate secondary side heat sink is maintained. This requirement is also consistent with the NRC SER for License Amendments 224 (Unit 1) and 208 (Unit 2), dated November 27, 1998, which stated that the requirement is to ensure the U-tubes are covered. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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

ATTACHMENT 7

ITS 3.4.7, RCS Loops - MODE 5, LOOPS Filled

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.7

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

LCO 3.4.7 — 3.4.1.4 At least one residual heat removal (RHR) loop† shall be OPERABLE and in operation*, and either:

a. One additional RHR loop shall be OPERABLE**, or

b. The secondary side water level of at least two steam generators shall be greater than or equal to 76% of wide range instrument span. [above the lower tap of the SG wide range level instrumentation by ≥ 420 inches] (L.3)

APPLICABILITY: MODE 5 with reactor coolant loops filled.***

ACTION:

ACTIONS A and B — a. With one of the RHR loops inoperable and with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible. [Add proposed Condition C first part] (M.1)

ACTION C — b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation. (L.1) [OPERABLE status and] [one] (M.1)

SURVEILLANCE REQUIREMENTS

SR 3.4.7.2 — 4.4.1.4.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

SR 3.4.7.1 — 4.4.1.4.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours. (LA.1) (M.2)

[Add proposed SR 3.4.7.3] (M.3)

LCO 3.4.7 Note 1 — * The RHR pump may be deenergized for up to 1 hour [per 8 hour period] provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration,†† and (2) core outlet temperature is maintained at least 10°F below saturation temperature. (L.1)

LCO 3.4.7 Note 2 — ** One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

LCO 3.4.7 Note 3 — *** A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 152°F unless (1) the pressurizer water volume is less than 62% of span or (2) the secondary water temperature of each steam generator is less than 50°F above each of the Reactor Coolant System cold leg temperatures. Operability of a reactor coolant loop(s) does not require an OPERABLE auxiliary feedwater system. (See ITS 3.4.12)

† The normal or emergency power source may be inoperable. (A.2)

†† For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.7.b.2. (L.1)

[Add proposed LCO 3.4.7 Note 4] (L.2)

ITS 3.4.7

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

LCO 3.4.7 — 3.4.1.4 At least one residual heat removal (RHR) loop† shall be OPERABLE and in operation*, and either:

a. One additional RHR loop shall be OPERABLE**, or

b. The secondary side water level of at least two steam generators shall be greater than or equal to 76% of wide range instrument span. [above the lower tap of the SG wide range level instrumentation by ≥ 418.77 inches] (L.3)

APPLICABILITY: MODE 5 with reactor coolant loops filled.***

ACTION:

ACTIONS A and B — a. With one of the RHR loops inoperable and with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible. [Add proposed Condition C first part] (M.1)

ACTION C — b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation. (L.1) [OPERABLE status and] [one] (M.1)

SURVEILLANCE REQUIREMENTS

SR 3.4.7.2 — 4.4.1.4.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

SR 3.4.7.1 — 4.4.1.4.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours. (LA.1)

[Add proposed SR 3.4.7.3] (M.2)

[per 8 hour period] (M.3)

LCO 3.4.7 Note 1 — * The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration,†† and (2) core outlet temperature is maintained at least 10°F below saturation temperature. (L.1)

LCO 3.4.7 Note 2 — ** One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

LCO 3.4.7 Note 3 — *** A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 152°F unless (1) the pressurizer water volume is less than 62% of span or (2) the secondary water temperature of each steam generator is less than 50°F above each of the Reactor Coolant System cold leg temperatures. Operability of a reactor coolant loop(s) does not require an OPERABLE auxiliary feedwater system. (See ITS 3.4.12)

† The normal or emergency power source may be inoperable. (A.2)

†† For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.7.b.2. (L.1)

[Add proposed LCO 3.4.7 Note 4] (L.2)

DISCUSSION OF CHANGES
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.1.4 states that residual heat removal (RHR) loops shall be OPERABLE. Footnote † to the LCO states that the OPERABLE RHR loops may have inoperable offsite or emergency power sources. ITS 3.4.7 does not contain a specific allowance for an OPERABLE RHR loop to have an offsite or emergency power source inoperable.

This change is acceptable because the ITS definition of OPERABLE - OPERABILITY requires an OPERABLE component to have only a normal or an emergency power source. This change to the CTS definition of OPERABLE - OPERABILITY is discussed in the ITS Section 1.0 Discussion of Changes. Given this change to the definition of OPERABLE - OPERABILITY, a specific allowance for the RHR loops is not required. This change is designated as editorial as it replaces a specific exception with an ITS change in the definition of OPERABLE - OPERABILITY.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.1.4 Actions do not include Actions for when there are no required RHR loops OPERABLE. ITS 3.4.7 ACTION C includes this Condition and requires the immediate suspension of operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1, and to immediately initiate action to restore one RHR loop to OPERABLE status and operation. This changes the CTS by adding the explicit requirements to ITS 3.4.7.

The purpose of ITS 3.4.7 ACTION C is to provide the appropriate compensatory action for inoperable RHR loops. This change is acceptable because it provides additional assurance that the appropriate compensatory actions will be taken with no RHR loops OPERABLE. This change is designated as more restrictive, because it adds an explicit ACTION for which there is no CTS Action.

M.2 CTS 3/4.4.1.4 does not contain an explicit Surveillance Requirement to verify correct breaker alignment and indicated power for the required RHR pump that is not in operation. ITS SR 3.4.7.3 requires this SR to be conducted every 7 days, however the SR is not required to be performed until 24 hours after a required pump is not in operation. This changes the CTS by adding the ITS requirement of SR 3.4.7.3.

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DISCUSSION OF CHANGES
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

The purpose of ITS SR 3.4.7.3 is to ensure the RHR pump can start, if necessary. This change is acceptable because it provides additional assurance that the RHR pump will have power for immediate startup, if necessary. This change is designated as more restrictive, because it adds a SR to the CTS.

M.3 CTS 3.4.1.4 states the number of coolant loops that shall be OPERABLE, and states that at least one RHR loop must be in operation. This requirement is modified by a note that states that the RHR pump may be de-energized for up to 1 hour. ITS 3.4.7 contains the same allowance, but limits the use of the 1 hour exception to once per 8 hour period.

The purpose of the 1 hour allowance is to allow the RHR pump to be removed from operation in order to place the other RHR pump in service. This change is acceptable because it helps ensure that boron stratification and inadequate decay heat removal do not occur should multiple 1 hour periods be required. This change is designated as more restrictive because it limits an allowance to 1 hour per 8 hour period, and that restriction does not currently exist.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.1.4.2 states that at least one RHR loop shall be determined to be in operation and "circulating reactor coolant" at least once per 12 hours. ITS SR 3.4.7.1 states that an RHR loop shall be verified to be in operation every 12 hours. This changes the CTS by moving the requirement to verify that the RHR loop is circulating reactor coolant to the Bases.

The removal of this detail for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement that a reactor coolant loop be in operation. As described in the ITS Bases, verification that a reactor coolant loop is in operation includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.4 Footnote * states that the RHR pump may be deenergized for up to 1 hour provided no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration. However, CTS 3.4.1.4 Footnote †† clarifies that for purposes of this Specification, addition of water from the refueling water storage tank (RWST) does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.7.b.2. CTS 3.4.1.4 Action b states that when no RHR loop is in operation, all operations involving a reduction in boron concentration of the RCS must be suspended. ITS LCO 3.4.7 Note 1 states that the RHR pump of the loop in operation may be removed from operation provided no operations are permitted that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1, "SHUTDOWN MARGIN (SDM)." ITS 3.4.7 Required Action C.1 states that operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1 must be suspended. This relaxes the CTS Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1.

The purpose of the CTS 3.4.1.4 LCO Footnote †† and Action b is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.4.1.4 places OPERABILITY requirements for the RHR loops to be OPERABLE and operating. ITS 3.4.7 specifies the same requirements; however, ITS LCO 3.4.7 Note 4 allows all RHR loops to be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation. This changes the CTS by adding this allowance during planned heatup operations to MODE 4.

The purpose of CTS LCO 3.4.1.4 is to ensure there is sufficient forced circulation to prevent boric acid stratification and to provide forced flow for decay heat removal and transport. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. This

DISCUSSION OF CHANGES
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

change allows an RCS loop to be in operation instead of an RHR loop. The RCS loop simply replaces the function of the RHR loop. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.3 CTS 3.4.1.4.b states that the secondary side water level of at least two steam generators shall be greater than or equal to 76% of wide range instrument span. ITS LCO 3.4.7.b requires the secondary side water level of at least two steam generators to be above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2). This changes the CTS by changing the requirement to specifically state the required water level as referenced to a specific point external to the steam generators instead of using a specific indication from one instrument.

The purpose of CTS 3.4.1.4.b is to provide assurance that the SG water level is above the top of the U-tubes. The change is acceptable since the proposed SG level will continue to ensure that the SG water level is above the top of the U-tubes, ensuring that an adequate secondary side heat sink is maintained. This requirement is also consistent with the NRC Safety Evaluation Report (SER) for License Amendments 224 (Unit 1) and 208 (Unit 2), dated November 27, 1998, which stated that the requirement is to ensure the U-tubes are covered. Also, as stated in the NRC SER, the current value, based on the wide range level instrument, is a conservative value. The ITS will continue to require a periodic check to ensure proper SG levels are maintained, and the Bases states that one method for verifying the SG water level is within the limit is to verify the SG water level is ≥ 79% wide range level instrument span (a second method, using a SG water level ≥ 6% narrow range level instrument, is also being included in the Bases). This change is defined as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2) (5)

3.4.1.4 LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

(1) (2)

One additional

a. ~~The non-operating~~ RHR loop shall be OPERABLE or (;)

b. The secondary side water level of at least [two] steam generators (SGs) shall be ≥ [17%]. (3) (5)

TSTF-438

- NOTES -

Footnote * 1. The RHR pump of the loop in operation may be ~~not in~~ removed from operation for ≤ 1 hour per 8 hour period provided:

a. No operations are permitted that would cause introduction of coolant into the RCS ~~coolant~~ with boron concentration less than required to meet the ~~SDM~~ "SHUTDOWN MARGIN (SDM)" requirements of LCO 3.1.1; and (1)

b. Core outlet temperature is maintained at least 10°F below saturation temperature.

Footnote ** 2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

Footnote *** 3. ~~No reactor coolant pump shall be started with one or more RCS cold leg temperatures ≤ [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] unless the secondary side water temperature of each SG is ≤ [50]°F above each of the RCS cold leg temperatures.~~ INSERT 1 (4)

DOC L.2 4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation. (4)

APPLICABILITY: MODE 5 with RCS Loops Filled (.) (1)

4

INSERT 1

Reactor coolant pumps shall not be started with one or more RCS cold leg temperatures ≤ 152°F unless the pressurizer water level is < 62% or the secondary water temperature of each steam generator is < 50°F above each of the RCS cold leg temperatures.

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CTS

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a	A. One required RHR loop inoperable. AND One RHR loop OPERABLE.	A.1 Initiate action to restore a second RHR loop to OPERABLE status. OR A.2 Initiate action to restore required SGs secondary side water level to within limit.	Immediately Immediately
Action a	B. One or more required SGs with secondary side water level not within limit. AND One RHR loop OPERABLE.	B.1 Initiate action to restore a second RHR loop to OPERABLE status. OR B.2 Initiate action to restore required SGs secondary side water level to within limit.	Immediately Immediately
Action b	C. No required RHR loops OPERABLE. OR Required RHR loop not in operation.	C.1 Suspend operations that would cause introduction of coolant into the RCS ~~coolant~~ with boron concentration less than required to meet the requirements ~~SDM~~ of LCO 3.1.1. AND C.2 Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately Immediately

} 1

CTS

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY
4.4.1.4.2	SR 3.4.7.1	Verify required RHR loop is in operation.	12 hours
4.4.1.4.1	SR 3.4.7.2	Verify SG secondary side water level is ≥ [17]% in required SGs. [above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)]	12 hours (5)
DOC M.3	SR 3.4.7.3	- NOTE - Not required to be performed until 24 hours after a required pump is not in operation.	
		Verify correct breaker alignment and indicated power are available to each required RHR pump.	7 days

above the lower tap of the SG wide range level instrumentation by ≥420 inches (Unit 1) and ≥418.77 inches (Unit 2)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

1. Editorial/grammatical change made for enhanced clarity.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. The brackets are removed and the proper plant specific information/value is provided.

4. The NOTE has been revised to be consistent with the current licensing basis as stated in CTS 3.4.1.4 Footnote ***.

5. The SG water level value has been changed from referencing a specific instrument to referencing a required level above the lower tap of the SG wide range level instrumentation. This will allow the wide range level or narrow range level instrument (or other qualified indicator) to be used to ensure proper SG water level. This proposed water level will ensure the U-tubes are covered, which is the intent of the current wide range level instrument value.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.7 RCS Loops - MODE 5, Loops Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops filled, the primary function of the reactor coolant is the removal of decay heat and transfer this heat either to the steam generator (SG) secondary side coolant via natural circulation (Ref. 1) or the component cooling water via the residual heat removal (RHR) heat exchangers. While the principal means for decay heat removal is via the RHR System, the SGs via natural circulation (Ref. 1) are specified as a backup means for redundancy. Even though the SGs cannot produce steam in this MODE, they are capable of being a heat sink due to their large contained volume of secondary water. As long as the SG secondary side water is at a lower temperature than the reactor coolant, heat transfer will occur. The rate of heat transfer is directly proportional to the temperature difference. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

In MODE 5 with RCS loops filled, the reactor coolant is circulated by means of two RHR loops connected to the RCS, each loop containing an RHR heat exchanger, an RHR pump, and appropriate flow and temperature instrumentation for control, protection, and indication. One RHR pump circulates the water through the RCS at a sufficient rate to prevent boric acid stratification.

The number of loops in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR loop for decay heat removal and transport. The flow provided by one RHR loop is adequate for decay heat removal. The other intent of this LCO is to require that a second path be available to provide redundancy for heat removal.

The LCO provides for redundant paths of decay heat removal capability. The first path can be an RHR loop that must be OPERABLE and in operation. The second path can be another OPERABLE RHR loop or maintaining two SGs with secondary side water levels ≥ [17]% to provide an alternate method for decay heat removal via natural circulation (Ref.1). (3)

INSERT 1

(3) **INSERT 1**

above the lower tap of the SG wide range level instrumentation by $\geq$ 420 inches (Unit 1) and $\geq$ 418.77 inches (Unit 2)

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BASES

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops - MODE 5 (Loops Filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least one of the RHR loops be OPERABLE and in operation with an additional RHR loop OPERABLE or two SGs with secondary side water level ≥ [17]%. One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to meet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is two SGs with their secondary side water levels ≥ [17]%. Should the operating RHR loop fail, the SGs could be used to remove the decay heat via natural circulation.

Note 1 permits all RHR pumps to (be) be (in) operation ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests designed to validate various accident analyses values. One of the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not likely during this short period with no forced flow.

Utilization of Note 1 is permitted provided the following conditions are met, along with any other conditions imposed by initial startup test procedures:

a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentrations less than required to meet SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation and

(3) **INSERT 1A**

above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)

(2) **INSERT 2**

the RHR pump to be removed from operation when switching operation from one RHR loop or flowpath to another.

(2) **INSERT 3**

switch the RHR loops

INSERT 4

Not Used

(2) **INSERT 5**

"SHUTDOWN MARGIN (SDM),"

BASES

LCO (continued)

b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 allows one RHR loop to be inoperable for a period of up to 2 hours, provided that the other RHR loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when such testing is safe and possible.

Note 3 requires that the secondary side water temperature of each SG be ≤ [50]°F above each of the RCS cold leg temperatures before the start of a reactor coolant pump (RCP) with an RCS cold leg temperature ≤ [275]°F [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR]. This restriction is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

or the pressurizer water level be < 62% (15L) (3)

Note 4 provides for an orderly transition from MODE 5 to MODE 4 during a planned heatup by permitting removal of RHR loops from operation when at least one RCS loop is in operation. This Note provides for the transition to MODE 4 where an RCS loop is permitted to be in operation and replaces the RCS circulation function provided by the RHR loops.

RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow [if required]. An OPERABLE SG can perform as a heat sink via natural circulation when it has an adequate water level and is OPERABLE in accordance with the Steam Generator [Tube Surveillance] Program. (4) (5)

APPLICABILITY

In MODE 5 with RCS loops filled, this LCO requires forced circulation of the reactor coolant to remove decay heat from the core and to provide proper boron mixing. One loop of RHR provides sufficient circulation for these purposes. However, one additional RHR loop is required to be OPERABLE, or the secondary side water level of at least [two] SGs is required to be ≥ [17]%. (1) (3)

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2";
LCO 3.4.5, "RCS Loops - MODE 3";
LCO 3.4.6, "RCS Loops - MODE 4"; and
LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." (6)

above the lower tap of the SG wide range water level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)

BASES

APPLICABILITY (continued)

LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6), and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1, A.2, B.1 and B.2

If one RHR loop is OPERABLE and the required SGs have secondary side water levels < [17]%, redundancy for heat removal is lost. Action must be initiated immediately to restore a second RHR loop to OPERABLE status or to restore the secondary side water levels to within limits for the required SGs. Either Required Action will restore redundant heat removal paths. The Immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

C.1 and C.2

If a required RHR loop is not in operation, except during conditions permitted by Note 1, or if no required loop is OPERABLE, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action to restore one RHR loop to OPERABLE status and operation must be initiated. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The Immediate Completion Times reflect the importance of maintaining operation for heat removal.

SURVEILLANCE REQUIREMENTS

SR 3.4.7.1

This SR requires verification every 12 hours that the required loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

(3) (4) **INSERT 6**

above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2) or one required RHR loop is inoperable

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.7.2

INSERT 6A

Verifying that at least two SGs are OPERABLE by ensuring their secondary side narrow range water levels are ≥ 17% ensures an alternate decay heat removal method via natural circulation in the event that the second RHR loop is not OPERABLE. If both RHR loops are OPERABLE, this Surveillance is not needed. The 12 hour Frequency is considered adequate in view of other indications available in the control room to alert the operator to the loss of SG level. ③ ②

INSERT 6B

SR 3.4.7.3

Verification that each required RHR pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required RHR pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. If secondary side water level is ≥ 17% in at least two SGs, this Surveillance is not needed. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience. ⑤ ③

INSERT 6A

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation. ← INSERT 7 ⑤

REFERENCES

1. NRC Information Notice 95-35, "Degraded Ability of Steam Generators to Remove Decay Heat by Natural Circulation."

(3) **INSERT 6A**

above the lower tap of the SG wide range level instrumentation by ≥ 420 inches (Unit 1) and ≥ 418.77 inches (Unit 2)

(2) **INSERT 6B**

The water level can be verified by either the wide range or the narrow range level instruments. A narrow range level instrument ≥ 6% or a wide range level instrument ≥ 79% ensures the Surveillance Requirement limit is met.

(5) **INSERT 7**

This is acceptable because proper breaker alignment and power availability are ensured if a pump is operating.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.7 BASES, RCS LOOPS - MODE 5, LOOPS FILLED

1. The brackets have been removed and the proper plant specific information/value has been provided.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Changes are made to reflect those changes made to the ISTS.

4. The Bases has been revised to reflect the ISTS.

5. The Bases of ISTS SR 3.4.7.3 state that "Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability." The Note to SR 3.4.7.3 clearly states that the SR is only required to be performed after a required pump is not in operation. Therefore, the SR does not need to be performed for operating pumps and the statement that there is an alternative method of verification is not necessary. The statement is essentially justifying why the Note to the SR is allowed. As such, a similar statement has been added to the paragraph describing the Note allowance.

6. Grammatical error corrected.

7. These punctuation corrections have been made to be consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L.3

CNP is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below is the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.4.1.4.b states that the secondary side water level of at least two steam generators shall be greater than or equal to 76% of wide range instrument span. ITS LCO 3.4.7.b requires the secondary side water level of at least two steam generators to be above the top of the U-tubes. This changes the CTS by changing the requirement to specifically state the required water level as referenced to a specific point inside the steam generators in lieu of using a specific indication from one instrument.

The purpose of CTS 3.4.1.4.b is to provide assurance that the SG water level is above the top of the U-tubes. The change is acceptable since the proposed SG level will continue to ensure that the SG water level is above the top of the U-tubes, ensuring that an adequate secondary side heat sink is maintained. This requirement is also consistent with the NRC Safety Evaluation Report (SER) for License Amendments 224 (Unit 1) and 208 (Unit 2), dated November 27, 1998, which stated that the requirement is to ensure the U-tubes are covered. Also, as stated in the NRC SER, the current value, based on the wide range instrument, is a conservative value. The ITS will continue to require a periodic check to ensure proper SG levels are maintained, and the Bases states that one method for verifying the SG water level is within the limit is to verify the SG water level is ≥ 76% wide range instrument span (a second method, using the narrow range instrument, is also being included in the Bases). This change is defined as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed change deletes the requirement that the steam generator secondary side water level limit be referenced to a wide range instrument level, and allows the limit to be referenced to a specific point inside the steam generator. This change will not affect the probability of an accident, since the steam generator wide range instrument is not considered as an initiator of an analyzed accident. The consequences of an analyzed accident are not affected by this change since the steam generator water level is still required to be maintained above the top of the U-tubes, consistent with the purpose of

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.7, RCS LOOPS - MODE 5, LOOPS FILLED

maintaining a specific wide range water level. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed change deletes the requirement that the steam generator secondary side water level limit be referenced to a wide range instrument level, and allows the limit to be referenced to a specific point inside the steam generator. This change will not physically alter the plant (no new or different type of equipment will be installed), and no new or revised operator actions are proposed. The changes in the method to verify steam generator water level is above the top of the U-tubes is consistent with plant design and capability. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   Response: No.

   The proposed change deletes the requirement that the steam generator secondary side water level limit be referenced to a wide range instrument level, and allows the limit to be referenced to a specific point inside the steam generator. The margin of safety is not affected by this change because the safety analysis assumptions are not affected. The SG water level is still required to be maintained above the top of the U-tubes, ensuring that an adequate secondary side heat sink is maintained. This requirement is also consistent with the NRC SER for License Amendments 224 (Unit 1) and 208 (Unit 2), dated November 27, 1998, which stated that the requirement is to ensure the U-tubes are covered. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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

ATTACHMENT 8

ITS 3.4.8, RCS Loops - MODE 5, Loops Not Filled

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

LCO 3.4.8 — 3.4.1.5 At least two residual heat removal (RHR) loops† shall be OPERABLE** and at least one RHR loop shall be in operation.*

APPLICABILITY: MODE 5 with reactor coolant loops not filled.

ACTION:

ACTION A — a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible. (M.1)

Add proposed Condition B first part

ACTION B — b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation. (L.1)

one — OPERABLE status and (M.1)

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1 — 4.4.1.5 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours. (LA.1)

Add proposed SR 3.4.8.2 (M.2)

(M.3)

LCO 3.4.8 Note 1 — * The RHR pump may be deenergized for up to 1 hour provided (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration,†† and (2) core outlet temperature is maintained at least 10°F below saturation temperature. (L.1)

Add proposed LCO 3.4.8 Note 1 part c (M.3)

LCO 3.4.8 Note 2 — ** One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

† The normal or emergency power source may be inoperable. (A.2)

†† For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.7.b.2. (L.1)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS NOT FILLED

LIMITING CONDITION FOR OPERATION

LCO 3.4.8 — 3.4.1.5 At least two residual heat removal (RHR) loops† shall be OPERABLE** and at least one RHR loop shall be in operation.*

APPLICABILITY: MODE 5 with reactor coolant loops not filled.

ACTION:

ACTION A — a. With less than the above required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible. (M.1)

Add proposed Condition B first part

ACTION B — b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required [one] RHR loop to [OPERABLE status and] operation. (L.1) (M.1)

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1 — 4.4.1.5 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours. (LA.1)

Add proposed SR 3.4.8.2 (M.2)

(M.3)

LCO 3.4.8 Note 1 — * The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration,†† and (2) core outlet temperature is maintained at least 10°F below saturation temperature. (L.1)

Add proposed LCO 3.4.8 Note 1 part c (M.3)

LCO 3.4.8 Note 2 — ** One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

† The normal or emergency power source may be inoperable. (A.2)

†† For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.7.b.2. (L.1)

A.1

3/4.4 REACTOR COOLANT SYSTEM

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DISCUSSION OF CHANGES
ITS 3.4.8, RCS LOOP - MODE 5, LOOPS NOT FILLED

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.1.5 states that at least two RHR loops shall be OPERABLE. Footnote † to the LCO states that the OPERABLE RHR loops may have inoperable offsite or emergency power sources. ITS 3.4.8 does not contain a specific allowance for an OPERABLE RHR loop to have an offsite or emergency power source inoperable.

This change is acceptable because the ITS definition of OPERABLE - OPERABILITY requires an OPERABLE component to have only a normal or emergency power source. This change to the CTS definition of OPERABLE - OPERABILITY is discussed in the ITS Section 1.0 Discussion of Change. Given this change to the definition of OPERABLE - OPERABILITY, a specific allowance for the RHR loops is not required. This change is designated as editorial as it replaces a specific exception with an ITS change in the definition of OPERABLE - OPERABILITY.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.1.5 Actions do not include actions for when there is no required RHR loops OPERABLE. ITS 3.4.8 ACTION B includes this Condition and requires the immediate suspension of operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1 and to immediately initiate action to restore one RHR loop to OPERABLE status and operation. This changes the CTS by adding the explicit Condition for no required RHR loop OPERABLE and provides the appropriate compensatory actions.

The purpose of ITS 3.4.8 ACTION B is to provide the appropriate compensatory action for no OPERABLE RHR loops. This change is acceptable because it provides additional assurance that the appropriate compensatory actions will be taken with no RHR loops OPERABLE. This change is designated as more restrictive, because it adds an explicit ACTION for which there is no CTS Action.

M.2 CTS 4.4.1.5 does not contain an explicit requirement to verify correct breaker alignment and indicated power for the required RHR pump that is not in operation. ITS SR 3.4.8.2 requires this SR to be conducted every 7 days, however the SR is not required to be performed until 24 hours after a required pump is not in operation. This changes the CTS by adding the ITS requirement of SR 3.4.8.2.

DISCUSSION OF CHANGES
ITS 3.4.8, RCS LOOP - MODE 5, LOOPS NOT FILLED

The purpose of ITS SR 3.4.8.2 is to ensure the RHR pump can start, if necessary. This change is acceptable because it provides additional assurance that the RHR pump will have power for immediate startup, if necessary. This change is designated as more restrictive, because it adds a SR to the Technical Specifications.

M.3 CTS 3.4.1.5 Footnote * contains an allowance for the RHR pump to be de-energized for up to one hour. ITS LCO 3.4.8 Note 1 allows all RHR pumps to be removed from operation for ≤ 30 minutes only when switching from one loop to the other, and also requires that no draining operations to further reduce the RCS water volume are permitted (part c). This changes the CTS by reducing the time allowed for the RHR pump to be de-energized from 1 hour to 30 minutes, restricts the allowance to only pump switching operations, and adds a restriction that no draining operations are permitted to further reduce the RCS water volume.

The purpose of the CTS 3.4.1.5 Footnote * is to allow the RCS loops to be switched from one to the other. This change is acceptable because ITS LCO 3.4.8 Note 1 provides sufficient time to perform loop switching operations and provide adequate controls. Stopping all operating RHR loops when the RCS is not filled should be limited to short periods of time because of the reduced inventory of water available to absorb decay heat. Stopping all RHR pumps during loop swapping operations is necessary, because pump vortexing may occur if both pumps are run simultaneously. Thirty minutes is sufficient time to perform the loop swapping operation without excessive increases in RCS average temperature due to lack of decay heat removal. Adding the additional condition that no draining operations be performed when the pumps are stopped is reasonable given the low RCS water level and the unavailability of the RHR pumps to add inventory to the RCS, if needed. This change is more restrictive because it reduces the time an RHR loop may be out of service and adds an additional restriction.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.1.5 states that at least one RHR loop shall be determined to be in operation and "circulating reactor coolant" at least once per 12 hours. ITS SR 3.4.8.1 states that the required RHR loop shall be verified to be in operation every 12 hours. This changes the CTS by moving the requirement to verify that the RHR loop is circulating reactor coolant to the Bases.

The removal of this detail for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be in the Technical Specifications in order to provide adequate protection of the public health and safety. The ITS retains the requirement that a reactor coolant loop be in operation. As described in the ITS Bases, verification that a reactor coolant loop is in operation includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.4.1.5 Footnote * states that the RHR pump may be deenergized for up to 1 hour provided no operations are permitted that would cause dilution of the reactor coolant system boron concentration. However, CTS 3.4.1.5 Footnote †† clarifies that for purposes of this Specification, addition of water from the refueling water storage tank (RWST) does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.7.b.2. CTS 3.4.1.5 Action b states that when no coolant loop is in operation, all operations involving a reduction in boron concentration of the RCS must be suspended. ITS LCO 3.4.8 Note 1 states that all RHR pumps may be removed from operation provided no operations are permitted that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1, "SHUTDOWN MARGIN (SDM)." ITS 3.4.8 Required Action B.1 states that operations that would cause introduction, into the RCS, of coolant with boron concentration less than required to meet the requirements of LCO 3.1.1 must be suspended. This relaxes the CTS Actions by revising the action from suspending reductions in boron concentration to suspending introduction of coolant with a boron concentration less than required to meet LCO 3.1.1.

The purpose of the CTS 3.4.1.5 LCO Footnote †† and Action b is to ensure that "pockets" of coolant with boron concentration less than that required to maintain the SDM are not created when there is no forced flow through the reactor. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. As long as coolant with boron concentration less than that required to meet the SDM requirement in LCO 3.1.1 is not introduced into the RCS, there is no possibility of creating "pockets" of coolant with less than the required boron concentration. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled ①

LCO 3.4.15

LCO 3.4.8 ~~Both~~ Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

TSTF-438

Footnote *

- NOTES -

1. All RHR pumps may be ~~not in~~ removed from operation for ≤ ~~15~~ 30 minutes when switching from one loop to another provided: ④

   a. The core outlet temperature is maintained ≥ at least 10°F below saturation temperature, ⑤ ② ③

   b. No operations are permitted that would cause introduction of coolant into the RCS ~~coolant~~ with boron concentration less than required to meet the ~~SDM~~ requirements of LCO 3.1.1, and INSERT 1 ① ① ③

   c. No draining operations to further reduce the RCS water volume are permitted.

Footnote **

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

APPLICABILITY: MODE 5 with RCS loops not filled.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required RHR loop inoperable.	A.1 Initiate action to restore RHR loop to OPERABLE status.	Immediately

Action a

(1) **<u>INSERT 1</u>**

, "SHUTDOWN MARGIN (SDM)"

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CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
Action b — B. No required RHR loop OPERABLE. OR Required RHR loop not in operation.	B.1	Suspend operations that would cause introduction of coolant into the RCS, coolant with boron concentration less than required to meet the requirements SDM of LCO 3.1.1.	Immediately
	AND		
	B.2	Initiate action to restore one RHR loop to OPERABLE status and operation.	Immediately

(1)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.4.1.5 — SR 3.4.8.1	Verify required RHR loop is in operation.	12 hours
DOC M.2 — SR 3.4.8.2	- NOTE - Not required to be performed until 24 hours after a required pump is not in operation. Verify correct breaker alignment and indicated power are available to each required RHR pump.	7 days

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.8, RCS LOOP - MODE 5, LOOPS NOT FILLED

1. Editorial change made for enhanced clarity or to be consistent with other places in the Specifications.

2. The brackets are removed and the proper plant specific information/value is provided.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

4. The time provided to allow all RHR pumps to be removed from service has been changed from 15 minutes to 30 minutes. In the CTS, 1 hour is currently provided. This current 1 hour time is sufficient time to allow the operators to swap the pumps in a controlled manner without rushing through the evolution, and provides some additional time in case difficulties arise during the pump swap evolution. Reducing the time to 30 minutes will still allow the operators the time to swap the pumps in a controlled manner without rushing through the evolution, yet removes most of the additional time currently provided.

5. The limit has been changed to be consistent with the same limit provided in Notes to ISTS 3.4.6 and ISTS 3.4.7, and with the current licensing basis.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops - MODE 5, Loops Not Filled

BASES

BACKGROUND

In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat generated in the fuel, and the transfer of this heat to the component cooling water via the residual heat removal (RHR) heat exchangers. The steam generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid.

In MODE 5 with loops not filled, only RHR pumps can be used for coolant circulation. The number of pumps in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR pump for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation. The flow provided by one RHR loop is adequate for heat removal and for boron mixing.

RCS loops in MODE 5 (loops not filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least two RHR loops be OPERABLE and one of these loops be in operation. An OPERABLE loop is one that has the capability of transferring heat from the reactor coolant at a controlled rate. Heat cannot be removed via the RHR System unless forced flow is used. A minimum of one running RHR pump meets the LCO requirement for one loop in operation. An additional RHR loop is required to be OPERABLE to meet single failure considerations.

Note 1 permits all RHR pumps to (be) not be in operation for ≤ 15 minutes when switching from one loop to another. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short and core outlet temperature is maintained > 10°F below saturation temperature. The Note prohibits boron dilution with coolant at boron concentrations less than required to assure SDM of LCO 3.1.1 is maintained or draining operations when RHR forced flow is stopped.

(2) <u>INSERT 1</u>

provide redundancy for heat removal

(5) <u>INSERT 2</u>

, "SHUTDOWN MARGIN (SDM),"

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BASES

LCO (continued)

Note 2 allows one RHR loop to be inoperable for a period of ≤ 2 hours, provided that the other loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when these tests are safe and possible.

An OPERABLE RHR loop is comprised of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the RHR System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops - MODES 1 and 2,"
LCO 3.4.5, "RCS Loops - MODE 3,"
LCO 3.4.6, "RCS Loops - MODE 4,"
LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled,"
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level" (MODE 6), and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level" (MODE 6).

ACTIONS

A.1

If one required RHR loop is inoperable, redundancy for RHR is lost. Action must be initiated to restore a second loop to OPERABLE status. The immediate Completion Time reflects the importance of maintaining the availability of two paths for heat removal.

B.1 and B.2

If no required RHR loop is OPERABLE or the required loop is not in operation, except during conditions permitted by Note 1, all operations involving introduction of coolant into the RCS with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 must be suspended and action must be initiated immediately to restore an RHR loop to OPERABLE status and operation. The required margin to criticality must not be reduced in this type of operation. Suspending the introduction of coolant into the RCS of coolant with boron concentration less than required to meet the minimum SDM of LCO 3.1.1 is required to

BASES

ACTIONS (continued)

assure continued safe operation. With coolant added without forced circulation, unmixed coolant could be introduced to the core, however coolant added with boron concentration meeting the minimum SDM maintains acceptable margin to subcritical operations. The Immediate Completion Time reflects the importance of maintaining operation for heat removal. The action to restore must continue until one loop is restored to OPERABLE status and operation.

SURVEILLANCE REQUIREMENTS

SR 3.4.8.1

This SR requires verification every 12 hours that the required loop is in operation. Verification includes flow rate, temperature, or pump status monitoring, which help ensure that forced flow is providing heat removal. The Frequency of 12 hours is sufficient considering other indications and alarms available to the operator in the control room to monitor RHR loop performance.

INSERT 3

(8)

SR 3.4.8.2

Verification that each required pump is OPERABLE ensures that an additional pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to each required pump. Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

(9)

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation.

INSERT 4

REFERENCES None.

(8) **INSERT 3**

circulating reactor coolant

(9) **INSERT 4**

This is acceptable because proper breaker alignment and power availability are ensured if a pump is operating.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.8 BASES, RCS LOOP - MODE 5, LOOPS NOT FILLED

1. In the Bases Background section, the sentence, "The number of pumps in operation can vary to suit operational needs," is not adopted. Only one RHR pump is used at a time in MODE 5.

2. The LCO Bases state, "An additional RHR loop is required to be OPERABLE to meet single failure considerations." In the Background section of the Bases for this Specification, the need for a second RHR loop is stated as, "The other intent of this LCO is to require that a second path be available to provide redundancy for heat removal." This is a more accurate statement of the requirement. The term "single failure" is typically used to describe an accident analysis assumption and the accident analyses performed for MODE 5 do not assume the single failure of an RHR loop. The LCO Bases have been revised to describe the LCO requirement using the wording from the Bases Background section.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Changes are made to reflect those changes made to the ISTS.

5. Editorial change for enhanced clarity.

6. Changes have been made to reflect the ISTS.

7. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

8. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

9. The Bases of ISTS SR 3.4.8.3 state that "Alternatively, verification that a pump is in operation also verifies proper breaker alignment and power availability." The Note to SR 3.4.8.3 clearly states that the SR is only required to be performed after a required pump is not in operation. Therefore, the SR does not need to be performed for operating pumps, and the statement that there is an alternative method of verification is not necessary. The statement is essentially justifying why the Note to the SR is allowed. As such, a similar statement has been added to the paragraph describing the Note allowance.

10. Grammatical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.8, RCS LOOP - MODE 5, LOOPS NOT FILLED

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 9

ITS 3.4.9, Pressurizer

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

PRESSURIZER

LIMITING CONDITION FOR OPERATION

LCO 3.4.9 3.4.4 The pressurizer shall be OPERABLE with a water [volume → level] (A.2) less than or equal to 92% of span and two trains of pressurizer [backup] (A.3) heaters with the capacity of each train greater than or equal to 150 kW.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

ACTION B a. With the pressurizer inoperable due to an inoperable train of pressurizer heaters, either restore the inoperable train within 72 hours (M.1)

ACTION C or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within [the following] 12 hours.

ACTION A b. With the pressurizer [otherwise inoperable, → water level not within limit] (A.4) be in at least HOT SHUTDOWN [with the reactor trip breakers open] within 12 hours.

[Add proposed Required Actions A.1, A.2, and A.3] (M.2)

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1 4.4.4.1 The pressurizer water [volume → level] (A.2) shall be determined to be within its limits at least once per 12 hours.

SR 3.4.9.2 4.4.4.2 The pressurizer [backup] (A.3) heaters shall be demonstrated OPERABLE at least once per [18 → 24] (L.1) months by energizing the required capacity of heaters in each train.

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

PRESSURIZER

LIMITING CONDITION FOR OPERATION

LCO 3.4.9 3.4.4 The pressurizer shall be OPERABLE with a water [volume] (level) (A.2) less than or equal to 92% of span and two trains of pressurizer (backup) (A.3) heaters with the capacity of each train greater than or equal to 150 kW.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

ACTION B — a. With the pressurizer inoperable due to an inoperable train of pressurizer heaters, either restore the inoperable train within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT
ACTION C — SHUTDOWN within [the following] 12 hours. (M.1)

ACTION A b. With the pressurizer [otherwise inoperable] (water level not within limit) (A.4) be in at least HOT SHUTDOWN [with the reactor trip breakers open] within 12 hours. (Add proposed Required Actions A.1, A.2, and A.3) (M.2)

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1 4.4.4.1 The pressurizer water [volume] (level) (A.2) shall be determined to be within its limit at least once per 12 hours.

SR 3.4.9.2 4.4.4.2 The pressurizer (backup) (A.3) heaters shall be demonstrated OPERABLE at least once per [18] (24) (L.1) months by energizing the required capacity of heaters in each train.

DISCUSSION OF CHANGES
ITS 3.4.9, PRESSURIZER

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS LCO 3.4.4 requires the pressurizer water volume to be ≤ 92% of span and CTS 4.4.4.1 requires a verification of the pressurizer water volume. ITS LCO 3.4.9 requires the pressurizer water level to be ≤ 92% and ITS SR 3.4.9.1 requires verification of the pressurizer water level. This changes the CTS by changing "pressurizer water volume" to "pressurizer water level."

The purpose of CTS LCO 3.4.4 and CTS 4.4.4.1 is to ensure the pressurizer water level is at or below the trip setpoint specified in CTS Table 2.2-1. This change is acceptable since the current value corresponds to pressurizer water level. The value of 92% of span corresponds to the Pressurizer Water Level – High trip setpoint in CTS Table 2.2-1. Since the value corresponds to the actual water level in the pressurizer, the change from "volume" to "level" is appropriate. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS LCO 3.4.4 requires two trains of pressurizer heaters with the capacity of each train to be ≥ 150 kW and CTS 4.4.4.2 requires a verification of the pressurizer heaters. ITS LCO 3.4.9 requires two trains of pressurizer backup heaters with the capacity of each train to be greater than or equal to 150 kW and ITS SR 3.4.9.2 requires a verification of the pressurizer backup heaters. This changes the CTS by changing the words "pressurizer heaters" to "pressurizer backup heaters."

The purpose of the subject CTS phrase is to ensure the appropriate heaters are available with the appropriate capacity. This change is acceptable because the CTS 3/4.4.4 Bases state that the requirements for pressurizer heaters applies to the pressurizer backup heaters. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 3.4.4 Action b applies when the pressurizer is otherwise inoperable (i.e., for reasons other than an inoperable train of pressurizer heaters as described in Action a). ITS 3.4.9 Condition A applies when the pressurizer water level is not within limit. This changes the CTS to specifically state the reason the pressurizer is inoperable.

The purpose of CTS 3.4.4 is to require the pressurizer to be OPERABLE and two conditions of OPERABILITY are supplied. The conditions are pressurizer water level and pressurizer backup heater OPERABILITY. CTS 3.4.4 Action b only applies when water level is not within limit. This is the same condition for which ITS 3.4.9 Condition A applies. This change is acceptable because the condition

DISCUSSION OF CHANGES
ITS 3.4.9, PRESSURIZER

under which CTS 3.4.4 Action b applies has not changed. This change is designated as administrative as it results in no technical change to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.4 Action a states, in part, to be in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the "following" 12 hours. Under the same condition, ITS 3.4.9 Required Action C.2 requires the unit to be in MODE 4 within 12 hours. This changes the CTS by reducing the time the unit must be in MODE 4 from 18 hours (6 hours to be in MODE 3 and the "following" 12 hours to be in MODE 4) to 12 hours.

The purpose of the shutdown actions of CTS 3.4.4 Action a is to place the unit outside of the Applicability of the Specification. ITS 3.4.9 ACTION C continues to accomplish this purpose but the time to be in MODE 4 has decreased from 18 hours (6 hours to be in MODE 3 and the "following" 12 hours to be in MODE 4) to 12 hours. This change is acceptable because the time required to be in MODE 4 is consistent with the time allowed in other Specifications. This change is designated as more restrictive because it reduces the amount of time provided to complete a Required Action.

M.2 CTS 3.4.4 Action b requires the unit to be in at least MODE 4 with the reactor trip breakers open within 12 hours if the pressurizer water level limit is not met. Under the same condition, ITS 3.4.9 ACTION A also requires the unit to be in MODE 3, to fully insert all rods, and place the Rod Control System in a condition incapable of rod withdrawal within 6 hours. In addition, the unit is required to be in MODE 4 in 12 hours. This changes the CTS by replacing the requirement to open the reactor trip breakers within 12 hours to requiring the unit to be in MODE 3, to fully insert all rods, and place the Rod Control System in a condition incapable of rod withdrawal within 6 hours.

The purpose of CTS 3.4.4 Action b is to place the unit outside of the Applicability of the Specification. ITS 3.4.9 ACTION A continues to require the unit to be in MODE 4 but adds three additional requirements intended to minimize the core reactivity and any pressure transient which may result from any inadvertent withdrawal of control rods. This change is acceptable because it provides additional assurance that certain events will not occur during the transition out of the MODE of Applicability of the Specification. This change is designated as more restrictive, because additional Required Actions are now required.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

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DISCUSSION OF CHANGES
ITS 3.4.9, PRESSURIZER

LESS RESTRICTIVE CHANGES

L.1 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.4.4.2 states that the pressurizer heaters shall be demonstrated OPERABLE at least once per 18 months by energizing the required capacity of heaters in each train. ITS SR 3.4.9.2 requires the same test to be performed at a 24 month Frequency. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.4.4.2 is to ensure the pressurizer backup heaters perform as designed. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the pressurizer backup heater capacity test is acceptable because during the cycle the heaters automatically start when necessary to maintain the appropriate pressurizer pressure and temperature. This operational characteristic will help identify any operational problems during the cycle. Additional justification for extending the Surveillance test interval is that there are two trains of redundant pressurizer backup heaters. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.9 Pressurizer

LCO 3.4.4

LCO 3.4.9 The pressurizer shall be OPERABLE with:

a. Pressurizer water level ≤ [92]% and ① ⑥

b. [Two groups of pressurizer heaters OPERABLE with the capacity of each group ≥ [125] kW and capable of being powered from an emergency power supply]. ① ② ① ③

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b	A. Pressurizer water level not within limit.	A.1 Be in MODE 3. AND A.2 Fully insert all rods. AND A.3 Place Rod Control System in a condition incapable of rod withdrawal. AND A.4 Be in MODE 4.	6 hours 6 hours 6 hours 12 hours	①
Action a	B. One [required] group of pressurizer heaters inoperable.	B.1 Restore [required] group of pressurizer heaters to OPERABLE status.	72 hours	② ④ ②
Action a	C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3. AND	6 hours	

CTS

ACTIONS (continued)

Action a.

CONDITION	REQUIRED ACTION	COMPLETION TIME
	C.2 Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.9.1	Verify pressurizer water level is ≤ [92]%.	12 hours (1)
- REVIEWER'S NOTE - The frequency for performing Pressurizer heater capacity testing shall be either 18 months or 92 days, depending on whether or not the plant has dedicated safety-related heaters. For dedicated safety-related heaters, which do not normally operate, 92 days is applied. For non-dedicated safety-related heaters, which normally operate, 18 months is applied. (5)		
4.4.4.2 SR 3.4.9.2	Verify capacity of each required group of pressurizer (2) train heaters (4) backup is ≥ [125] 150 kW. (1) (4)	[18] 24 months (1)
SR 3.4.9.3	[Verify required pressurizer heaters are capable of being powered from an emergency power supply.	[18] months] (5)

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.9, PRESSURIZER

1. The brackets are removed and the proper plant specific information/value is provided.

2. The CNP design includes backup and proportional heaters. The backup heaters are required to be OPERABLE in accordance with this Specification. Therefore, "pressurizer heaters" has been changed to "pressurizer backup heaters" and the word "required" has been deleted, as applicable.

3. The bracketed phrase has been deleted. The backup heaters are always powered from an emergency power supply.

4. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. CNP is equipped with two groups (trains) of pressurizer backup heaters that are permanently powered by Class 1E power supplies. Therefore, ITS SR 3.4.9.3, which verifies that pressurizer heaters can be manually swapped from normal power to emergency power, is not applicable to CNP. In addition, the Reviewer's Note has been deleted in ISTS SR 3.4.9.2.

6. These punctuation corrections have been made to be consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.9 Pressurizer

BASES

BACKGROUND

The pressurizer provides a point in the RCS where liquid and vapor are maintained in equilibrium under saturated conditions for pressure control purposes to prevent bulk boiling in the remainder of the RCS. Key functions include maintaining required primary system pressure during steady state operation, and limiting the pressure changes caused by reactor coolant thermal expansion and contraction during normal load transients.

The pressure control components addressed by this LCO include the pressurizer water level, the required heaters, and their controls and emergency power supplies. Pressurizer safety valves and pressurizer power operated relief valves are addressed by LCO 3.4.10, "Pressurizer Safety Valves," and LCO 3.4.11, "Pressurizer Power Operated Relief Valves (PORVs)," respectively.

The intent of the LCO is to ensure that a steam bubble exists in the pressurizer prior to power operation to minimize the consequences of potential overpressure transients. The presence of a steam bubble is consistent with analytical assumptions. Relatively small amounts of noncondensible gases can inhibit the condensation heat transfer between the pressurizer spray and the steam, and diminish the spray effectiveness for pressure control.

Electrical immersion heaters, located in the lower section of the pressurizer vessel, keep the water in the pressurizer at saturation temperature and maintain a constant operating pressure. A minimum required available capacity of pressurizer heaters ensures that the RCS pressure can be maintained. The capability to maintain and control system pressure is important for maintaining subcooled conditions in the RCS and ensuring the capability to remove core decay heat by either forced or natural circulation of reactor coolant. Unless adequate heater capacity is available, the hot, high pressure condition cannot be maintained indefinitely and still provide the required subcooling margin in the primary system. Inability to control the system pressure and maintain subcooling under conditions of natural circulation flow in the primary system could lead to a loss of single phase natural circulation and decreased capability to remove core decay heat.

(1) **INSERT 1**

There are two types of pressurizer heaters. There are proportional heaters and backup heaters. The backup heaters are powered from the emergency busses and are required by this Specification.

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BASES

APPLICABLE SAFETY ANALYSES

In MODES 1, 2, and 3, the LCO requirement for a steam bubble is reflected implicitly in the accident analyses. Safety analyses performed for lower MODES are not limiting. All analyses performed from a critical reactor condition assume the existence of a steam bubble and saturated conditions in the pressurizer. In making this assumption, the analyses neglect the small fraction of noncondensible gases normally present.

Safety analyses presented in the FSAR (Ref. 1) do not take credit for pressurizer heater operation; however, an implicit initial condition assumption of the safety analyses is that the RCS is operating at normal pressure.

The maximum pressurizer water level limit, which ensures that a steam bubble exists in the pressurizer, satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). Although the heaters are not specifically used in accident analysis, the need to maintain subcooling in the long term during loss of offsite power, as indicated in NUREG-0737 (Ref. 2), is the reason for providing an LCO.

LCO

- REVIEWER'S NOTE -
Plants licensed prior to the issuance of NUREG-0737 may not have a requirement on the number of pressurizer groups.

The LCO requirement for the pressurizer to be OPERABLE with a water volume ≤ [1240] cubic feet, which is equivalent to [92]%, ensures that a steam bubble exists. Limiting the LCO maximum operating water level preserves the steam space for pressure control. The LCO has been established to ensure the capability to establish and maintain pressure control for steady state operation and to minimize the consequences of potential overpressure transients. Requiring the presence of a steam bubble is also consistent with analytical assumptions.

The LCO requires [two groups of] OPERABLE pressurizer heaters, [each] with a capacity ≥ [125] kW, capable of being powered from either the offsite power source or the emergency power supply. The minimum heater capacity required is sufficient to maintain the RCS near normal operating pressure when accounting for heat losses through the pressurizer insulation. By maintaining the pressure near the operating conditions, a wide margin to subcooling can be obtained in the loops. The exact design value of [125 kW is derived from the use of seven heaters rated at 17.9 kW each]. The amount needed to maintain pressure is dependent on the heat losses.

(1) **INSERT 2**

provide assurance that the heaters can be energized during a loss of offsite power condition to provide adequate subcooling margin in the RCS to maintain natural circulation conditions in MODE 3. Seven heaters (each rated at 23.08 kW) per train are required to meet the 150 kW capacity requirement.

BASES

APPLICABILITY

The need for pressure control is most pertinent when core heat can cause the greatest effect on RCS temperature, resulting in the greatest effect on pressurizer level and RCS pressure control. Thus, applicability has been designated for MODES 1 and 2. The applicability is also provided for MODE 3. The purpose is to prevent solid water RCS operation during heatup and cooldown to avoid rapid pressure rises caused by normal operational perturbation, such as reactor coolant pump startup.

In MODES 1, 2, and 3, there is need to maintain the availability of pressurizer heaters ~~capable of being powered from an emergency power supply~~. In the event of a loss of offsite power, the initial conditions of these MODES give the greatest demand for maintaining the RCS in a hot pressurized condition with loop subcooling for an extended period. For MODE 4, 5, or 6, it is not necessary to control pressure (by heaters) to ensure loop subcooling for heat transfer when the Residual Heat Removal (RHR) System is in service, and therefore, the LCO is not applicable.

ACTIONS

A.1, A.2, A.3, and A.4

Pressurizer water level control malfunctions or other plant evolutions may result in a pressurizer water level above the nominal upper limit, even with the plant at steady state conditions. Normally the plant will trip in this event since the upper limit of this LCO is the same as the Pressurizer Water Level - High Trip.

If the pressurizer water level is not within the limit, action must be taken to bring the plant to a MODE in which the LCO does not apply. To achieve this status, within 6 hours the unit must be brought to MODE 3 with all rods fully inserted and incapable of withdrawal. Additionally, the unit must be brought to MODE 4 within 12 hours. This takes the unit out of the applicable MODES.

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.

B.1

If one required group of pressurizer heaters is inoperable, restoration is required within 72 hours. The Completion Time of 72 hours is reasonable considering the anticipation that a demand caused by loss of offsite

BASES

ACTIONS (continued)

power would be unlikely in this period. Pressure control may be maintained during this time using normal station powered heaters.

C.1 and C.2

If one group of pressurizer heaters are inoperable and cannot be restored in the allowed Completion Time of Required Action B.1, 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 MODE 3 within 6 hours and to MODE 4 within 12 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.

SURVEILLANCE REQUIREMENTS

SR 3.4.9.1

This SR requires that during steady state operation, pressurizer level is maintained below the nominal upper limit to provide a minimum space for a steam bubble. The Surveillance is performed by observing the indicated level. The Frequency of 12 hours corresponds to verifying the parameter each shift. The 12 hour interval has been shown by operating practice to be sufficient to regularly assess level for any deviation and verify that operation is within safety analyses assumption of ensuring that a steam bubble exists in the pressurizer. Alarms are also available for early detection of abnormal level indications.

SR 3.4.9.2

- REVIEWER'S NOTE -
The frequency for performing Pressurizer heater capacity testing shall be either 18 months or 92 days, depending on whether or not the plant has dedicated safety-related heaters. For dedicated safety-related heaters, which do not normally operate, 92 days is applied. For non-dedicated safety-related heaters, which normally operate, 18 months is applied.

The SR is satisfied when the power supplies are demonstrated to be capable of producing the minimum power and the associated pressurizer heaters are verified to be at their design rating. This may be done by testing the power supply output and by performing an electrical check on heater element continuity and resistance. The Frequency of 18 months is considered adequate to detect heater degradation and has been shown by operating experience to be acceptable.

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.4.9.3

This SR is not applicable if the heaters are permanently powered by Class 1E power supplies.

This Surveillance demonstrates that the heaters can be manually transferred from the normal to the emergency power supply and energized. The Frequency of 18 months is based on a typical fuel cycle and is consistent with similar verifications of emergency power supplies.] ④

REFERENCES

1. U FSAR, Section [ ] Chapter 14 ① ③
2. NUREG-0737, November 1980.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.9 BASES, PRESSURIZER

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The Reviewer's Note has been deleted since it is not intended to remain in a plant specific ITS.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Changes are made to reflect those changes made to the ISTS. The subsequent requirements are renumbered or revised, where applicable, to reflect the changes.

5. Changes have been made to be consistent with the ISTS.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.9, PRESSURIZER

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 10

ITS 3.4.10, Pressurizer Safety Valves

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.10

(A.1)

ITS

3/4.4 REACTOR COOLANT SYSTEM

SAFETY VALVES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

LCO 3.4.10 — 3.4.2 A minimum of [one] [three] pressurizer code safety valve shall be OPERABLE with a lift setting of 2485 PSIG ±3%.*

APPLICABILITY: MODES 4 [and 5]. [with all RCS cold leg temperatures > 266°F] (L.1)

[Add proposed Applicability Note] (L.2)

ACTION: (M.1)

ACTIONS A and B — With no pressurizer code safety valve OPERABLE:

a. Immediately suspend all operations involving positive reactivity changes except addition of water from the RWST, provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.8.b.2 (MODE 4) or 3.1.2.7.b.2 (MODE 5), and place an OPERABLE RHR loop into operation in the shutdown cooling mode, and

[Add proposed ACTION A] (M.1)

b. Immediately render all Safety Injection pumps and all but one charging pump inoperable by removing the applicable motor circuit breakers from the electric power circuit within one hour.

[Add proposed ACTION B] (L.3) (M.1)

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1 — 4.4.2 The pressurizer code safety valve shall be demonstrated OPERABLE per Surveillance Requirement 4.4.3.

[Add proposed SR 3.4.10.1] (A.2)

* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. (LA.1)

SR 3.4.10.1 — # The pressurizer code safety valve shall be reset to the nominal value ±1% whenever found outside the ±1% tolerance.

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

SAFETY VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.4.10 3.4.3 All pressurizer code safety valves shall be OPERABLE with a lift setting of 2485 PSIG ± 3%.*

APPLICABILITY: MODES 1, 2 and 3. ← [Add proposed Applicability Note] (L.2)

ACTION:

ACTION A / ACTION B — With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes or be in HOT SHUTDOWN within 12 [24] hours.

[MODE 4 with any RCS cold loop temperature ≤ 266° F]
[Add proposed Required Action B.1]
[Add second part of Condition B]
(L.4)

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1 4.4.3 ~~No additional surveillance requirements other than those required by Specification 4.0.5.~~

[Add proposed SR 3.4.10.1] (A.2)

~~* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.~~ (LA.1)

SR 3.4.10.1 # The pressurizer code safety valve shall be reset to the nominal value ±1% whenever found outside the ±1% tolerance.

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

SAFETY VALVES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

(M.1) three

LCO 3.4.10 3.4.2 A minimum of ~~one~~ pressurizer code safety valve shall be OPERABLE with a lift setting of 2485 PSIG ±3%.*

(L.1) with all RCS cold leg temperatures > 299°F

APPLICABILITY: MODES 4 ~~and 5~~.

(L.2) Add proposed Applicability Note

ACTION:

ACTIONS A and B

~~With no pressurizer code safety valve OPERABLE:~~

~~a. Immediately suspend all operations involving positive reactivity changes except addition of water from the RWST, provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.8.b.2 (MODE 4) or 3.1.2.7.b.2 (MODE 5), and place an OPERABLE RHR loop into operation in the shutdown cooling mode, and~~

~~b. Immediately render all Safety Injection pumps and all but one charging pump inoperable by removing the applicable motor circuit breakers from the electric power circuit within one hour.~~

(M.1) Add proposed ACTION A

(L.3) (M.1) Add proposed ACTION B

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1 4.4.2 ~~No additional Surveillance Requirements other than those required by Specification 4.0.5.~~

(A.2) Add proposed SR 3.4.10.1

(LA.1) ~~* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure.~~

SR 3.4.10.1 * The pressurizer code safety valve shall be reset to the nominal value ±1% whenever found outside the ±1% tolerance.

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

SAFETY VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.4.10 3.4.3 All pressurizer code safety valves shall be OPERABLE with a lift setting of 2485 PSIG ± 3%.*#

APPLICABILITY: MODES 1, 2 and 3. [Add proposed Applicability Note] L.2

ACTION:

ACTION A – With one pressurizer code safety valve inoperable, either restore the inoperable valve to OPERABLE status within 15 minutes or

ACTION B – be in HOT SHUTDOWN within 12 [24] hours. [MODE 4 with any RCS cold loop temperature ≤ 299°F] [Add proposed Required Action B.1] [Add second part of Condition B] L.4

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1 4.4.3 No additional Surveillance Requirements other than those required by Specification 4.0.5. [Add proposed SR 3.4.10.1] A.2

* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. LA.1

SR 3.4.10.1 # The pressurizer code safety valve shall be reset to the nominal value ±1% whenever found outside the ±1% tolerance.

DISCUSSION OF CHANGES
ITS 3.4.10, PRESSURIZER SAFETY VALVES

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 4.4.3 states that there are no Surveillance Requirements on the pressurizer safety valves other than those required by Specification 4.0.5. CTS 4.4.2 states that the pressurizer safety valves shall be demonstrated OPERABLE per CTS 4.4.3. Specification 4.0.5 describes the Inservice Test requirements. CTS LCO 3.4.2 Footnote # and CTS LCO 3.4.3 Footnote # state that the valves shall be reset to the nominal value ± 1% when found outside the ± 1% band. ITS SR 3.4.10.1 states that it must be verified that each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program and, following testing, lift settings shall be within ± 1%.

This change is acceptable because the requirements have not changed. Both the CTS and the ITS state that the safety valves must be tested in accordance with the Inservice Testing Program. The ITS requirement that the as-left lift settings must be within ± 1% is moved from CTS LCO 3.4.3 and 3.4.2. This change is designated as administrative as the technical requirements are not changed.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.2 requires a minimum of one pressurizer safety valve to be OPERABLE during MODES 4 and 5. Thus, one or two of the three safety valves are allowed to be inoperable indefinitely in MODES 4 and 5. ITS LCO 3.4.10 requires three pressurizer safety valves to be OPERABLE during MODE 4 with all RCS cold leg temperatures > 266°F (Unit 1) and > 299°F (Unit 2). With one of the three pressurizer safety valves inoperable, ITS 3.4.10 ACTION A states that the valve must be restored to OPERABLE status within 15 minutes. If this cannot be met, ITS 3.4.10 ACTION B requires the unit to be in MODE 3 in 6 hours and MODE 4 with any RCS cold leg temperature ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2) in 24 hours. In addition, ITS 3.4.10 ACTION B requires these same actions to place the unit outside of the Applicability of the Specification when two of the three pressurizer safety valves are inoperable. This changes the CTS by requiring three safety valves to be OPERABLE and by specifying new Required Actions for when one or two of the three valves are inoperable. The change to the Applicability is discussed in DOC L.1. The change to the remainder of the CTS 3.4.2 Actions is discussed in DOC L.3.

The purpose of CTS 3.4.2 is to provide requirements on pressurizer safety valves during shutdown conditions. In the ITS, the requirements for pressurizer safety

DISCUSSION OF CHANGES
ITS 3.4.10, PRESSURIZER SAFETY VALVES

valves are included in one Specification (ITS 3.4.10). The new requirement is acceptable since it is more conservative and helps to ensure the combined capacity of the three valves will keep the reactor coolant pressure below 110% of its design value during postulated transients. Along with this change, the ITS 3.4.10 ACTIONS provide a minimal time for restoration when one of the three safety valves is inoperable and provides a shutdown requirement for when this minimal time has expired or when two of the three pressurizer safety valves are inoperable. This change is designated as more restrictive as it increases the required number of pressurizer safety valves from one to three and provides explicit Required Actions for when one or two of the three safety valves are inoperable.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.4.2 and CTS LCO 3.4.3 are modified by a note that states that the pressurizer lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. This information is not provided in ITS 3.4.10. This changes the CTS by moving this information to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS 3.4.10 still retains a requirement for the valves to be OPERABLE. Under the definition of OPERABILITY, the safety valves must be capable of lifting at the assumed conditions, which includes the ambient operating conditions of the safety valves themselves. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being moved from the Technical Specifications to the ITS Bases.

LESS RESTRICTIVE CHANGES

L.1 *(Category 2 - Relaxation of Applicability)* CTS 3.4.2 requires a safety valve to be OPERABLE in MODES 4 and 5. ITS 3.4.10 requires three safety valves to be OPERABLE in MODE 4 with all RCS cold leg temperatures > 266°F (Unit 1) and > 299°F (Unit 2). This changes the operating conditions in which pressurizer

DISCUSSION OF CHANGES
ITS 3.4.10, PRESSURIZER SAFETY VALVES

safety valves are required to be OPERABLE. The change in the number of required safety valves is discussed in DOC M.1.

The purpose of CTS 3.4.2 is to ensure the appropriate number of safety valves are available to mitigate an overpressurization event. This change is acceptable because the requirements continue to ensure that the systems are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. At less than or equal to the low temperature overpressurization protection (LTOP) arming temperature of 266°F (Unit 1) and 299°F (Unit 2), the LTOP System provides overpressure protection, consistent with the CNP LTOP analysis and with the LTOP System requirements in ITS 3.4.12, "Low Pressure Overpressure Protection (LTOP) System." The LTOP System provides pressure relief at a lower pressure than the pressurizer safety valves and, therefore, the pressurizer safety valves are not needed. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions in the ITS than in the CTS.

L.2 *(Category 2 – Relaxation of Applicability)* CTS LCO 3.4.2 and CTS LCO 3.4.3 provide requirements for the pressurizer code safety valves. The ITS LCO 3.4.10 Applicability is modified by a Note which allows the lift settings to not be within the LCO limits during MODES 3 and 4 for the purpose of in-situ setting of the pressurizer safety valves under ambient (hot) conditions. The exception is allowed for 54 hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup. This changes the CTS by allowing entry into MODES 3 and 4 without verifying that the pressurizer code safety valve lift settings are within the LCO limits.

The purpose of the Applicability Note is to allow entry into MODES 3 and 4 to perform testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. This change is acceptable because the requirements continue to ensure that the components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The cold lift settings give assurance that the valves are OPERABLE near their design condition during the short period of time allowed to verify the settings at the hot condition. While CNP does not set pressurizer safety valves while installed at this time, this Applicability Note provides the flexibility to utilize this method in the future. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.3 *(Category 4 - Relaxation of Required Action)* The CTS 3.4.2 Action states that with no pressurizer safety valve OPERABLE to immediately suspend all operations involving reactivity changes except addition of water from the refueling water storage tank (RWST), provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.8.b.2 (MODE 4) or 3.1.2.7.b.2 (MODE 5), and to place an OPERABLE RHR loop into operation in the shutdown cooling mode, and to immediately render all Safety Injection pumps and all but one charging pump inoperable by removing the applicable motor circuit breakers from the electric power circuit within one hour. With no pressurizer safety valves OPERABLE (i.e., all three safety valves are

DISCUSSION OF CHANGES
ITS 3.4.10, PRESSURIZER SAFETY VALVES

inoperable), ITS 3.4.10 ACTION B requires the unit to be in MODE 3 in 6 hours and MODE 4 with any RCS cold leg temperature ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2) in 24 hours. This places the unit outside of the Applicability of the Specification. This changes the CTS by replacing the CTS 3.4.2 Actions with new ACTIONS designed to place the unit outside of the Applicability of the Specification when no pressurizer safety valves are OPERABLE. The change to the Applicability is discussed in DOC L.1. The change to the number of pressurizer safety valves required for OPERABILITY is discussed in DOC M.1.

The purpose of the CTS 3.4.2 Action is to ensure a reactivity excursion does not occur. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change replaces the CTS 3.4.2 Actions with new ACTIONS designed to place the unit outside of the Applicability of the Specification when no pressurizer safety valves are OPERABLE. The explicit Actions to immediately suspend all operations involving positive reactivity changes, to place an OPERABLE RHR loop into operation in the shutdown cooling mode, and to immediately render all Safety Injection pumps and all but one charging pump inoperable by removing the applicable motor circuit breakers from the electric power circuit within one hour have been deleted. The explicit action to stop operations involving positive reactivity changes is not needed since the new Required Actions require the unit to proceed to a MODE outside of the Applicability which will require the unit to cool down and to add boron to maintain the required SHUTDOWN MARGIN. The explicit Action to place an OPERABLE RHR loop into operation in the shutdown cooling mode is not necessary since the requirements for RHR shutdown cooling and the reactor coolant loops are prescribed in ITS LCO 3.4.6, "Reactor Coolant Loops – MODE 4." This Specification requires at least one RHR or RCS loop to be in operation. This will ensure sufficient mixing of the borated water in the reactor coolant. The requirement to immediately render all Safety Injection pumps and all but one charging pump inoperable by removing the applicable motor circuit breakers from the electric power circuit within one hour is not necessary, since ITS LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," prescribes the requirements for low temperature overpressure protection. This Specification continues to limit the number of pumps allowed to be capable of injecting into the RCS during periods when low temperature overpressurization is a concern. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.4 *(Category 4 - Relaxation of Required Action)* The CTS 3.4.3 Action states that with one of the three pressurizer safety valves inoperable either restore the inoperable valve to OPERABLE status within 15 minutes or be in MODE 4 within 12 hours. Currently, no Actions are specified when two or three safety valves are inoperable. Thus CTS 3.0.3 must be entered. ITS 3.4.10 ACTION A continues to allow 15 minutes to restore the inoperable pressurizer safety valve to

DISCUSSION OF CHANGES
ITS 3.4.10, PRESSURIZER SAFETY VALVES

OPERABLE status. ITS 3.4.10 ACTION B requires the unit to be in MODE 3 in 6 hours and MODE 4 with any RCS cold leg temperature ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2) within 24 hours if the valve is not restored within the 15 minutes or if two or more pressurizer safety valves are inoperable. This changes the CTS by extending the time to place the unit outside of the Applicability and allows the unit not to enter LCO 3.0.3 when two or more pressurizer safety valves are found to be inoperable.

The purpose of the CTS 3.4.3 Action is to place the unit in a condition in which the pressurizer safety valves are not needed if one safety valve is inoperable and cannot be restored to OPERABLE status within the specified Completion Time. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. The time to place the unit outside of the Applicability has been extended. In addition, the change allows the unit not to enter LCO 3.0.3 when two or more pressurizer safety valves are found to be inoperable. The time to place the unit outside of the Applicability has been extended (from 12 hours to reach MODE 4 to 24 hours to reach MODE 4 with any RCS cold leg temperature ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2)). Because the LTOP entry conditions (266°F (Unit 1) and 299°F (Unit 2)) are below the 350°F entry conditions for entry into MODE 4, additional time is provided beyond the 12 hours given to enter MODE 4 in CTS 3.0.3 and ITS LCO 3.0.3. In addition, this extension in time is acceptable since a new Required Action has been added to be in MODE 3 within 6 hours. This will require the unit to reduce power in a more controlled manner. The allowance not to enter LCO 3.0.3 when two or more pressurizer safety valves are found to be inoperable is acceptable since overpressure protection may still be maintained by the pressurizer power operated relief valves. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.10 Pressurizer Safety Valves

LLOs 3.4.2 and 3.4.3

LCO 3.4.10 [Three] pressurizer safety valves shall be OPERABLE with lift settings ≥ [2460] 2411 psig and ≤ [2510] 2559 psig. (1)

INSERT 1 (1)

DOC M.1

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR].

DOC L.2

- NOTE -
The lift settings are not required to be within the LCO limits during MODES 3 and 4 for the purpose of setting the pressurizer safety valves under ambient (hot) conditions. This exception is allowed for [54] hours following entry into MODE 3 provided a preliminary cold setting was made prior to heatup. (1)

ACTIONS

CTS	CONDITION	REQUIRED ACTION		COMPLETION TIME
3.4.3 Action, DOC M.1	A. One pressurizer safety valve inoperable.	A.1	Restore valve to OPERABLE status.	15 minutes
3.4.3 Action, DOC M.1	B. Required Action and associated Completion Time of Condition A not met. OR Two or more pressurizer safety valves inoperable.	B.1 AND B.2	Be in MODE 3. Be in MODE 4 with any RCS cold leg temperatures ≤ [LTOP arming temperature specified in the PTLR]. INSERT 2	6 hours [24] hours (3) (1) (2)

3.4.10

1

INSERT 1

266°F (Unit 1) and > 299°F (Unit 2)

1

INSERT 2

266°F (Unit 1) and ≤ 299°F (Unit 2)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.4.2, 4.4.3 SR 3.4.10.1	Verify each pressurizer safety valve is OPERABLE in accordance with the Inservice Testing Program. Following testing, lift settings shall be within ± 1%.	In accordance with the Inservice Testing Program

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.10, PRESSURIZER SAFETY VALVES

1. The brackets are removed and the proper plant specific information/value is provided.

2. The actual temperature has been provided, consistent with the allowance in the Applicability.

3. Change has been made to be consistent with similar Conditions in other Specifications.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.10 Pressurizer Safety Valves

BASES

BACKGROUND

Trip

The pressurizer safety valves provide, in conjunction with the Reactor Protection System, overpressure protection for the RCS. The pressurizer safety valves are totally enclosed pop type, spring loaded, self actuated valves with backpressure compensation. The safety valves are designed to prevent the system pressure from exceeding the system Safety Limit (SL), [2735] psig, which is 110% of the design pressure. (1) (2)

420,000

Because the safety valves are totally enclosed and self actuating, they are considered independent components. The relief capacity for each valve, [380,000] lb/hr, is based on postulated overpressure transient conditions resulting from a complete loss of steam flow to the turbine. This event results in the maximum surge rate into the pressurizer, which specifies the minimum relief capacity for the safety valves. The discharge flow from the pressurizer safety valves is directed to the pressurizer relief tank. This discharge flow is indicated by an increase in temperature downstream of the pressurizer safety valves or increase in the pressurizer relief tank temperature or level. (1) (2) (1)

INSERT 1

INSERT 2

Overpressure protection is required in MODES 1, 2, 3, 4, and 5; however, in MODE 4, with one or more RCS cold leg temperatures ≤ [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR], and MODE 5 and MODE 6 with the reactor vessel head on, overpressure protection is provided by operating procedures and by meeting the requirements of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."

(3)

The upper and lower pressure limits are based on the ± 1% tolerance requirement (Ref. 1) for lifting pressures above 1000 psig. The lift setting is for the ambient conditions associated with MODES 1, 2, and 3. This requires either that the valves be set hot or that a correlation between hot and cold settings be established. (5)

The pressurizer safety valves are part of the primary success path and mitigate the effects of postulated accidents. OPERABILITY of the safety valves ensures that the RCS pressure will be limited to 110% of design pressure. The consequences of exceeding the American Society of Mechanical Engineers (ASME) pressure limit (Ref. 1) could include damage to RCS components, increased leakage, or a requirement to perform additional stress analyses prior to resumption of reactor operation.

(1) **INSERT 1**

An acoustic flow monitor and a temperature indicator on each valve discharge alerts the operator to the passage of steam due to leakage or valve lifting.

(2) **INSERT 2**

266°F (Unit 1) and ≤ 299°F (Unit 2)

BASES

APPLICABLE SAFETY ANALYSES

All accident and safety analyses in the FSAR (Ref. 2) that require safety valve actuation assume operation of three pressurizer safety valves to limit increases in RCS pressure. The overpressure protection analysis (Ref. 3) is also based on operation of three safety valves. Accidents that could result in overpressurization if not properly terminated include:

a. Uncontrolled rod withdrawal from full power,
b. Loss of reactor coolant flow,
c. Loss of external electrical load,
d. Loss of normal feedwater,
e. Loss of all AC power to station auxiliaries, and
f. Locked rotor.

Detailed analyses of the above transients are contained in Reference 2. Safety valve actuation is required in events c, d, and e (above) to limit the pressure increase. Compliance with this LCO is consistent with the design bases and accident analyses assumptions.

Pressurizer safety valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The three pressurizer safety valves are set to open at the RCS design pressure (2500 psia), and within the ASME specified tolerance, to avoid exceeding the maximum design pressure SL, to maintain accident analyses assumptions, and to comply with ASME requirements. The upper and lower pressure tolerance limits are based on the ± 1% tolerance requirements (Ref. 1) for lifting pressures above 1000 psig. The limit protected by this Specification is the reactor coolant pressure boundary (RCPB) SL of 110% of design pressure. Inoperability of one or more valves could result in exceeding the SL if a transient were to occur. The consequences of exceeding the ASME pressure limit could include damage to one or more RCS components, increased leakage, or additional stress analysis being required prior to resumption of reactor operation.

APPLICABILITY

In MODES 1, 2, and 3, and portions of MODE 4 above the LTOP arming temperature, OPERABILITY of three valves is required because the combined capacity is required to keep reactor coolant pressure below 110% of its design value during certain accidents. MODE 3 and portions

(1) **INSERT 3**

(reactor coolant pump locked rotor)

(1) **INSERT 4**
(Unit 2 only)

Major rupture of main feedwater pipe

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BASES

APPLICABILITY (continued)

of MODE 4 are conservatively included, although the listed accidents may not require the safety valves for protection.

The LCO is not applicable in MODE 4 when any RCS cold leg temperatures are ≤ [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] or in MODE 5 because LTOP is provided. Overpressure protection is not required in MODE 6 with reactor vessel head detensioned.

The Note allows entry into MODES 3 and 4 with the lift settings outside the LCO limits. This permits testing and examination of the safety valves at high pressure and temperature near their normal operating range, but only after the valves have had a preliminary cold setting. The cold setting gives assurance that the valves are OPERABLE near their design condition. Only one valve at a time will be removed from service for testing. The [54] hour exception is based on 18 hour outage time for each of the [three] valves. The 18 hour period is derived from operating experience that hot testing can be performed in this timeframe.

ACTIONS

A.1

With one pressurizer safety valve inoperable, restoration must take place within 15 minutes. The Completion Time of 15 minutes reflects the importance of maintaining the RCS Overpressure Protection System. An inoperable safety valve coincident with an RCS overpressure event could challenge the integrity of the pressure boundary.

B.1 and B.2

If the Required Action of A.1 cannot be met within the required Completion Time or if two or more pressurizer safety valves are inoperable, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 4 with any RCS cold leg temperatures ≤ [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] within [24] 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. With any RCS cold leg temperatures at or below [275°F] [Low Temperature Overpressure (LTOP) arming temperature specified in the PTLR], overpressure protection is provided by the LTOP System. The change from MODE 1, 2, or 3 to MODE 4 reduces the RCS energy (core

(2) **INSERT 5**

266°F (Unit 1) and ≤ 299°F (Unit 2)

(2) **INSERT 6**

266°F (Unit 1) and ≤ 299°F (Unit 2)

(2) **INSERT 7**

266°F (Unit 1) and 299°F (Unit 2)

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BASES

ACTIONS (continued)

power and pressure), lowers the potential for large pressurizer insurges, and thereby removes the need for overpressure protection by (three) pressurizer safety valves. (2)

SURVEILLANCE REQUIREMENTS

SR 3.4.10.1

SRs are specified in the Inservice Testing Program. Pressurizer safety valves are to be tested in accordance with the requirements of ~~Section XI of~~ the ASME (OM) Code (Ref. 4), which provides the activities and Frequencies necessary to satisfy the SRs. No additional requirements are specified. (6)

The pressurizer safety valve setpoint is ± [3]% for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift. (2)

REFERENCES

1. ASME, Boiler and Pressure Vessel Code, Section III.
2. [U]FSAR, Chapter ~~[15]~~ (14). (2)
3. WCAP-~~7769~~ (14286), Rev. ~~1~~, ~~June 1972~~ (December 1995). (1)
4. ASME, ~~Boiler and Pressure Vessel Code, Section XI~~. INSERT 8 (6)

(6) **INSERT 8**

Operation and Maintenance Standards and Guides (OM Codes)

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.10 BASES, PRESSURIZER SAFETY VALVES

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. These punctuation corrections have been made consistent with the Writer's Guide for the improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

4. Changes are made to be consistent with similar phrases in other ISTS Bases.

5. Changes have been made to be consistent with the ISTS.

6. CTS 4.0.5 requires pump and valve testing per the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. ISTS 5.5.8, "Inservice Testing Program," also references the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. However, ITS 5.5.6, "Inservice Testing Program," references the ASME Operation and Maintenance Standards and Guides (OM Codes) as described in detail in ITS 5.5 JFD 10. ITS Bases SR 3.4.10.1 references the ASME OM Codes for testing of the pressurizer safety valves consistent with the justification provided in ITS 5.5 JFD 10. This changes the ISTS Bases to reference the ASME OM Codes instead of Section XI of the ASME Boiler and Pressure Vessel Code. This is acceptable based on the justification provided in ITS 5.5 DOC A.15.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.10, PRESSURIZER SAFETY VALVES

There are no specific NSHC discussions for this Specification.

ATTACHMENT 11

ITS 3.4.11, Pressurizer Power Operated Relief Valves (PORVs)

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.11

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

RELIEF VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.4.11 — 3.4.11 Three power operated relief valves (PORVs) and their associated block valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3. — M.1

ACTION: ← Add proposed ACTIONS Note

ACTION A / ACTION H — a. With one or more PORVs inoperable ~~because of excessive seat leakage~~ [and capable of being manually cycled] (A.2), within 1 hour ~~either restore the inoperable PORV(s) to OPERABLE status or~~ (A.3) close the associated block valve(s) with power maintained to the block valve(s); ~~otherwise~~, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION B / ACTION H — b. With one PORV inoperable ~~due to causes other than excessive seat leakage~~ [and not capable of being manually cycled] (A.2), within 1 hour ~~either restore the PORV to OPERABLE status or~~ (A.3) close the associated block valve and remove power from the block valve; ~~otherwise~~ be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION D / Required Actions B.1 and B.2 / Required Actions D.1 and F.1 / ACTION H — c. With two PORVs inoperable ~~due to causes other than excessive seat leakage~~ [and not capable of being manually cycled] (A.2), within 1 hour ~~either restore the PORVs to OPERABLE status or~~ (A.3) close the associated block valves and remove power from the block valves; restore at least one of the inoperable PORVs to OPERABLE status within the ~~following~~ 72 hours (M.1) or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

ACTION H / Required Actions B.1 and B.2 / ACTION H — d. With three PORVs inoperable ~~due to causes other than excessive seat leakage~~ [and not capable of being manually cycled] (A.2), within 1 hour ~~either restore at least one PORV to OPERABLE status or~~ (A.3) close the block valves and remove power from ~~the block valves~~ and be in HOT STANDBY within the ~~next~~ 6 hours and in HOT SHUTDOWN within the ~~following~~ 6 hours. (M.1) (A.4)

← Add Required Action C.1 Note (A.4)

ACTION C / ACTION H — e. With one block valve inoperable, within 1 hour ~~either restore the block valve to OPERABLE status, or~~ (A.3) place its associated PORV in manual control, ~~or close the block valve and remove power from the block valve~~ (M.2); ~~otherwise be~~ in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

← Add Required Action E.1 and F.1 Note (A.4)

ACTIONS E and G / Required Action C.1 / Required Action C.1 / Required Action G.1 / Required Action E.1 / ACTION H — f. With two or three block valves inoperable, ~~within 1 hour apply the provisions of ACTION e above to one of the block valves and,~~ for the remaining inoperable block valve(s), ~~either restore the block valve(s) to OPERABLE status, or~~ (A.3) place the associated PORV(s) in manual control; ~~restore at least one block valve to OPERABLE status within the next hour;~~ restore at least two block valves to OPERABLE status within the ~~following~~ 72 hours (M.1); ~~otherwise~~ be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

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ITS 3.4.11

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION (Continued)

and not capable of being manually cycled — A.2

ACTIONS F and H — g. With PORVs and block valves not in the same line inoperable due to causes other than excessive seat leakage, within 1 hour restore the valves to OPERABLE status or close and de-energize the associated block valve and place the associated PORV in manual control in each respective line. Apply the portions of ACTION c or d above, relating to the OPERATIONAL MODE, as appropriate for two or three lines unavailable. (A.3, L.1)

Required Actions B.1 and B.2

Required Action C.1

ACTIONS F and H

SURVEILLANCE REQUIREMENTS

4.4.11.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE: (A.5)

a. At least once per 31 days by performance of a CHANNEL FUNCTIONAL TEST, excluding valve operation, and (L.2)

SR 3.4.11.2 — b. At least once per 18 [24] months by operating the PORV through one complete cycle of full travel during MODES 3 or 4, and (L.3)

SR 3.4.11.3 — c. At least once per 18 [24] months by operating solenoid air control valves and check valves in PORV control systems through one complete cycle of full travel, and (L.3)

d. At least once per 18 months by performing a CHANNEL CALIBRATION of the actuation instrumentation. (L.2)

SR 3.4.11.1 — 4.4.11.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel unless the block valve is closed in order to meet the requirements of ACTION b, c, or d in Specification 3.4.11. (L.4)

4.4.11.3 Deleted.

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

REACTOR COOLANT SYSTEM

RELIEF VALVES - OPERATING

LIMITING CONDITION FOR OPERATION

LCO 3.4.11 — 3.4.11 Three power operated relief valves (PORVs) and their associated block valves shall be OPERABLE. (M.1)

APPLICABILITY: MODES 1, 2, and 3.

ACTION: ← Add proposed ACTIONS Note (A.2)

[and capable of being manually cycled] (A.3)

ACTION A / ACTION H — a. With one or more PORVs inoperable because of excessive seat leakage, within 1 hour either restore the PORV(s) to OPERABLE status or close the associated block valve(s) with power maintained to the block valve(s); otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

[and not capable of being manually cycled] (A.2) (A.3)

ACTION B / ACTION H — b. With one PORV inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORV to OPERABLE status or close the associated block valve and remove power from the block valve; otherwise be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

[and not capable of being manually cycled] (A.2) (A.3) (M.1)

ACTION D / Required Actions B.1 and B.2 / Required Actions D.1 and F.1 / ACTION H — c. With two PORVs inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORVs to OPERABLE status or close the associated block valves and remove power from the block valves; restore at least one of the inoperable PORVs to OPERABLE status within the following 72 hours or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

[and not capable of being manually cycled] (A.2) (A.3) (M.1)

ACTION H / Required Actions B.1 and B.2 / ACTION H — d. With three PORVs inoperable due to causes other than excessive seat leakage, within 1 hour either restore at least one PORV to OPERABLE status or close the block valves and remove power from the block valves and be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

[Add Required Action C.1 Note] (A.4) (A.3) (M.2)

ACTION C / ACTION H — e. With one block valve inoperable, within 1 hour either restore the block valve to OPERABLE status, or place its associated PORV in manual control, or close the block valve and remove power from the block valve; otherwise be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

[Add Required Action E.1 and F.1 Note] (A.4) (A.3) (M.1)

ACTIONS E and G / Required Action C.1 / Required Action C.1 / Required Action G.1 / Required Action E.1 / ACTION H — f. With two or three block valves inoperable, within 1 hour apply the provisions of ACTION e above to one of the block valves and, for the remaining inoperable block valve(s), either restore the block valve(s) to OPERABLE status, or place the associated PORV(s) in manual control; restore at least one block valve to OPERABLE status within the next hour; restore at least two block valves to OPERABLE status within the following 72 hours; otherwise be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

ITS 3.4.11

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

REACTOR COOLANT SYSTEM

LIMITING CONDITION FOR OPERATION (Continued)

ACTIONS F and H — g. With PORVs and block valves not in the same line inoperable due to causes other than excessive seat leakage, [and not capable of being manually cycled — A.2] [A.3]

Required Actions B.1 and B.2 — within 1 hour restore the valves to OPERABLE status or close and de-energize the associated block valve and place the associated PORV in manual [L.1]

Required Action C.1 — control in each respective line.

ACTIONS F and H — Apply the portions of ACTION c or d above, relating to the OPERATIONAL MODE, as appropriate for two or three lines unavailable.

SURVEILLANCE REQUIREMENTS

4.4.11.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE: [A.5]

a. At least once per 31 days by performance of a CHANNEL FUNCTIONAL TEST, excluding valve operation, and [L.2]

SR 3.4.11.2 b. At least once per [18 → 24] months by operating the PORV through one complete cycle of full travel during MODES 3 or 4, and [L.3]

SR 3.4.11.3 c. At least once per [18 → 24] months by operating solenoid air control valves and check valves in PORV control systems through one complete cycle of full travel, and [L.3]

d. At least once per 18 months by performing a CHANNEL CALIBRATION of the actuation instrumentation. [L.2]

SR 3.4.11.1 4.4.11.2 Each block valve shall be demonstrated OPERABLE at least once per 92 days by operating the valve through one complete cycle of full travel unless the block valve is closed in order to meet the requirements of ACTION b, c, or d in Specification 3.4.11. [L.4]

4.4.11.3 Deleted.

DISCUSSION OF CHANGES
ITS 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.11 Action a applies to one or more PORVs inoperable solely due to excessive seat leakage. CTS 3.4.11 Actions b, c, and d apply to one, two, or three PORVs inoperable, respectively, due to causes other than excessive seat leakage. CTS 3.4.11 Action g applies to PORVs and block valves not in the same line inoperable due to causes other than excessive seat leakage. ITS 3.4.11 ACTIONS divide the conditions of PORV inoperability into those in which the PORV is capable of being manually cycled and those which the PORV is not capable of being manually cycled. ITS 3.4.11 ACTION A applies to one or more PORVs inoperable and capable of being manually cycled. ITS 3.4.11 ACTION B applies to one or more PORVs inoperable and not capable of being manually cycled. ITS 3.4.11 ACTION D applies to two PORVs inoperable and not capable of being manually cycled. ITS ACTION F applies to one PORV inoperable and not capable of being manually cycled and one block valve inoperable in a different line than the inoperable PORV. ITS ACTION H applies to three PORVs inoperable and not capable of being manually cycled. ITS ACTION H also applies to: a) two PORVs inoperable and not capable of being manually cycled and one block valve inoperable in a different line than the inoperable PORVs; or b) one PORV inoperable and not capable of being manually cycled and two block valves inoperable and in different lines than the inoperable PORV. This changes the CTS by dividing the existing conditions into those in which the PORV can, and cannot, be manually cycled.

This change is acceptable because the requirements have not changed. A PORV inoperable due to excessive seat leakage can still be manually cycled. PORVs inoperable for other reasons cannot be manually cycled. Therefore, the conditions under which the Required Actions are applied have not changed. This change is designated as administrative because it does not result in a technical change to the CTS.

A.3 CTS 3.4.11 Actions a, b, c, and d provide an option to restore inoperable PORV(s) to OPERABLE status. CTS 3.4.11 Actions e and f provide an option to restore inoperable block valve(s) to OPERABLE status. CTS 3.4.11 Action g provides an option to restore either the inoperable PORV(s) or the inoperable block valve(s) to OPERABLE status. ITS 3.4.11 does not include the explicit option to restore the valves to OPERABLE status. This changes the CTS by eliminating the option to restore the valves to OPERABLE status.

The purpose of the CTS Actions are to provide all of the acceptable options for inoperable PORVs and block valves. This change is acceptable because the requirements have not changed. LCO 3.0.3 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. Therefore, it is not necessary to provide the option to restore the inoperable valves to OPERABLE status. When they are restored, LCO 3.0.2 allows exiting from the Condition. This change is designated as administrative as it is a change required by the ITS usage rules that does not result in a technical change to the CTS.

A.4 CTS 3.4.11 Action e specifies the compensatory actions for one inoperable block valve. CTS 3.4.11 Action f specifies the compensatory actions for two or three inoperable block valves. ITS 3.4.11 ACTION C specifies the Required Actions for one inoperable block valve, ITS 3.4.11 ACTION E specifies the Required Actions for two inoperable block valves, and ITS 3.4.11 ACTION G specifies the Required Actions for three inoperable block valves. The ITS 3.4.11 ACTIONS C, E, and G Required Actions are preceded by a Note that states that the specified Required Action (C.1, E.1, or G.1) does not apply when the block valve is inoperable solely as a result of complying with Required Action B.2. ITS 3.4.11 Required Action B.2 requires the removal of power from the applicable block valve when a PORV is inoperable. This changes the CTS by adding the clarification Note that the Required Action to place the PORV in manual control is not applicable when the block valve is inoperable solely due to complying with the ACTIONS for an inoperable PORV.

The purpose of the CTS 3.4.11 Actions is to ensure the appropriate compensatory measures are taken with inoperable PORVs or inoperable block valves. The Note clarifies that the applicable Required Action is not necessary when entry into the Condition is made as a result of application of the Required Actions for inoperable PORVs that are not capable of being manually cycled. This clarification is acceptable since these actions (place associated PORV in manual control or restore one block valve to OPERABLE status) are not appropriate for the block valve inoperability. This change is designated as administrative since the change does not result in a technical change to the CTS.

A.5 CTS 4.4.11.1 states that the PORVs must be tested in accordance with Specification 4.0.5, the Inservice Testing Program requirements for ASME Code Class 1, 2, and 3 components. ITS 3.4.11 does not contain this explicit Surveillance Requirement. This changes the CTS by deleting the explicit requirement to perform the inservice testing Surveillance Requirements for ASME Code Class 1, 2, and 3 components.

The purpose of CTS 4.4.11.1 is to ensure the appropriate inservice testing Surveillance Requirements for ASME Code Class 1, 2, and 3 components are performed for the required PORVs. The inservice testing requirements of CTS 4.0.5 are retain in ITS 5.5.6, "Inservice Testing Program." See the Discussion of Changes for ITS 5.5 for any changes to the requirements of CTS 4.0.5. The explicit cross reference is not necessary since when the system is determined to be inoperable when tested in accordance with the Inservice Testing Program, the plant procedures will require the PORVs to be declared inoperable and the appropriate ITS 3.4.11 ACTIONS will be entered when applicable. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.11 describes the Actions to be taken when PORV(s) and/or block valve(s) are inoperable. ITS 3.4.11 also describes Actions to be taken when PORV(s) and/or block valve(s) are inoperable and contains a statement (ITS 3.4.11 ACTIONS Note) that separate condition entry is allowed for each PORV and each block valve. This changes the CTS by adding a Note stating that separate condition entry is allowed for each PORV.

The purpose of the CTS 3.4.11 Actions are to provide the appropriate compensatory actions for inoperable PORV(s) and/or block valves. This proposed change will allow separate condition entry for each PORV and each block valve. CTS 3.4.11 Action a allows separate condition entry for one or more inoperable PORVs because of excessive seat leakage, but for all other inoperabilities a specific condition exists in CTS 3.4.11. That is, an Action exists for one PORV inoperable due to causes other than excessive seat leakage (Action b), two PORVs inoperable due to causes other than excessive seat leakage (Action c), three PORVs inoperable due to causes other than excessive seat leakage (Action d), one block valve inoperable (Action e), two or three block valves inoperable (Action f), and PORVs and block valves not in the same line inoperable due to causes other than excessive seat leakage (Action g). This change will result in more restrictive Completion Times for those Conditions where more than one valve is inoperable. CTS 3.4.11 Action c and Action d require restoration of one valve in the "following" 72 hours (for two inoperable valves). The 72 hour time starts after the 1 hour time allowed to close block valves and remove power to the block valves, or to restore the PORVs to OPERABLE status. ITS 3.4.11 Required Action D.1 and Required Action E.1 will not allow the 72 hour Completion Time to follow the 1 hour time period since separate condition entry is allowed. If three PORVs are found to be inoperable due to causes other than excessive seat leakage, CTS 3.4.11 Action d requires the unit to close block valves and remove power from the block valves within 1 hour and be in HOT STANDBY (MODE 3) within the next 6 hours and in HOT SHUTDOWN (MODE 4) within the following 6 hours. ITS 3.4.11 ACTION H will require immediate entry into the shutdown actions when three PORVs are inoperable. These changes are acceptable since the proposed Required Actions provide sufficient time to satisfy the Required Actions. Valve inoperabilities are normally found one at a time, not concurrently. Therefore, the action to close a block valve or place a PORV in manual control will apply as each valve is found to be inoperable and not at the same time. This change is designated as more restrictive as it reduces the Completion Times for multiple valve failures.

M.2 CTS 3.4.11 Action e provides an option to place the associated PORV in manual control or to close the block valve and remove power from the block valve when it is found that one block valve is inoperable. ITS 3.4.11 ACTION C specifies to place the PORVs in manual control. This changes the CTS by deleting the option to close the block valve and remove power from the block valve when the block valve is found to be inoperable.

DISCUSSION OF CHANGES
ITS 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

The purpose of CTS 3.4.11 Action e is to provide the appropriate compensatory actions for when a block valve is inoperable. A block valve is inoperable when it is not open or when it is not capable of isolating the associated PORV from the pressure of the reactor coolant system. In most cases, the option to close the valve will not be available if the valve is inoperable such that it cannot be closed. Therefore, the action to place the PORV in manual control is acceptable. This precludes its automatic opening for an overpressure event and avoids the potential for a stuck open PORV at a time when its associated block valve is inoperable. This change is designated as more restrictive as it deletes an optional compensatory action.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.4.11 Action g specifies compensatory measures for inoperable PORVs and block valves not in the same line due to causes other than excessive seat leakage. The actions are to restore the valves to OPERABLE status or close and de-energize the associated block valve and place the associated PORV in manual control in each respective line within one hour. In addition, the applicable portions of CTS 3.4.11 Action c or d must be applied, relating to the OPERATIONAL MODE, as appropriate for two or three lines unavailable. ITS 3.4.11 ACTION B covers the condition associated with one or more PORVs inoperable and not capable of being manually cycled. Required Actions B.1 and B.2 are to close the associated block valve and to remove power from associated block valve. ITS 3.4.11 ACTION C covers the condition associated with one or more inoperable block valves. ITS 3.4.11 Required Action C.1 requires the PORVs to be placed in manual control. ITS 3.4.11 ACTION F covers the condition associated with one PORV inoperable and not capable of being manually cycled and one block valve inoperable in a different line than the inoperable PORV. ITS 3.4.11 ACTION H covers the conditions associated with: a) two PORVs inoperable and not capable of being manually cycled and one block valve inoperable in a different line than the inoperable PORVs; and b) one PORV inoperable and not capable of being manually cycled and two block valves inoperable in different lines than the inoperable PORV. This changes the CTS by only requiring the block valves to be closed and de-energized when its associated PORV is inoperable and only requires the PORVs to be placed in manual when its associated block valve is inoperable.

The purpose of the CTS 3.4.11 Actions is to provide the appropriate compensatory actions for inoperable PORVs and inoperable block valves. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. When a block valve is inoperable the associated PORV is placed in manual control. The primary purpose of a block valve is to isolate a stuck open PORV. If the PORV is placed in manual control it cannot be opened inadvertently; therefore, the primary purpose of the block valve is being met. The PORV still has the capability to be manually opened. When a PORV is inoperable, isolation is required by closing the block valve and removing power from the associated block valve. This ensures that the inadvertent opening of the PORV will not depressurize the Reactor Coolant System. Therefore, it is not necessary to close and deenergize the block valve in addition to placing the PORV in manual control for each type of inoperability. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.4.11.1.a requires performance of a Channel Functional Test for each PORV, excluding valve operation, every 31 days and CTS 4.4.11.1.d requires performance of a Channel Calibration of the PORV actuation instrumentation every 18 months. ITS 3.4.11 does not require the PORV automatic control system for OPERABILITY. This changes the CTS by eliminating the LCO requirement and SRs for the PORV automatic control system.

The purpose of CTS 3.4.11 is to ensure the PORVs are available to perform their accident mitigation function. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. In the applicable MODES for ITS 3.4.11, the PORVs are only credited for manual operator action in the event of a steam generator tube rupture. The PORV automatic control system is not needed to perform this function and, therefore, is not required for PORV OPERABILITY. This change is designated as less restrictive because less stringent LCO requirements and SRs are being applied in the ITS than were applied in the CTS.

L.3 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.4.11.1.b requires each PORV to be cycled through one complete cycle of full travel every 18 months. CTS 4.4.11.1.c requires each solenoid air control valve and check valve in the PORV control systems to be operated through one complete cycle of full travel every 18 months. ITS SR 3.4.11.2 and SR 3.4.11.3 include these same tests to be performed at a Frequency of 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

DISCUSSION OF CHANGES
ITS 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

The purpose of CTS 4.4.11.1.b and 4.4.11.1.c is to ensure the PORVs can be opened. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the full cycle tests of the PORVs and the associated solenoid air control valves and check valves is acceptable because the accident analysis only assumes the manual actuation of one PORV. Additionally, there are no time-based failure mechanisms identified in the PORVs, the solenoid air control valves, or the check valves. Based on the inherent system and component reliability, system redundancy, the quarterly stroke testing and the mid cycle stroke time testing performed under the IST Program, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 7 – Relaxation of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.4.11.2 states that each block valve shall be cycled unless the block valve is closed in order to meet the requirements of CTS 3.4.11 Action b, c, or d. CTS 3.4.11 Actions b, c, and d require the block valve to be closed for reasons other than excessive PORV seat leakage. ITS SR 3.4.11.1 states that each block valve shall be cycled, but it is modified by a Note stating that the SR is not required to be performed with the block valve closed in accordance with the Required Actions. This changes the CTS by not requiring a cycle of the block valve when the block valve is also closed due to excessive PORV seat leakage.

The purpose of CTS 4.4.11.2 is to verify the block valve can be cycled, if needed. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. With the block valve closed in order to isolate a PORV with excessive seat leakage, opening the block valve increases the risk of an unisolable RCS leak as the PORV is already inoperable. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

TSTF-359

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

and each block valve ③

DOC M.1

- NOTES -

1. Separate Condition entry is allowed for each PORV.

2. LCO 3.0.4 is not applicable.

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CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable and capable of being manually cycled.	A.1 Close and maintain power to associated block valve.	1 hour
B. One [or two] PORV[s] inoperable and not capable of being manually cycled.	B.1 Close associated block valve[s].	1 hour
	AND	
	B.2 Remove power from associated block valve[s].	1 hour
	AND	
	B.3 Restore PORV[s] to OPERABLE status.	72 hours

Action a (beside Condition A); Actions b and c (beside Condition B); "more" (handwritten insertion in Condition B); ① ① ② (margin markers)

CTS

ACTIONS (continued) or more

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One block valves inoperable.	- NOTE - Required Actions C.1 and C.2 do not apply when block valves are inoperable solely as a result of complying with Required Actions B.2 or E.2.	
	C.1 Place associated PORV in manual control.	1 hour
	AND	
	C.2 Restore block valve to OPERABLE status.	72 hours
D. Required Action and associated Completion Time of Condition A, B, or C not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Be in MODE 4.	12 hours
E. Two or three PORVs inoperable and not capable of being manually cycled.	E.1 Close associated block valves.	1 hour
	AND	
	E.2 Remove power from associated block valves.	1 hour
	AND	
	E.3 Be in MODE 3.	6 hours
	AND	
	E.4 Be in MODE 4.	12 hours

Handwritten annotations: Action e; Actions c, Action g; Actions a, b, c, d, e, f, g; INSERT 1; INSERT 2; INSERT 3; Move to after ACTION G

(2) **INSERT 1**

D. Two PORVs inoperable and not capable of being manually cycled.	D.1 Restore one PORV to OPERABLE status.	72 hours

(7) **INSERT 2**

Required Action and associated CompletionTime of Condition A, B, C, D, E, F, or G not met.

OR

(7) **INSERT 3**

OR

Two PORVs inoperable and not capable of being manually cycled and one block valve inoperable, for reasons other than to comply with Required Action B.2, in a different line than the inoperable PORVs.

OR

One PORV inoperable and not capable of being manually cycled and two block valves inoperable, for reasons other than to comply with Required Action B.2, in different lines than the inoperable PORV.

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
Action f — E F. ~~More than one~~ Two block valves inoperable.		- NOTE - Required Actions ~~F.1, F.2, and F.3~~ E.1 do not apply when block valves are inoperable solely as a result of complying with Required Actions B.2 ~~or E.2~~.	
	~~F.1~~	~~Place associated PORVs in manual control.~~	~~1 hour~~
	~~AND~~		
	~~F.2~~	~~Restore one block valve to OPERABLE status [if three block valves are inoperable].~~	~~2 hours~~
	~~AND~~		
	~~F.3~~ E.1	Restore ~~remaining~~ one block valves to OPERABLE status.	72 hours
Actions f and g — ~~G. Required Action and associated Completion Time of Condition F not met.~~	~~G.1~~	~~Be in MODE 3.~~	~~6 hours~~
	~~AND~~		
	~~G.2~~	~~Be in MODE 4.~~	~~12 hours~~

INSERT 4 (4) (5)

(1) (4) (6)

INSERT 4

F. One PORV inoperable and not capable of being manually cycled and one block valve inoperable, for reasons other than to comply with Required Action B.2, in a different line than the inoperable PORV.	F.1 Restore valve(s) such that only valve(s) in one line are inoperable.	72 hours	5
G. Three block valves inoperable.	G.1 -------------------- - NOTE - Required Action G.1 does not apply when block valves are inoperable solely as a result of complying with Required Action B.2. -------------------- Restore one block valve to OPERABLE status.	2 hours	4

CTS

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.4.11.2	SR 3.4.11.1	- NOTES - 1. Not required to be performed with block valve closed in accordance with the Required Actions of this LCO. 2. Only required to be performed in MODES 1 and 2. Perform a complete cycle of each block valve.	92 days	8 8
4.4.11.1.b	SR 3.4.11.2	- NOTE - Only required to be performed in MODES 1 and 2. Perform a complete cycle of each PORV.	~~18~~ 24 months	1
4.4.11.1.c	SR 3.4.11.3	[Perform a complete cycle of each solenoid air control valve and check valve on the air accumulators in PORV control systems.	~~[18]~~ 24 months]	1
	SR 3.4.11.4	[Verify PORVs and block valves are capable of being powered from emergency power sources.	[18] months]	9

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

1. The brackets are removed and the proper plant specific information/value is provided.

2. ISTS 3.4.11 Condition B includes a bracketed requirement for entry when one [or two] PORV[s] are inoperable and not capable of being manually cycled. ISTS 3.4.11 Required Action B.3 requires restoration of the two PORVs within 72 hours. The CTS does not require restoration when only one PORV is inoperable. Therefore, the bracketed requirement has been changed to require entry when one or more PORVs are inoperable and the requirement to restore the PORV within 72 hours has been deleted. ITS 3.4.11 ACTION D has been added (consistent with the CTS) and covers the condition associated with two inoperable PORVs that are not capable of being manually cycled. The Required Action is to restore the inoperable PORV to OPERABLE status within 72 hours. The Completion Time is also consistent with the Completion Time for ISTS 3.4.11 Required Action B.3.

3. The ISTS 3.4.11 ACTIONS Note 1 has been revised to allow separate Condition entry for each block valve. TSTF-247, Rev. 0, approved this change on September 24, 1998, but it was not properly adopted in NUREG-1431, Rev.2.

4. ISTS 3.4.11 Condition C includes a requirement for entry when one block valve is inoperable. ISTS 3.4.11 Required Action C.2 requires restoration of the block valve within 72 hours. The CTS does not require restoration of one inoperable block valve. Therefore, ISTS 3.4.11 Required Action C.2 has been deleted and ISTS 3.4.11 Condition C has been changed to "one or more block valves inoperable," since ISTS 3.4.11 Required Action C.1 is appropriate for any number of inoperable block valves. In addition, the ISTS 3.4.11 Required Action C Note has been modified to reflect the deletion of Required Action C.2. ISTS 3.4.11 Condition F covers the inoperabilities associated with "more than one block valve inoperable." This Condition (ITS 3.4.11 Condition E) has been revised to cover the condition for when two block valves are inoperable. In addition, ISTS 3.4.11 Required Actions F.1 and F.2 have been deleted. ISTS 3.4.11 Required Action F.1 is covered by ISTS 3.4.11 Required Action C.1 and does not have to be repeated in this Condition since, as noted in the ACTIONS Note 1, separate Condition entry is allowed for each block valve and since Condition C has been revised to cover the Condition of "one or more block valves inoperable." ISTS 3.4.11 Required Action F.2 has been deleted since the action (Restore one block valve to OPERABLE status if three block valves are inoperable) is covered by proposed ITS 3.4.11 ACTION G, three block valves inoperable. Similarly, the ISTS 3.4.11 Required Action F Note (ITS 3.4.11 Required Action E Note) has been modified to reflect the deletion of ISTS 3.4.11 Required Actions F.1 and F.2.

5. ITS ACTION F has been added to cover inoperabilities associated with one PORV inoperable and not capable of being manually cycled and one block valve inoperable in a different line for reasons other than to comply with Required Action B.2. This ACTION is consistent with CTS 3.4.11 Action g and subsequently Action c (since Action c is referenced in Action g). The Required Action is to restore one PORV to OPERABLE status within 72 hours or restore the block valve to OPERABLE status.

6. The default Conditions covered by ISTS 3.4.11 ACTIONS D and G have been deleted since they are adequately covered by ISTS 3.4.11 ACTION E (ITS 3.4.11 ACTION H).

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

7. ISTS 3.4.11 ACTION E (ITS 3.4.11 ACTION H) has been revised to cover any Required Action and associated Completion Time not met, three PORVs inoperable and not capable of being manually cycled, two PORVs inoperable and not capable of being manually cycled and one block valve inoperable in a different line than the inoperable PORVs, and two block valves inoperable and one PORVs inoperable and not capable of being manually cycled in a different line than the inoperable block valve. These Conditions, Required Actions, and Completion Times are consistent with the CTS. In addition, ISTS 3.4.11 Required Actions E.1 and E.2 have been deleted since they are covered by the Required Actions in ITS 3.4.11 ACTION B. ISTS 3.4.11 ACTIONS Note 1 states "Separate Condition entry is allowed for each PORV." Thus, when one, two, or three PORVs become inoperable and not capable of being manually cycled, ISTS 3.4.1 ACTION B must be entered and the Required Actions taken for each inoperable PORV. This is clearly stated in ITS Section 1.3, Example 1.3-5, which describes how the ACTIONS are to be used when a Note similar to that described above is used to modify the ACTIONS. Therefore, ISTS 3.4.11 Required Actions E.1 and E.2, which require closing and removing power from the associated block valves, are duplicative of ISTS 3.4.11 Required Actions B.1 and B.2 and are unnecessary to be included in ITS 3.4.11 ACTION H. Subsequent Required Actions have been renumbered as applicable.

8. This allowance has not been adopted, consistent with current licensing basis. The remaining Note has been renumbered due to this deletion.

9. The bracketed requirement is deleted because it is not applicable to CNP. The PORVs and block valves are not configured such that they can be powered from a non-safety related power source.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

BASES

BACKGROUND

The pressurizer is equipped with two types of devices for pressure relief: pressurizer safety valves and PORVs. The PORVs are air operated valves that are controlled to open at a specific set pressure when the pressurizer pressure increases and close when the pressurizer pressure decreases. The PORVs may also be manually operated from the control room.

Block valves, which are normally open, are located between the pressurizer and the PORVs. The block valves are used to isolate the PORVs in case of excessive leakage or a stuck open PORV. Block valve closure is accomplished manually using controls in the control room. A stuck open PORV is, in effect, a small break loss of coolant accident (LOCA). As such, block valve closure terminates the RCS depressurization and coolant inventory loss.

The PORVs and their associated block valves may be used by plant operators to depressurize the RCS to recover from certain transients if normal pressurizer spray is not available. Additionally, the series arrangement of the PORVs and their block valves permit performance of surveillances on the valves during power operation.

The PORVs may also be used for feed and bleed core cooling in the case of multiple equipment failure events that are not within the design basis, such as a total loss of feedwater.

The PORVs, their block valves, and their controls are powered from the vital buses that normally receive power from offsite power sources, but are also capable of being powered from emergency power sources in the event of a loss of offsite power. Two PORVs and their associated block valves are powered from two separate safety trains (Ref. 1).

The plant has two PORVs, each having a relief capacity of 210,000 lb/hr at 2335 psig. The functional design of the PORVs is based on maintaining pressure below the Pressurizer Pressure - High reactor trip setpoint following a step reduction of 50% of full load with steam dump. In addition, the PORVs minimize challenges to the pressurizer safety valves and also may be used for low temperature overpressure protection (LTOP). See LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."

(1) **INSERT 1**

the steam generator tube rupture (SGTR) event

(1) **INSERT 2**

The PORVs and their controls are powered from the safety related DC Power Distribution System.

(1) **INSERT 3**

while the third PORV and associated block valve is powered by the other safety train

(1) **INSERT 3Z**

The normal air supply for each PORV is the plant control air source. Two of the PORVs each have a solenoid control valve and an accumulator with a check valve, and open when the associated solenoid control valve and check valve opens. The other PORV only has a solenoid control valve, and opens when the associated solenoid control valve opens.

Unit ①

BASES

APPLICABLE SAFETY ANALYSES

Plant operators employ the PORVs to depressurize the RCS in response to certain plant transients if normal pressurizer spray is not available. For the Steam Generator Tube Rupture (SGTR) event, the safety analysis assumes that manual operator actions are required to mitigate the event. A loss of offsite power is assumed to accompany the event, and thus, normal pressurizer spray is unavailable to reduce RCS pressure. The PORVs are assumed to be used for RCS depressurization, which is one of the steps performed to equalize the primary and secondary pressures in order to terminate the primary to secondary break flow and the radioactive releases from the affected steam generator. ① ① INSERT 3A ①

unit

The PORVs are also modeled in safety analyses for events that result in increasing RCS pressure for which departure from nucleate boiling ratio (DNBR) criteria are critical (Ref. 2). By assuming PORV actuation, the primary pressure remains below the high pressurizer pressure trip setpoint; thus, the DNBR calculation is more conservative. As such, this actuation is not required to mitigate these events, and PORV automatic operation is, therefore, not an assumed safety function.

Pressurizer PORVs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires two PORVs and their associated block valves to be OPERABLE for manual operation to mitigate the effects associated with an SGTR. ①

By maintaining two PORVs and their associated block valves OPERABLE, the single failure criterion is satisfied. An OPERABLE block valve may be either open and energized with the capability to be closed, or closed and energized with the capability to be opened, since the required safety function is accomplished by manual operation. Although typically open to allow PORV operation, the block valves may be OPERABLE when closed to isolate the flow path of an inoperable PORV that is capable of being manually cycled (e.g., as in the case of excessive PORV leakage). Similarly, isolation of an OPERABLE PORV does not render that PORV or block valve inoperable provided the relief function remains available with manual action. INSERT 4 ① ① INSERT 3B ③

An OPERABLE PORV is required to be capable of manually opening and closing, and not experiencing excessive seat leakage. Excessive seat leakage, although not associated with a specific acceptance criteria, exists when conditions dictate closure of the block valve to limit leakage.

Satisfying the LCO helps minimize challenges to fission product barriers.

(1) **INSERT 3A**

The analysis also assumes a single failure of one of the PORVs.

(1) **INSERT 3B**

(one PORV is assumed to fail in the analysis)

(1) **INSERT 4**

Any of the three PORVs can be used to meet this requirement. In addition, the third PORV and associated block valve are required to be OPERABLE to ensure the PORV is closed and not excessively leaking and the associated block valve is capable of isolating the PORV due to excessive leakage or being stuck open.

BASES

APPLICABILITY

In MODES 1, 2, and 3, the PORV and its block valve are required to be OPERABLE to limit the potential for a small break LOCA through the flow path. The most likely cause for a PORV small break LOCA is a result of a pressure increase transient that causes the PORV to open. Imbalances in the energy output of the core and heat removal by the secondary system can cause the RCS pressure to increase to the PORV opening setpoint. The most rapid increases will occur at the higher operating power and pressure conditions of MODES 1 and 2. The PORVs are also required to be OPERABLE in MODES 1, 2, and 3 for manual actuation to mitigate a steam generator tube rupture event. (4)

Pressure increases are less prominent in MODE 3 because the core input energy is reduced, but the RCS pressure is high. Therefore, the LCO is applicable in MODES 1, 2, and 3. The LCO is not applicable in MODES 4, 5, and 6 with the reactor vessel head in place when both pressure and core energy are decreased and the pressure surges become much less significant. LCO 3.4.12 addresses the PORV requirements in these MODES. (4)

PORVs are required in other MODES for LTOP events.

ACTIONS

(A) Note 2 has been added to clarify that all pressurizer PORVs and block valves are treated as separate entities, each with separate Completion Times (i.e., the Completion Time is on a component basis). The exception for LCO 3.0.4, Note 2, permits entry into MODES 1, 2, and 3 to perform cycling of the PORVs or block valves to verify their OPERABLE status in the event that testing was not satisfactorily performed in lower MODES. (2) (TSTF-359)

- REVIEWER'S NOTE -
The bracketed options in Conditions B, C, E, and F are to accommodate plants with three PORVs and associated block valves. (1)

A.1

PORVs may be inoperable and capable of being manually cycled (e.g., excessive seat leakage). In this condition, either the PORVs must be restored or the flow path isolated within 1 hour. The associated block valve is required to be closed, but power must be maintained to the associated block valve, since removal of power would render the block valve inoperable. This permits operation of the plant until the next refueling outage (MODE 6) so that maintenance can be performed on the PORVs to eliminate the problem condition. (2) (5)

BASES

ACTIONS (continued)

Quick access to the PORV for pressure control can be made when power remains on the closed block valve. The Completion Time of 1 hour is based on plant operating experience that has shown that minor problems can be corrected or closure accomplished in this time period. (1)

B.1, B.2, and B.3 (6)

If one [or two] PORV(s) is inoperable and not capable of being manually cycled, it must be either restored, or isolated by closing the associated block valve and removing the power to the associated block valve. The Completion Times of 1 hour are reasonable, based on challenges to the PORVs during this time period, and provide the operator adequate time to correct the situation. If the inoperable valve cannot be restored to OPERABLE status, it must be isolated within the specified time. Because there is at least one PORV that remains OPERABLE, an additional 72 hours is provided to restore the inoperable PORV to OPERABLE status. If the PORV cannot be restored within this additional time, the plant must be brought to a MODE in which the LCO does not apply, as required by Condition D. (7) (6) (2) (6)

C.1 and C.2 (6)

If one [or two] block valve(s) are inoperable, then it is necessary to either restore the block valve(s) to OPERABLE status within the Completion Time of 1 hour or place the associated PORV in manual control. The prime importance for the capability to close the block valve(s) is to isolate a stuck open PORV. Therefore, if the block valve(s) cannot be restored to OPERABLE status within 1 hour, the Required Action is to place the PORV in manual control to preclude its automatic opening for an overpressure event and to avoid the potential for a stuck open PORV at a time that the block valve(s) are inoperable. The Completion Time of 1 hour is reasonable, based on the small potential for challenges to the system during this time period, and provides the operator time to correct the situation. Because at least one PORV remains OPERABLE, the operator is permitted a Completion Time of 72 hours to restore the inoperable block valve(s) to OPERABLE status. The time allowed to restore the block valve(s) is based upon the Completion Time for restoring an inoperable PORV in Condition B, since the PORVs may not be capable of mitigating an event if the inoperable block valve(s) are not full open. If the block valve(s) are restored within the Completion Time of 72 hours, the PORV may be restored to automatic operation. If it cannot be restored within this additional time, the plant must be brought to a MODE in which the LCO does not apply, as required by Condition D. (7) (6) (6)

BASES

ACTIONS (continued)

The Required Actions C.1 and C.2 are modified by a Note stating that the Required Actions do not apply if the sole reason for the block valve being declared inoperable is as a result of power being removed to comply with other Required Actions. In this event, the Required Actions for inoperable PORV(s) (which require the block valve power to be removed once it is closed) are adequate to address the condition. While it may be desirable to also place the PORV(s) in manual control, this may not be possible for all causes of Condition B or E entry with PORV(s) inoperable and not capable of being manually cycled (e.g., as a result of failed control power fuse(s) or control switch malfunctions(s)).

D.1 and D.2

If the Required Action of Condition A, B, or C is not met, then 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 6 hours and to MODE 4 within 12 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. In MODES 4 and 5, automatic PORV OPERABILITY may be required. See LCO 3.4.12.

E.1, E.2, E.3, and E.4

If more than one PORV is inoperable and not capable of being manually cycled, it is necessary to either restore at least one valve within the Completion Time of 1 hour or isolate the flow path by closing and removing the power to the associated block valves. The Completion Time of 1 hour is reasonable, based on the small potential for challenges to the system during this time and provides the operator time to correct the situation. If no PORVs are restored within the Completion Time, then 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 6 hours and to MODE 4 within 12 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. In MODES 4 and 5, automatic PORV OPERABILITY may be required. See LCO 3.4.12.

F.1

If two (or three) block valves are inoperable, it is necessary to restore at least one block valve within 2 hours. The Completion Time is reasonable

(6) **INSERT 5**

D.1

If two PORVs are inoperable and not capable of being manually cycled, it is necessary to restore one PORV to OPERABLE status within a Completion Time of 72 hours. Because at least one PORV remains OPERABLE, the assumptions of the SGTR analysis is still met, and the operator is permitted a Completion Time of 72 hours to restore one of the inoperable PORVs to OPERABLE status.

(6) **INSERT 6**

If any Required Action and associated Completion Time of Condition A, B, C, D, E, F, or G is not met, if three PORVs are inoperable and not capable of being manually cycled, if two PORVs are inoperable and not capable of being manually cycled and one block valve inoperable (for reasons other than to comply with Required Action B.2) in a different line than the inoperable PORVs, or if one PORV is inoperable and not capable of being manually cycled and two block valves are inoperable (for reasons other than to comply with Required Action B.2) in different lines than the inoperable PORV,

(6) **INSERT 7**

Because at least one block valve remains OPERABLE, the operator is permitted a Completion Time of 72 hours to restore one of the inoperable block valves to OPERABLE status.

BASES

ACTIONS (continued)

based on the small potential for challenges to the system during this time and provide the operator time to correct the situation.

The Required Actions B.1, F.2, and F.3 are modified by a Note stating that the Required Actions do not apply if the sole reason for the block valve being declared inoperable is a result of power being removed to comply with other Required Actions. In this event, the Required Actions for inoperable PORV(s) (which require the block valve power to be removed once it is closed) are adequate to address the condition. While it may be desirable to also place the PORV(s) in manual control, this may not be possible for all causes of Condition B or E entry with PORV(s) inoperable and not capable of being manually cycled (e.g., as a result of failed control power fuse(s) or control switch malfunctions(s)).

INSERT 8 (6)

G.1 and G.2

If the Required Actions of Condition F are not met, then 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 6 hours and to MODE 4 within 12 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. In MODES 4 and 5, automatic PORV OPERABILITY may be required. See LCO 3.4.12.

INSERT ACTION H from page B 3.4.11-5 (6)

SURVEILLANCE REQUIREMENTS

SR 3.4.11.1

Block valve cycling verifies that the valve(s) can be opened and closed if needed. The basis for the Frequency of 92 days is the ASME Code, Section XI (Ref. 3), which states that OM

This SR is modified by two Notes. Note 1 modifies this SR by stating that it is not required to be performed with the block valve closed in accordance with the Required Actions of this LCO. Opening the block valve in this condition increases the risk of an unisolable leak from the RCS since the PORV is already inoperable. Note 2 modifies this SR to allow entry into and operation in MODE 3 prior to performing the SR. This allows the test to be performed in MODE 3 under operating temperature and pressure conditions, prior to entering MODE 1 or 2. [In accordance with Reference 4, administrative controls require this test be performed in MODE 3 or 4 to adequately simulate operating temperature and pressure effects on PORV operation.]

(6) **INSERT 8**

F.1

If one PORV is inoperable and not capable of being manually cycled and one block valve is inoperable (for reasons other than to comply with Required Action B.2) in a different line than the inoperable PORV, it is necessary to restore valve(s) to OPERABLE status within 72 hours such that only valve(s) in one line are inoperable. Since at least one PORV and its associated block valve remain OPERABLE, the operator is permitted a Completion Time of 72 hours. The Completion Time is reasonable based on a small potential for challenges to the system during this time period and to provide the operator time to correct the situation.

G.1

If three block valves are inoperable, it is necessary to restore at least one block valve to OPERABLE status within 2 hours. The Completion Time is reasonable based on a small potential for challenges to the system during this time period and to provide the operator time to correct the situation.

Required Action G.1 is modified by a Note stating that the Required Action does not apply if the sole reason for the block valve being declared inoperable is a result of power being removed to comply with Required Action B.2. In this event, the Required Actions for inoperable PORV(s) (which require the block valve power to be removed once it is closed) are adequate to address the condition. While it may be desirable to also place the PORV(s) in manual control, this may not be possible for all causes of Condition B entry with PORV(s) inoperable and not capable of being manually cycled (e.g., as a result of failed control power fuse(s) or control switch malfunctions(s)).

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.11.2

SR 3.4.11.2 requires a complete cycle of each PORV. Operating a PORV through one complete cycle ensures that the PORV can be manually actuated for mitigation of an SGTR. The Frequency of [18] months is based on a typical refueling cycle and industry accepted practice.

The Note modifies this SR to allow entry into and operation in MODE 3 prior to performing the SR. This allows the test to be performed in MODE 3 under operating temperature and pressure conditions, prior to entering MODE 1 or 2. In accordance with Reference 4, administrative controls require this test be performed in MODE 3 or 4 to adequately simulate operating temperature and pressure effects on PORV operation.

SR 3.4.11.3

Operating the solenoid air control valves and check valves on the air accumulators ensures the PORV control system actuates properly when called upon. The Frequency of [18] months is based on a typical refueling cycle and the Frequency of the other Surveillances used to demonstrate PORV OPERABILITY.

[SR 3.4.11.4

This Surveillance is not required for plants with permanent 1E power supplies to the valves.

The Surveillance demonstrates that emergency power can be provided and is performed by transferring power from normal to emergency supply and cycling the valves. The Frequency of [18] months is based on a typical refueling cycle and industry accepted practice.]

REFERENCES

1. Regulatory Guide 1.32, February 1977.

2. FSAR, Section [15.2].

3. ASME, Boiler and Pressure Vessel Code, Section XI.

(1) INSERT 9

Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(1) INSERT 10

Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. The Frequency was also based on the

(1) INSERT 11

Operation and Maintenance Standards and Guides (OM Codes)

BASES

REFERENCES (continued)

4. Generic Letter 90-06, "Resolution of Generic Issue 70, 'Power-Operated Relief Valve and Block Valve Reliability,' and Generic Issue 94, 'Additional Low-Temperature Overpressure for Light-Water Reactors,' Pursuant to 10 CFR 50.54(f)," June 25, 1990. (7)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.11 BASES, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. Changes are made to reflect the ISTS.
3. This portion of the LCO Bases description implies that the LCO is satisfied with leaking PORVs and the associated block valve closed. This Condition is reflected in ACTION A therefore the discussion is not appropriate in the LCO description. In addition, the previous sentence in the Bases already states that the block valves are OPERABLE if closed but with power maintained.
4. Editorial change made for clarity.
5. This statement has been deleted since the statement is not valid. The Required Action does not preclude the unit from starting up without performing the maintenance on the valve(s).
6. Changes are made to reflect those changes made to the ISTS. The subsequent requirements are renumbered or revised, where applicable, to reflect the changes.
7. The brackets have been removed and the proper plant specific information/value has been provided.
8. This cross reference to another Specification has been deleted. This type of cross reference is not used in the ITS Bases.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.11, PRESSURIZER POWER OPERATED RELIEF VALVES (PORVs)

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 12

ITS 3.4.12, Low Temperature Overpressure Protection (LTOP) System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

LCO 3.4.12.A.2 3.4.9.3 At least one of the following overpressure protection systems shall be OPERABLE: [Add LCO 3.4.12.A.1 and LCO 3.4.12.B.1 accumulator isolation requirements] (M.1)

LCO 3.4.12.A.2.a a. Two power operated relief valves (PORVs) with a lift setting of less than or equal to 435 psig, or

LCO 3.4.12.A.2.b b. One power operated relief valve (PORV) with a lift setting of less than or equal to 435 psig and the RHR safety valve with a lift setting of less than or equal to 450 psig.

APPLICABILITY: Mode 5 [When the temperature of any RCS cold leg is less than or equal to 152°F,] and Mode 6 when the head is on [and fastened to the reactor vessel] and the RCS is not vented
LCO 3.4.12.A.2.c through a 2-square-inch or larger vent, or through any single blocked open PORV.

[MODE 4 when any RCS cold leg temperature ≤ 266°F] (M.2) (M.3)

ACTION:

[Add proposed ACTIONS Note] (M.2)
[Add proposed ACTION E]

ACTION F / ACTION G a. With one of two PORVs required by item a above or either the PORV or RHR safety valve required by item b above inoperable, either restore the inoperable PORV or RHR safety valve to OPERABLE status within 24 hours, or complete depressurization and venting of the RCS through at least a 2-square-inch vent, or through any single blocked open PORV, [within a total of 32] hours. [Maintain the RCS in a vented condition until the inoperable PORV or RHR safety valve has been restored to OPERABLE status.] [12] (L.1) (A.2)

ACTION G b. With both PORVs and the RHR safety valve inoperable, complete depressurization and venting of the RCS through at least a 2-square-inch vent, or through any single blocked open PORV, within [8] hours. [Maintain the RCS in a vented condition until both PORVs or one PORV and the RHR safety valve have been restored to OPERABLE status.] [12] (L.1) (A.2)

SR 3.4.12.5 c. With the RCS vented per ACTION a or b above, verify the vent pathway at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the vent pathway every 12 hours.

~~d. In the event either the PORVs, the RHR safety valve or the RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs or vents on the transient, and any corrective action necessary to prevent recurrence.~~ (L.2)

[Add proposed ACTIONS C and D] (M.1)

(A.1)

ITS

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by: [Add proposed SR 3.4.12.8 Note] (M.2)

SR 3.4.12.8 a. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel, but excluding valve operation, ~~within 31 days prior to entering a condition in which the PORV is required OPERABLE~~ and at least once per 31 days thereafter when the PORV required OPERABLE.

SR 3.4.12.9 b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per ~~18~~ [24] months. (L.3)

SR 3.4.12.6 c. Verifying the PORV isolation valve is open at least once per 72 hours when the PORV is being used for overpressure protection.

~~d. Testing in accordance with the inservice test requirements for ASME Category B valves pursuant to Specification 4.0.5.~~ (A.3)

e. Determining the emergency air tank OPERABLE by verifying:

SR 3.4.12.7 1. At least once per 31 days, air tank pressure greater than or equal to 900 psig.

~~2. Air tank pressure instrumentation OPERABLE by performance of a:~~

~~(a) CHANNEL FUNCTIONAL TEST at least once per 31 days, and~~

~~(b) CHANNEL CALIBRATION at least once per 18 months,~~

~~with the low pressure alarm setpoint greater than or equal to 900 psig.~~ (LA.2)

4.4.9.3.2 The RHR safety valve shall be demonstrated OPERABLE by:

SR 3.4.12.4 a. Verifying that the RHR system suction is aligned to the RCS loop with the valves in the flow path open at least once per 12 hours when the RHR safety valve is being used for overpressure protection.

~~b. Testing in accordance with the inservice test requirements for ASME Category C valves pursuant to Specification 4.0.5.~~ (A.3)

[Add proposed SR 3.4.12.3] (M.1)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.1 REACTIVITY CONTROL SYSTEMS

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION — See CTS 3/4.1.2.3

3.1.2.3

a. One charging pump in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency bus.

b. One charging flowpath associated with support of Unit 2 shutdown functions shall be available*

APPLICABILITY: Specification 3.1.2.3.a. - MODES 5 and 6
Specification 3.1.2.3.b. - At all times when Unit 2 is in MODES 1, 2, 3, or 4.

ACTION:

a. With no charging pump OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes except: 1) heatup or cooldown of the reactor coolant volume provided that SHUTDOWN MARGIN sufficient to accommodate the change in temperature is maintained in accordance with Specification 3.1.1.2 in MODE 5 or Specification 3.9.1 in MODE 6, and the heatup or cooldown rate is restricted to 50°F or less in any one-hour period in MODE 5, or 2) addition of water from the RWST, provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.7.b.2. — M.6: Add proposed ACTIONS Note

ACTION A, ACTION B, Applicability — b. With more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE when the temperature of any RCS cold leg is less than or equal to ~~152~~ 266°F, unless the reactor vessel head is removed, remove the additional charging pump(s) and the safety injection pump(s) ~~motor circuit breakers from the electrical power circuit within one hour.~~ immediately (M.6, LA.3, M.7)

c. The provisions of Specification 3.0.3 are not applicable.

d. In addition to the above, when Specification 3.1.2.3.b is applicable and the required flow path is not available, return the required flow path to available status within 7 days, or provide equivalent shutdown capability in Unit 2 and return the required flow path to available status within the next 60 days, or have Unit 2 in HOT STANDBY within the next 12 hours and HOT SHUTDOWN within the following 24 hours. — See CTS 3/4.1.2.3

SURVEILLANCE REQUIREMENTS

4.1.2.3.1.1 The above required charging pump shall be demonstrated OPERABLE by verifying that the pump's developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5.

LCO 3.4.12.A, Applicability — *A maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is less than or equal to ~~152~~ 266°F. (L.6, M.6)

L.6 — Add proposed LCO 3.4.12.B, LCO 3.4.12.B.2, LCO 3.4.12.B.3, LCO 3.4.12.B.4, and applicable ACTIONS

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.1 REACTIVITY CONTROL SYSTEMS

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION

not capable of injection into the RCS — LA.3

M.6

SR 3.4.12.1, SR 3.4.12.2 — 4.1.2.3.2 All charging pumps and safety injection pumps, excluding the above required OPERABLE charging pump, shall be demonstrated inoperable by verifying that the motor circuit breakers have been removed from their electrical power supply circuits at least once per 12 hours, except when:

Applicability —

a. The reactor vessel head is removed, or

b. The temperature of all RCS cold legs is greater than 152 °F. (266)

4.1.2.3.3 Charging line cross-tie valves to Unit 2 will be cycled full travel at least once per 18 months. Following cycling, the valves will be verified to be in their closed positions. — See CTS 3/4.1.2.3

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4 At least one residual heat removal (RHR) loop† shall be OPERABLE and in operation*, and either:

a. One additional RHR loop shall be OPERABLE**, or

b. The secondary side water level of at least two steam generators shall be greater than or equal to 76% of wide range instrument span.

APPLICABILITY: MODE 5 with reactor coolant loops filled.***

ACTION:

a. With one of the RHR loops inoperable and with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible.

b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.4.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

4.4.1.4.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

See ITS 3.4.7

* The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration,†† and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

** One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

LCO 3.4.12 Note

*** A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 152°F unless (1) the pressurizer water volume is less than 62% of span or (2) the secondary water temperature of each steam generator is less than 50°F above each of the Reactor Coolant System cold leg temperatures. Operability of a reactor coolant loop(s) does not require an OPERABLE auxiliary feedwater system.

A.4

† The normal or emergency power source may be inoperable.

†† For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.7.b.2.

See ITS 3.4.7

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Add proposed third Condition of Condition G

M.5

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,#

b. One OPERABLE residual heat removal heat exchanger,

c. One OPERABLE residual heat removal pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

{See ITS 3.5.3}

APPLICABILITY: MODE 4. (M.6)

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours. {See ITS 3.5.3}

b. With no ECCS subsystem OPERABLE because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods.

Add proposed ACTIONS Note (M.6)

ACTION A, ACTION B Applicability

c. With more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE when the temperature of any RCS cold leg is less than or equal to 152°F, remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit within 1 hour. [266] (M.6) (LA.3) immediately (M.7)

d. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. {See ITS 3.5.3}

e. Specification 3.0.4.b is not applicable to the centrifugal charging pump. {See ITS 3.5.3}

Add proposed LCO 3.4.12.A two charging pumps allowance (L.4)

(L.6)

LCO 3.4.12.A, LCO 3.4.12.B Applicability

\# A maximum of one centrifugal charging pump shall be OPERABLE and both safety injection pumps shall be inoperable whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F. [266] (M.6)

Add proposed LCO 3.4.12.B, LCO 3.4.12.B.2, LCO 3.4.12.B.3, and LCO 3.4.12.B.4, and applicable ACTIONS (L.6)

(A.1)

ITS

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2. — [See ITS 3.5.3]

SR 3.4.12.1, SR 3.4.12.2 Applicability

4.5.3.2 All charging pumps and safety injection pumps, except the above required OPERABLE charging pump, shall be demonstrated inoperable, by verifying that the motor circuit breakers have been removed from their electrical power supply circuits, at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F as determined at least once per hour when any RCS cold leg temperature is between 152°F and 200°F.

not capable of injecting into the RCS — (LA.3)

(L.5)

266 — (M.6)

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A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

OVERPRESSURE PROTECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

Add LCO 3.4.12.A.1 and LCO 3.4.12.B.1 accumulator isolation requirements — M.1

LCO 3.4.12.A.2 — 3.4.9.3 At least one of the following overpressure protection systems shall be OPERABLE:

LCO 3.4.12.A.2.a — a. Two power operated relief valves (PORVs) with a lift setting of less than or equal to 435 psig, or

LCO 3.4.12.A.2.b — b. One power operated relief valve (PORV) with a lift setting of less than or equal to 435 psig and the RHR safety valve with a lift setting of less than or equal to 450 psi, or

MODE 4 when any RCS cold leg temperature ≤ 299°F — M.2

APPLICABILITY: Mode 5 ~~when the temperature of any RCS cold leg is less than or equal to 152°F~~, and Mode 6 when the head is on ~~and fastened to the reactor vessel~~ and the RCS is not vented through a 2-square-inch or larger vent or through any single blocked open PORV. — M.3

LCO 3.4.12.A.2.c

ACTION:

Add proposed ACTIONS Note — M.2

Add proposed ACTION E — M.2

ACTION F — a. With one of two PORVs required by item a above or either the PORV or RHR safety valve required by item b above inoperable, either (1) restore the inoperable PORV or RHR safety valve to OPERABLE status within 24 hours, or (2) complete depressurization

ACTION G — and venting of the RCS through at least a 2-square-inch vent, or through any single blocked open PORV, ~~within a total of 32~~ 12 hours. ~~Maintain the RCS in a vented condition until the inoperable PORV or RHR safety valve has been restored to OPERABLE status.~~ — L.1, A.2

ACTION G — b. With both PORVs and the RHR safety valve inoperable, complete depressurization and venting of the RCS through at least a 2-square-inch vent, or through any single blocked open PORV, within ~~8~~ 12 hours. ~~Maintain the RCS in a vented condition until both PORVs or one PORV and the RHR safety valve have been restored to OPERABLE status.~~ — L.1, A.2

SR 3.4.12.5 — c. With the RCS vented per ACTION a or b above, verify the vent pathway at least once per 31 days when the pathway is provided by a valve(s) that is locked, sealed, or otherwise secured in the open position; otherwise, verify the vent pathway every 12 hours.

~~d. In the event either the PORVs, the RHR safety valve or the RCS vent(s) are used to mitigate a RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs or vent(s) on the transient and any corrective action necessary to prevent recurrence.~~ — L.2

Add proposed ACTIONS C and D — M.1

A.1

ITS

REACTOR COOLANT SYSTEM

SURVEILLANCE REQUIREMENTS

4.4.9.3.1 Each PORV shall be demonstrated OPERABLE by: (Add proposed SR 3.4.12.8 Note — M.2)

SR 3.4.12.8 a. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel, but excluding valve operation, within 31 days prior to entering a condition in which the PORV is required OPERABLE and at least once per 31 days thereafter when the PORV is required OPERABLE. (M.2)

SR 3.4.12.9 b. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 [24] months. (L.3)

SR 3.4.12.6 c. Verifying the PORV isolation valve is open at least once per 72 hours when the PORV is being used for overpressure protection.

SR 3.4.12.7 d. Determining the emergency air tank OPERABLE by verifying:

1. At least once per 31 days, air tank pressure greater than or equal to 900 psig.

2. Air tank pressure instrumentation OPERABLE by performance of a:

(a) CHANNEL FUNCTIONAL TEST at least once per 31 days, and

(b) CHANNEL CALIBRATION at least once per 18 months, with the low pressure alarm setpoint ≥ to 900 psig. (LA.2)

4.4.9.3.2 The RHR safety valve shall be demonstrated OPERABLE by:

SR 3.4.12.4 a. Verifying that the RHR system suction is aligned to the RCS loop with the valves in the flow path open at least once per 12 hours when the RHR safety valve is being used for overpressure protection.

b. Testing in accordance with the inservice test requirements for ASME Category C valves pursuant to Specification 4.0.5. (A.3)

Add proposed SR 3.4.12.3 (M.1)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.1 REACTIVITY CONTROL SYSTEMS

CHARGING PUMP - SHUTDOWN

LIMITING CONDITION FOR OPERATION — See CTS 3/4.1.2.3

3.1.2.3

a. One charging pump in the boron injection flow path required by Specification 3.1.2.1 shall be OPERABLE and capable of being powered from an OPERABLE emergency bus.

b. One charging flow path associated with support of Unit 1 shutdown functions shall be available.*

APPLICABILITY: Specification 3.1.2.3.a. - MODES 5 and 6
Specification 3.1.2.3.b. - At all times when Unit 1 is in MODES 1, 2, 3, or 4.

ACTION:

M.6 — Add proposed ACTIONS Note

a. With no charging pump OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes except: 1) heatup or cooldown of the reactor coolant volume provided that SHUTDOWN MARGIN sufficient to accommodate the change in temperature is maintained in accordance with Specification 3.1.1.2 in MODE 5 or Specification 3.9.1 in MODE 6, and the heatup or cooldown rate is restricted to 50°F or less in any one-hour period in MODE 5, or 2) addition of water from the RWST, provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.7.b.2.

ACTION A, ACTION B

Applicability

b. With more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE when the temperature of any RCS cold leg is less than or equal to ~~152~~°F, unless the reactor vessel head is removed, remove the additional charging pump(s) and the safety injection pump(s) ~~motor circuit breakers from the electrical power circuit within one hour~~.

299 — M.6

LA.3

immediately — M.7

c. The provisions of Specification 3.0.3 are not applicable.

d. In addition to the above, when Specification 3.1.2.3.b is applicable and the required flow path is not available, return the required flow path to available status within 7 days, or provide equivalent shutdown capability in Unit 1 and return the required flow path to available status within the next 60 days, or have Unit 1 in HOT STANDBY within the next 12 hours and HOT SHUTDOWN within the following 24 hours. — See CTS 3/4.1.2.3

SURVEILLANCE REQUIREMENTS

4.1.2.3.1.1 The above required charging pump shall be demonstrated OPERABLE by verifying that the pump's developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5

M.6

LCO 3.4.12.A

Applicability

* A maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is less than or equal to ~~152~~°F.

299 — M.6

Add proposed LCO 3.4.12.B, LCO 3.4.12.B.2, LCO 3.4.12.B.3, and 3.4.12.B.4, and applicable ACTIONS — L.6

ITS 3.4.12

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.1 REACTIVITY CONTROL SYSTEMS

SURVEILLANCE REQUIREMENTS

[not capable of injection into the RCS] — (LA.3)

SR 3.4.12.1, SR 3.4.12.2 — 4.1.2.3.2 All charging pumps and safety injection pumps, excluding the above-required OPERABLE charging pump, shall be demonstrated inoperable by verifying that the motor circuit breakers have been removed from their electrical power supply circuits at least once per 12 hours, except when: — (M.6)

Applicability —
a. The reactor vessel head is removed, or
b. The temperature of all RCS cold legs is greater than 152 [299] °F.

4.1.2.3.3 Charging line cross-tie valves to Unit 1 will be cycled full travel at least once per 18 months. Following cycling, the valves will be verified to be in their closed positions. — See CTS 3/4.1.2.3

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ITS 3.4.12

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

COLD SHUTDOWN - LOOPS FILLED

LIMITING CONDITION FOR OPERATION

3.4.1.4 At least one residual heat removal (RHR) loop† shall be OPERABLE and in operation*, and either:

a. One additional RHR loop shall be OPERABLE**, or

b. The secondary side water level of at least two steam generators shall be greater than or equal to 76% of wide range instrument span.

APPLICABILITY: *MODE 5 with reactor coolant loops filled.****

ACTION:

a. With one of the RHR loops inoperable and with less than the required steam generator water level, immediately initiate corrective action to return the inoperable RHR loop to OPERABLE status or restore the required steam generator water level as soon as possible. (See ITS 3.4.7)

b. With no RHR loop in operation, suspend all operations involving a reduction in boron concentration of the Reactor Coolant System and immediately initiate corrective action to return the required RHR loop to operation.

SURVEILLANCE REQUIREMENTS

4.4.1.4.1 The secondary side water level of at least two steam generators when required shall be determined to be within limits at least once per 12 hours.

4.4.1.4.2 At least one RHR loop shall be determined to be in operation and circulating reactor coolant at least once per 12 hours.

* The RHR pump may be deenergized for up to 1 hour provided: (1) no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration,†† and (2) core outlet temperature is maintained at least 10°F below saturation temperature.

** One RHR loop may be inoperable for up to 2 hours for surveillance testing provided the other RHR loop is OPERABLE and in operation.

LCO 3.4.12 Note

*** A reactor coolant pump shall not be started with one or more of the Reactor Coolant System cold leg temperatures less than or equal to 152°F unless (1) the pressurizer water volume is less than 62% of span or (2) the secondary water temperature of each steam generator is less than 50°F above each of the Reactor Coolant System cold leg temperatures. ~~Operability of a reactor coolant loop(s) does not require an OPERABLE auxiliary feedwater system.~~ (A.4)

† The normal or emergency power source may be inoperable.

†† For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by specification 3.1.2.7.b.2.

(See ITS 3.4.7)

Add proposed third Condition of Condition G (M.5)

ITS 3.4.12

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE residual heat removal heat exchanger,

c. One OPERABLE residual heat removal pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation.

(See ITS 3.5.3)

APPLICABILITY: MODE 4. (M.6)

ACTION:

a. With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 hours. (See ITS 3.5.3)

b. With no ECCS subsystem OPERABLE because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods.

Add proposed ACTIONS Note (M.6)

ACTION A, ACTION B — c. With more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE when the temperature of any RCS cold leg is less than or equal to 152°F [299] (M.6), remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit (LA.3) within 1 hour [immediately] (M.7).

Applicability

d. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. (See ITS 3.5.3)

e. Specification 3.0.4.b is not applicable to the centrifugal charging pump. (See ITS 3.5.3)

Add proposed LCO 3.4.12.A two charging pumps allowance (L.4)

LCO 3.4.12.A, LCO 3.4.12.B — A maximum of one centrifugal charging pump shall be OPERABLE and both safety injection pumps shall be inoperable (L.6) whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F. [299] (M.6)

Applicability

Add proposed LCO 3.4.12.B, LCO 3.4.12.B.2, LCO 3.4.12.B.3, and LCO 3.4.12.B.4, and applicable ACTIONS (L.6)

ITS 3.4.12

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS

4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2. — See ITS 3.5.3

SR 3.4.12.1, SR 3.4.12.2 / Applicability — 4.5.3.2 All charging pumps and safety injection pumps, except the above required OPERABLE charging pump, shall be demonstrated inoperable, by verifying that the motor circuit breakers have been removed from their electrical power supply circuits, at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F, as determined at least once per hour when any RCS cold leg temperature is between 152°F and 200°F.

(Annotations: "not capable of injecting into the RCS" — LA.3; L.5; "299" — M.6)

DISCUSSION OF CHANGES
ITS 3.4.12, LOW TEMPERATURE OVERPRESURE PROTECTION (LTOP) SYSTEM

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.9.3 Action a states that the RCS must be maintained in the vented condition until the inoperable PORV or RHR safety valve has been restored to OPERABLE status. CTS 3.4.9.3 Action b states that the RCS must be maintained in the vented condition until both PORVs or one PORV and the RHR safety valve have been restored to OPERABLE status. ITS 3.4.12 does not include the explicit requirement to maintain the RCS vented until the required valves are restored to OPERABLE status. This changes the CTS by eliminating the requirement to restore the valves to OPERABLE status.

The purpose of the CTS Actions are to provide all of the acceptable options for inoperable PORVs and RHR safety valves. This change is acceptable because the requirements have not changed. ITS LCO 3.0.2 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. Therefore, it is not necessary to provide the requirement to maintain the RCS vented until the required valves are restored to OPERABLE status. When they are restored, LCO 3.0.2 allows exiting from the Condition. This change is designated as administrative as it is a change required by the ITS usage rules that does not result in a technical change to the CTS.

A.3 Unit 1 CTS 4.4.9.3.1.d states that each PORV shall be demonstrated OPERABLE by testing in accordance with the inservice test requirements for ASME Category B valves pursuant to Specification 4.0.5. CTS 4.4.9.3.2.b states that each RHR safety valve shall be demonstrated OPERABLE by testing in accordance with the inservice test requirements for ASME Category C valves pursuant to Specification 4.0.5. ITS 3.4.12 does not contain these requirements.

This change is acceptable because Specification 4.0.5 applies whether or not it is specifically invoked in a particular Specification. A requirement to follow Specification 4.0.5 in CTS 4.4.9.3.1.d and 4.4.9.3.2.b is repetitious and adds no new requirements. Therefore, it is deleted. Changes to Specification 4.0.5 are discussed in the ITS Section 5.5 DOCs. These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.4 CTS 3.4.1.4 Applicability Footnote *** specifies restrictions for reactor coolant pump startups with one or more of the RCS cold leg temperatures less than or equal to 152°F. In addition, the footnote states that the OPERABILITY of the reactor coolant loop(s) does not require an OPERABLE Auxiliary Feedwater

System. ITS LCO 3.4.12 Note contains the requirements of this CTS Footnote, however the detail of the OPERABILITY requirements for the reactor coolant loops is not retained. This changes the CTS by deleting the detail of the OPERABILITY requirements for the reactor coolant loops.

The purpose of the detail is to clarify that the Auxiliary Feedwater System is not required to support the reactor coolant loop. The requirements for reactor coolant loops during MODE 5 with the reactor coolant loops filled is retained in ITS 3.4.7. This Specification includes the appropriate OPERABILITY requirements for the reactor coolant loops. Since the Auxiliary Feedwater System is not listed in the Surveillance Requirements for this Specification (LCO 3.4.7) and is not mentioned in the Bases, it is clear that it is not required to support the reactor coolant loops. This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 The CTS LTOP Specifications provide no limitations on the accumulators. ITS LCO 3.4.12.A.1 and LCO 3.4.12.B.1 states that the accumulators shall be isolated, except an accumulator may be unisolated when the accumulator is depressurized and vented. ITS 3.4.12 ACTION C states that if an accumulator is not isolated when the accumulator is not depressurized and vented, then the affected accumulator must be isolated within 1 hour. If this isolation is not accomplished, ITS 3.4.12 ACTION D states that the RCS cold leg temperature must be increased to > 266°F (Unit 1) and > 299°F (Unit 2) or the affected accumulator must be depressurized and vented within 12 hours. ITS SR 3.4.12.3 requires verification that each accumulator is isolated every 12 hours.

These changes are acceptable because the LTOP analyses assume that the accumulators are isolated and therefore not capable of initiating a mass addition transient. The Completion Times are reasonable for the ACTIONS to be performed and minimize the time in which the design assumptions for the LTOP System are not being met. The Surveillance Frequency of 12 hours is the same as the Frequency of ITS SR 3.5.1.1, which verifies that the accumulator isolation valves are open when the accumulators are required to be OPERABLE to perform ECCS functions. This change is designated as more restrictive because it adds additional requirements to the CTS.

M.2 CTS 3.4.9.3 is applicable in MODE 5 when the temperature of any RCS cold leg is ≤ 152°F, and MODE 6 when the head is on and fastened to the reactor vessel and the RCS is not vented through a 2-square-inch or larger vent, or through any single blocked open PORV. CTS 4.4.9.3.1.a requires the performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel (excluding valve actuation) prior to entering the Applicability of CTS 3.4.9.3. ITS LCO 3.4.12 is applicable in MODE 4 when any RCS cold leg temperature is ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2), MODE 5, and MODE 6 when the reactor vessel head is on. ITS SR 3.4.12.8, which is required under the same Applicability described above for ITS LCO 3.4.12, requires a similar test on the PORV actuation channel. However the SR is modified by a Note that states that the test is not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2). This change expands the Applicability to require the low temperature overpressure protection systems to be OPERABLE in MODE 4 when any RCS cold leg temperature is ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2), and at all times in MODE 5. Furthermore, this changes the CTS by providing an explicit Note that allows testing of the PORV instrumentation after entering the MODE of Applicability of the Specification. Along with this change, proposed ITS 3.4.12 ACTIONS Note has been added that states that LCO 3.0.4.b is not applicable when entering MODE 4. In addition, proposed ITS 3.4.12 ACTION E has been added to cover the inoperabilities associated with one required RCS relief valve in MODE 4. ITS 3.4.12 Required Action E.1 states to restore required RCS relief valve to OPERABLE status within 7 days.

These changes are acceptable because the LTOP analyses require the LTOP Systems to be OPERABLE during the specified MODE 4 conditions. The addition of the SR 3.4.12.8 Note is necessary since the Applicability has changed. Previously, CTS 4.4.9.3.1.a was required to be performed before decreasing RCS temperature below 152°F. Thus, it could be performed after decreasing RCS temperature below the LTOP arming temperature of 266°F (Unit 1) and 299°F (Unit 2). Therefore, the addition of the Note is acceptable and considered more restrictive. The addition of the ACTIONS Note is also considered more restrictive because MODE 4 will not be allowed to be entered from MODE 5 while in the ACTIONS. The addition of Condition E is necessary to provide Required Action for inoperability of one of the RCS relief valves in this new MODE of applicability. The Completion Time for the ACTION to restore the required RCS relief valve to OPERABLE status in MODE 4 is reasonable for the ACTION to be performed, minimizes the time in which the design assumptions for the LTOP System are not being met, does not conflict with any current licensing basis requirement, and is consistent with NUREG-1431, Revision 2. This change is designated as more restrictive because it adds additional requirements to the CTS.

M.3 CTS 3.4.9.3 Applicability states that the requirement of CTS LCO 3.4.9.3 are applicable when in MODE 6 when the head is on and fastened to the reactor vessel and the RCS is not vented through a 2-square-inch or larger vent or any single blocked open PORV. ITS LCO 3.4.12.A.2.c states that one of the pressure relief capabilities allowed is the RCS depressurized and an RCS vent of ≥ 2.0 square inches or any single blocked open PORV. The ITS 3.4.12 Applicability states the LCO is applicable in MODE 6 when the reactor vessel head is on. This changes the CTS by requiring the MODE 6 Applicability to include the situation when all reactor vessel head closure bolts are removed and the head is still on.

The purpose of CTS 3.4.9.3 is to ensure there is sufficient low temperature overpressurization protection in all conditions. The definition of MODE 5 and MODE 6 included in ITS Table 1.1-1 clearly states that in MODE 5 all reactor vessel head closure bolts are fully tensioned and MODE 6 is when one or more reactor vessel head closure bolts are less that fully tensioned. The ITS 3.4.12

DISCUSSION OF CHANGES
ITS 3.4.12, LOW TEMPERATURE OVERPRESURE PROTECTION (LTOP) SYSTEM

Applicability states that the LCO is applicable in MODE 6 when the reactor vessel head is on. This change therefore will require the MODE 6 Applicability to include the situation when all reactor vessel head closure bolts are removed and the vessel head is still on. This change is necessary since a low temperature overpressurization event may occur in this situation and a vent path is still necessary until the head is physically removed. This change is designated as more restrictive because it adds additional requirements to the CTS.

M.4 Not used.

M.5 CTS 3.4.1.4 Applicability Footnote *** specifies restrictions for reactor coolant pump startups with one or more of the RCS cold leg temperatures ≤ 152°F. The Specification does not provide compensatory actions for when this requirement is not met. ITS LCO 3.4.12 Note contains the requirements of this CTS Footnote. In addition, a new ACTION has been added to cover the situation when the requirements are not met. ITS 3.4.12 ACTION G requires a depressurization of the RCS and the establishment of an RCS vent ≥ 2.0 square inches or any single blocked open PORV when the LTOP System is inoperable for any reason other than ITS 3.4.12 Condition A, B, C, D, E, or F. This changes the CTS by ensuring the appropriate Condition and Required Actions are taken.

The purpose of CTS 3.4.1.4 Applicability Footnote *** is to ensure the startup of a reactor coolant pump will not cause a low temperature overpressurization transient. A more explicit action has been added consistent with the compensatory action in CTS 3.4.9.3 for all required RCS pressure relief valves inoperable. The proposed action is appropriate if this condition exists. This change is designated as more restrictive since an explicit action is provided.

M.6 CTS LCO 3.5.3 requires one ECCS subsystem to be OPERABLE in MODE 4. CTS LCO 3.5.3.a requires one centrifugal charging pump to be OPERABLE; however this requirement is modified by Footnote #, which specifies that a maximum of one centrifugal charging pump shall be OPERABLE and both safety injection pumps shall be inoperable whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. CTS 4.5.3.2 requires all charging pumps and safety injection pumps, except the above required OPERABLE charging pump to be demonstrated inoperable by verifying that the motor circuit breakers have been removed from their electrical power supply circuits whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. CTS 3.5.3 Action c provides the compensatory actions to be taken when more than one charging pump is OPERABLE or with one or more safety injection pumps OPERABLE when the temperature of any RCS cold leg is ≤ 152°F. CTS LCO 3.1.2.3.a requires one charging pump in the boron injection flow path required by Specification 3.1.2.1 to be OPERABLE and CTS LCO 3.1.2.3.b requires one charging flow path associated with support of Unit 2 shutdown functions to be available. LCO 3.1.2.3.b is modified by a footnote that states that a maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. LCO 3.1.2.3.a is applicable in MODES 5 and 6, and CTS LCO 3.1.2.3.b is applicable at all times when Unit 2 (Unit 1) and Unit 1 (Unit 2) is in MODES 1, 2, 3, or 4. CTS 4.1.2.3.2 requires all charging pumps and safety injection pumps, except the above required OPERABLE charging pump, to be demonstrated inoperable by verifying that the

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motor circuit breakers have been removed from their electrical power supply circuits except when the reactor vessel head is removed or the temperature of one or more of the RCS cold legs is > 152°F. CTS 3.1.2.3 Action b provides the compensatory actions to be taken when more than one charging pump is OPERABLE or with one or more safety injection pumps OPERABLE when the temperature of any RCS cold leg is ≤ 152°F unless the reactor vessel head is removed. ITS LCO 3.4.12.A requires a maximum of one charging pump and no safety injection (SI) pump capable of injecting into the RCS. The Applicability of the Specification has been changed to be consistent with CTS 3.4.9.3 as modified by DOCs M.2 and M.3. The new Applicability is MODE 4 when any RCS cold leg temperature is ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2), MODE 5, and MODE 6 when the reactor vessel head is on. ITS 3.4.12 ACTION A covers the situation when one or more SI pumps capable of injecting into the RCS. ITS 3.4.12 ACTION B covers the situation when two charging pumps are capable of injecting into the RCS and only one charging pump is allowed to be capable of injecting into the RCS. In addition, ITS 3.4.12 ACTIONS Note has been added that states that LCO 3.0.4.b is not applicable when entering MODE 4. This changes the CTS by aligning the Applicability with the LTOP Specification. The pumps must not be capable of injecting into the RCS over a wider RCS cold leg temperature band.

The purpose of the CTS 3.5.3 Footnote #, CTS 4.5.3.2, CTS 3.1.2.3 Footnote #, and CTS 4.1.2.3.2 is to ensure the mass addition capacity assumed in the LTOP analysis is not exceeded. This ensures the low temperature overpressure analysis assumptions will be met. Low temperature overpressurization concerns have been extended to MODE 4 with any RCS cold leg temperature ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2). These changes are consistent with the analysis. Since the limitations on charging and SI pumps in CTS 3.5.3 Footnote #, CTS 3.5.3 Action c, CTS 3.1.2.3 Footnote #, and CTS 4.1.2.3.2 are to cover the low temperature overpressurization concerns, the extension of this Applicability is considered appropriate and necessary. This change is designated as more restrictive because it will require entry into the ACTIONS whenever any SI pump or an additional charging pump is capable of injection into the RCS in the proposed expanded Applicability.

M.7 CTS 3.5.3 Action c and CTS 3.1.2.3 Action b provides the compensatory actions to be taken when more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE. The requirement is to remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit with 1 hour. ITS 3.4.12 ACTION A covers the situation when one or more SI pumps are capable of injecting into the RCS. ITS 3.4.12 Required Action A.1 is to immediately initiate action to verify all SI pumps are not capable of injecting into the RCS. ITS 3.4.12 ACTION B covers the situation when two charging pumps are capable of injecting into the RCS and only one charging pump is allowed to be capable of injecting into the RCS. ITS 3.4.12 Required Action B.1 is to immediately initiate action to verify a maximum of one charging pump is capable of injecting into the RCS. The changes CTS 3.5.3 Action c to require "immediate" response instead of a response "within 1 hour."

The purpose of CTS 3.5.3 Action c and CTS 3.1.2.3 Action b is to minimize the time the unit is operating with more than one charging pump or one or more SI pumps. The proposed Required Action requires action to be taken immediately. This change reflects the urgency of removing the RCS from this condition. In this condition, the low temperature overpressure protection analysis may not be met. Therefore, immediate action is necessary. This change is designated as more restrictive because the required response was change from "within 1 hour" to "immediate."

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 Not used.

LA.2 *(Type 4 – Removing Performance Requirements for Indication-Only Instrumentation and Alarms)* CTS 4.4.9.3.1.e.2 (Unit 1) and 4.4.9.3.1.d.2 (Unit 2) require the performance of a CHANNEL FUNCTIONAL TEST and a CHANNEL CALIBRATION of the PORV emergency air tank pressure instrumentation. ITS 3.4.12 does not include this requirement. This changes the CTS by relocating these Surveillances to the Technical Requirements Manual (TRM).

The removal of requirements for indication-only instrumentation and alarms from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. This indication and alarm instrumentation is not required to be OPERABLE to support OPERABILITY of the LTOP actuation logic. The ITS continues to verify that the emergency air tank banks pressure is sufficient to operate the required PORVs. Also, this change is acceptable because the removed information will be adequately controlled in TRM. The TRM is incorporated by reference into the UFSAR, and any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because performance requirements for indication-only instrumentation and the alarm is being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.5.3.a requires one centrifugal charging pump to be OPERABLE. However this requirement is modified by Footnote #, which specifies that a maximum of one centrifugal charging pump shall be OPERABLE and both safety injection pumps shall be inoperable. CTS 3.5.3 Action c provides the compensatory actions to be taken with more than one charging pump OPERABLE or with safety injection pump(s) OPERABLE. The requirement is to remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit within 1 hour. CTS 4.5.3.2 requires all charging pumps and safety injection pumps, except the above required OPERABLE charging pump, to be demonstrated inoperable by

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verifying that the motor circuit breakers have been removed from their electrical power supply circuits. CTS LCO 3.1.2.3.a requires one charging pump in the boron injection flow path required by Specification 3.1.2.1 to be OPERABLE and CTS LCO 3.1.2.3.b requires one charging flow path associated with support of Unit 2 (Unit 1) and Unit 1 (Unit 2) shutdown functions to be available. LCO 3.1.2.3.b is modified by a footnote that states that a maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. CTS 4.1.2.3.2 requires all charging pumps and safety injection pumps, except the above required OPERABLE charging pump, to be demonstrated inoperable by verifying that the motor circuit breakers have been removed from their electrical power supply circuits. CTS 3.1.2.3 Action b provides the compensatory actions to be taken when more than one charging pump is OPERABLE or with one or more safety injection pumps OPERABLE. The requirement is to remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit within 1 hour. ITS LCO 3.4.12.A requires a maximum of one charging pump capable of injecting into the RCS and both safety injection pumps not capable of injecting into the RCS. ITS 3.4.12 ACTION A covers the situation when one or more SI pumps are capable of injecting into the RCS. ITS 3.4.12 Required Action A.1 is to initiate action to verify all SI pumps are not capable of injecting into the RCS. ITS 3.4.12 ACTION B covers the situation when two charging pumps are capable of injecting into the RCS and only one charging pump is allowed to be capable of injecting into the RCS. ITS 3.4.12 Required Action B.1 is to initiate action to verify a maximum of one charging pump is capable of injecting into the RCS. ITS SR 3.4.12.1 requires the verification that all SI pumps are not capable of injecting into the RCS while SR 3.4.12.2 requires verification that no more than the maximum allowed number of charging pumps are capable of injecting into the RCS. This changes the CTS by relocating the detail on how to remove the safety injection and charging pumps from service (remove motor circuit breakers from the electrical power circuit) to the Bases and replacing them with the words "in a condition not capable of injecting into the RCS."

The removal of these details for performing Actions and Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements in the LCO, Required Actions, and Surveillances that the specified pumps are not capable of injection into the RCS. Also, this change is acceptable because these types of procedural details will be adequately controlled the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

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LESS RESTRICTIVE CHANGES

L.1 *(Category 3 – Relaxation of Completion Time)* When an inoperable RCS vent path has not been restored to OPERABLE status within 24 hours, CTS 3.4.9.3 Action a essentially allows 8 hours (for a total of 32 hours) to depressurize the RCS and establish an RCS vent. CTS 3.4.9.3 Action b allows 8 hours to depressurize the RCS and establish an RCS vent when both PORVs and the RHR safety valve are inoperable. ITS 3.4.12 ACTION G requires the RCS to be depressurized and to establish an RCS vent within 12 hours under the same conditions. This changes the CTS by allowing 12 hours instead of 8 hours to depressurize and vent the RCS when one of the PORVs is inoperable or when both the PORVs and the RHR safety valve are inoperable.

The purpose of CTS 3.4.9.3 Actions a and b is to place the unit in a condition in which the PORVs and RHR safety valve are not needed. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. Twelve hours is a sufficient amount of time to allow to cool and depressurize the RCS (following the unit cooldown rate limits), change MODES, and plan and execute the maintenance activity of opening an RCS vent. This change allows the necessary activities to be performed in a controlled manner. This change is designated as less restrictive because additional time is allowed to complete Required Actions than was allowed in the CTS.

L.2 *(Category 8 – Deletion of Reporting Requirements)* CTS 3.4.9.3 Action d states that in the event either the PORVs, the RHR safety valve, or the RCS vent(s) are used to mitigate an RCS pressure transient, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 30 days. The report shall describe the circumstances initiating the transient, the effect of the PORVs or RCS vent(s) on the transient, and any corrective action necessary to prevent recurrence. The ITS does not have a similar requirement. This changes the CTS by eliminating a Special Report.

The purpose of CTS 3.4.9.3 Action d is to inform the NRC of challenges to the RCS pressure relief capabilities. This change is acceptable because the regulations provide adequate reporting requirements, or the reports do not affect continued plant operation. The regulatory reporting requirements in 10 CFR 50 are adequate to inform the NRC of challenges to the PORVs, the RHR safety valve, or RCS vents, when necessary. Neither the safety analysis assumptions or conditions for continued operation are dependent on the NRC review of the provided information. This change is designated as less restrictive because reports that would be submitted under the CTS will not be required under the ITS.

L.3 *(Category 11 – 18 to 24 Month Surveillance Frequency Change, Channel Calibration Type)* CTS 4.4.9.3.1.b requires the performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per 18 months. ITS SR 3.4.12.9 requires this same test at a 24 month Frequency. This changes the

CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.4.9.3.1.b is to ensure the PORV actuation channel will function correctly when required to mitigate a low temperature overpressurization event. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. This change is acceptable because the PORV actuation and actuation logic, is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one of the channel components. Furthermore, the impacted PORV actuation channel has been evaluated based on make, manufacturer, and model number to determine that the instrumentation's actual drift falls within the design allowance in the associated setpoint calculation.

For CTS 4.4.9.3.1.b, this Function (PORV actuation on RCS Pressure - High) is performed by Foxboro N-E11 Series Pressure Transmitters, Foxboro N-2AI-H2V Input Cards, and Foxboro N-2CCA-DC Control Cards. The signal conditioners and Control Cards are a part of the Foxboro Spec 200 rack. The Control Cards are to be functionally checked and setpoint verified by a COT every 31 days in the required MODES, and if necessary, recalibrated. These more frequent testing requirements remain unchanged. Therefore, an increase in the calibration Surveillance interval does not affect the Foxboro rack components with respect to drift. The Foxboro N-E11 Series Transmitters were evaluated quantitatively through a drift analysis to verify that drift for normal operating conditions is consistent with similar plant instruments used for protective functions. The drift value determined has been used in the development of, confirmation of, or revision to the current plant setpoint and the Technical Specification Allowable Value. Based on the design of the instrumentation and the drift evaluation, it is concluded that the impact, if any, from this change on system availability is minimal. A review of the Surveillance test history was performed to validate the above conclusion. This review demonstrates that there are no failures that would invalidate the conclusion that the impact, if any, on system availability from this change is minimal. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 1 – Relaxation of LCO Requirements)* CTS LCO 3.5.3 requires one ECCS subsystem to be OPERABLE in MODE 4. CTS LCO 3.5.3.a requires one centrifugal charging pump to be OPERABLE, however this requirement is modified by Footnote #, which specifies that a maximum of one centrifugal charging pump shall be OPERABLE when the temperature of one or more of the RCS cold legs is ≤ 152°F. ITS LCO 3.4.12.A requires a maximum of one charging pump capable of injecting into the RCS. In addition, ITS LCO 3.4.12.A allows two charging pumps to be capable of injecting into the RCS for ≤ 1 hour for pump swap operations. This changes the CTS by allowing an additional charging pump to be capable of injecting into the RCS for up to 1 hour during pump swap operations only.

The purpose of CTS 3.5.3.a Footnote # is to ensure that appropriate limitations are placed on Emergency Core Cooling Systems, which helps ensure a low temperature overpressurization event is avoided. This change is acceptable because it is a short time period and the probability of an LTOP event is low. This changes the CTS by allowing an additional charging pump to be capable of injecting into the RCS. The one hour time period for the pump swap operation provides sufficient time to safely complete the actual transfer and to complete administrative controls and Surveillance Requirements associated with the swap. The intent is to minimize the actual time that more than one charging pump is physically capable of injection. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.5 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.5.3.2 requires all charging pumps and safety injection pumps, except the required OPERABLE charging pump, to be demonstrated inoperable. The Surveillance is required to be performed every 12 hours when the temperature of one or more RCS cold legs is ≤ 152°F as determined at least once per hour when any RCS cold leg temperature is between 152°F and 200°F. ITS SR 3.4.12.1 and SR 3.4.12.2 require the same tests to be performed once every 12 hours. This changes the CTS by deleting the requirement to evaluate the RCS cold legs temperature at least once per hour when any cold leg temperature is between 152°F and 200°F.

The purpose of CTS 4.5.3.2 is to ensure the pumps are not capable of injection into the RCS when low temperature overpressurization is a concern. This change is acceptable because the proposed Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. This changes the CTS by deleting the requirement to evaluate the RCS cold legs temperature at least once per hour when any cold leg temperature is between 152°F and 200°F. RCS cold leg temperature indication is readily available in the control room and therefore, an explicit frequency for monitoring or determining the Applicability is not necessary. The RCS cold leg temperature of 152°F is consistent with the Applicability in CTS 3/4.4.9.3 (Overpressure Protection Systems). CTS 3/4.4.9.3 contains a 12 hour Surveillance requirement (CTS 4.4.9.3.2) that does not include the determination of the Applicability at least once per hour when any cold leg temperature is between 152°F and 200°F. Since the RCS cold leg temperature is included in the Applicability of ITS 3.4.12, it is considered not necessary to retain this requirement in any Surveillance. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.6 CTS LCO 3.5.3 requires one ECCS subsystem to be OPERABLE in MODE 4. CTS LCO 3.5.3.a requires one centrifugal charging pump to be OPERABLE; however this requirement is modified by Footnote #, which specifies that a maximum of one centrifugal charging pump shall be OPERABLE and both safety

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injection pumps shall be inoperable whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. CTS 4.5.3.2 requires all charging pumps and safety injection pumps, except the above required OPERABLE charging pump to be demonstrated inoperable by verifying that the motor circuit breakers have been removed from their electrical power supply circuits whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. CTS 3.5.3 Action c provides the compensatory actions to be taken when more than one charging pump is OPERABLE or with one or more safety injection pumps OPERABLE when the temperature of any RCS cold leg is ≤ 152°F. CTS LCO 3.1.2.3.a requires one charging pump in the boron injection flow path required by Specification 3.1.2.1 to be OPERABLE and CTS LCO 3.1.2.3.b requires one charging flow path associated with support of Unit 2 shutdown functions to be available. LCO 3.1.2.3.b is modified by a footnote that states that a maximum of one centrifugal charging pump shall be OPERABLE whenever the temperature of one or more of the RCS cold legs is ≤ 152°F. LCO 3.1.2.3.a is applicable in MODES 5 and 6, and CTS LCO 3.1.2.3.b is applicable at all times when Unit 2 (Unit 1) and Unit 1 (Unit 2) is in MODES 1, 2, 3, or 4. CTS 4.1.2.3.2 requires all charging pumps and safety injection pumps, except the above required OPERABLE charging pump, to be demonstrated inoperable by verifying that the motor circuit breakers have been removed from their electrical power supply circuits except when the reactor vessel head is removed or the temperature of one or more of the RCS cold legs is > 152°F. CTS 3.1.2.3 Action b provides the compensatory actions to be taken when more than one charging pump is OPERABLE or with one or more safety injection pumps OPERABLE when the temperature of any RCS cold leg is ≤ 152°F unless the reactor vessel head is removed. ITS LCO 3.4.12.B allows both charging pumps to be capable of injecting into the RCS, provided two PORVS with lift setting ≤ 435 psig are OPERABLE (ITS LCO 3.4.12.B.2), the RHR suction relief valve with a setpoint ≤ 450 psig is OPERABLE (ITS LCO 3.4.12.B.3), and all RCS cold leg temperatures are ≥ 140°F (ITS LCO 3.4.12.B.4). ITS 3.4.12 ACTION B covers the situation when two charging pumps are capable of injecting into the RCS and only one charging pump is allowed to be capable of injecting into the RCS. In addition, ITS 3.4.12 ACTIONS Note has been added that states that LCO 3.0.4.b is not applicable when entering MODE 4. This changes the CTS by allowing two charging pumps to be capable of injecting into the RCS when all RCS cold leg temperatures are ≥ 140°F and three LTOP relief valves (two PORVS and one RHR suction relief valve) are OPERABLE.

The purpose of the CTS 3.5.3 Footnote #, CTS 4.5.3.2, CTS 3.1.2.3 Footnote #, and CTS 4.1.2.3.2 is to ensure the mass addition capacity assumed in the LTOP analysis is not exceeded. This ensures the low temperature overpressure analysis assumptions will be met. Low temperature overpressurization concerns have been extended to MODE 4 with any RCS cold leg temperature ≤ 266°F (Unit 1) and ≤ 299°F (Unit 2) as described in DOCs M.2 and M.6.

The LTOP System is designed to provide the capability, during operation at relatively low temperatures, to prevent RCS pressure from exceeding the 10 CFR 50 Appendix G limits. The PORVs, together with actuation logic from the pressurizer pressure wide range instrumentation channels, are used to automatically mitigate potential RCS overpressure transients whenever the LTOP System is enabled. In addition, the RHR suction relief valve provides an alternative RCS discharge path for mitigating the consequences of LTOP events. The RHR suction relief valve is a passive component that is available whenever the RHR suction isolation valves are open.

Automatic operation of the LTOP System is required by the current Technical Specifications when any RCS cold leg temperature is ≤ 152°F, and is required under current administrative controls when all RCS cold leg temperatures are > 152°F and any RCS cold leg temperature is ≤ 266°F (Unit 1) and 299°F (Unit 2). These requirements ensure that RCS pressure is maintained below 10 CFR 50 Appendix G limits during potential RCS overpressure transients. An analysis has been performed that demonstrates that the current administrative controls (and the proposed ITS controls) are acceptable for allowing two charging pumps to be capable of injecting into the RCS (and no SI pump) when the LTOP System is required to be OPERABLE. This evaluation concluded that:

a. With the availability of relief paths from both the RHR relief valve and a single pressurizer PORV, there are no restrictions on the number of RHR pumps or RCPs running, or on the initial pressurizer water level (i.e., water solid operation is not precluded by the analysis);

b. The RHR System design pressure limit will not be exceeded; and

c. During the mass injection from two centrifugal charging pumps, the steady state 10 CFR 50 Appendix G limits will not be violated for RCS temperatures ≥ 140°F.

In conclusion, the proposed less restrictive ITS limitations are acceptable based on the evaluations performed that demonstrate, with RHR aligned to the RCS and the availability of one pressurizer PORV and the RHR safety valve, the proposed two charging pump limits are conservative and will prevent exceeding both the RHR piping limit and the applicable steady state 10 CFR 50 Appendix G limits based on the following analytical bases:

a. Unit 1 pressure/temperature limits are less restrictive than provided in WCAP-12483, "Analysis of Capsule U from the American Electric Power Company D. C. Cook Unit 1 Reactor Vessel Radiation Surveillance Program, January 1990," provided to the NRC by letter dated June 22, 1990;

b. Unit 2 pressure-temperature limits are less restrictive than provided in WCAP-13515, "Analysis of Capsule U from the Indiana Michigan Power Company D.C. Cook Unit 2 Reactor Vessel Radiation Surveillance Program, February 1993," provided to the NRC by letter dated December 3, 1993;

c. The accumulators are isolated or depressurized and vented;

d. Two PORVs with setpoints ≤ 435 psig (Note: The LTOP System is designed to use two of the three PORVs to provide relief, and in compliance with the single failure requirement, both PORVs are required to be OPERABLE but only one PORV is assumed to operate in all the

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analyses where LTOP System is enabled. In addition, although there are a total of three PORVs, only two PORVs are automatically reset to 435 psig from 2335 psig when LTOP System is enabled (energized) by the operators, and the controls for these two PORVs are independent and redundant in compliance with single failure requirements.);

e. PORV stroke open time ≤ 6 seconds (analysis includes an additional 0.95 seconds signal actuation time);

f. The RHR suction relief valve with a setpoint ≤ 450 psig (analysis includes a 10% accumulation effect);

g. All RCS cold leg temperatures ≥ 140°F;

h. No restriction on pressurizer water level;

i. No restriction on the number of RHR pumps in operation; and

j. No restriction on the number of RCPs in operation.

Therefore, the requested limitations are conservative with respect to the analytical bases and are acceptable.

This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.12 Low Temperature Overpressure Protection (LTOP) System

LCO 3.4.12 An LTOP System shall be OPERABLE with a maximum of [one] [high pressure injection (HPI)] pump [and one charging pump] capable of injecting into the RCS and the accumulators isolated and one of the following pressure relief capabilities:

a. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR,

[b. Two residual heat removal (RHR) suction relief valves with setpoints ≥ [436.5] psig and ≤ [463.5] psig,]

[c. One PORV with a lift setting within the limits specified in the PTLR and one RHR suction relief valve with a setpoint ≥ [436.5] psig and ≤ [463.5] psig,] or

d. The RCS depressurized and an RCS vent of ≥ [2.07] square inches.

INSERT 1 ①

INSERT 4 ②

3.1.2.3 Applicability, 3.1.2.3 Action b

APPLICABILITY: MODE 4 when all (any) RCS cold leg temperature is ≤ [275°F] [LTOP arming temperature specified in the PTLR], ① ②
MODE 5,
MODE 6 when the reactor vessel head is on.

- NOTE -
Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR. ①

—NOTE—
LCO 3.0.4.b is not applicable when entering MODE 4. TSTF 359

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Two (One) or more [HPI] (SI) pumps capable of injecting into the RCS.	A.1 Initiate action to verify a (all) maximum of [one] [HPI] (SI) pump(s) is (are not) capable of injecting into the RCS.	Immediately

3.5.3 Action c, 3.1.2.3 Action b ①

CTS

(2) **INSERT 1**

3.4.9.3, 3.4.9.3 App, 3.1.2.3 Footnote*, 3.5.3 Footnote*, DOC M.1

An LTOP System shall be OPERABLE with one of the following:

A. No safety injection (SI) pump and a maximum of one charging pump capable of injecting into the RCS, except two charging pumps may be made capable of injecting into the RCS for ≤ 1 hour for pump swap operations, and the following:

1. The accumulators isolated, except an accumulator may be unisolated when the accumulator is depressurized and vented; and

2. One of the following pressure relief capabilities:

   a. Two power operated relief valves (PORVs) with lift settings ≤ 435 psig;

   b. One PORV with a lift setting ≤ 435 psig and the residual heat removal (RHR) suction relief valve with a setpoint ≤ 450 psig; or

   c. The RCS depressurized and an RCS vent of ≥ 2.0 square inches or any single PORV blocked open.

OR

3.5.3 Footnote *, DOCs M.1 and L.6

B. No SI pump and both charging pumps capable of injecting into the RCS, and the following:

1. The accumulators isolated, except an accumulator may be unisolated when the accumulator is depressurized and vented;

2. Two PORVs with lift settings ≤ 435 psig;

3. The RHR suction relief valve with a setpoint ≤ 450 psig; and

4. All RCS cold leg temperatures ≥ 140°F.

- NOTE -

3.4.1.4 Footnote***

Reactor coolant pumps shall not be started with one or more RCS cold leg temperatures ≤ 152°F unless the pressurizer water level is < 62% or the secondary water temperature of each steam generator is < 50°F above each of the RCS cold leg temperatures.

INSERT 2

Not Used

INSERT 3

Not Used

INSERT 3A

Not Used

2 **INSERT 4**

266°F (Unit 1) and ≤ 299°F (Unit 2)

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CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.5.3 Action c, 3.1.2.3 Action b	B. (1) Two or more charging pumps capable of injecting into the RCS. INSERT 4A	B.1 - NOTE - Two charging pumps may be capable of injecting into the RCS during pump swap operation for ≤ 15 minutes. Initiate action to verify a maximum of (one) charging pump is capable of injecting into the RCS.	Immediately	(2) (7) (1) (2)
DOC M.1	C. An accumulator not isolated when the accumulator pressure is greater than or equal to the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	C.1 Isolate affected accumulator. not depressurized and vented.	1 hour	(1)
DOC M.1	D. Required Action and associated Completion Time of Condition (C) not met.	D.1 Increase RCS cold leg temperature to > (275°F) (LTOP arming temperature specified in the PTLR). INSERT 5 OR D.2 Depressurize affected accumulator and vent to less than the maximum RCS pressure for existing cold leg temperature allowed in the PTLR.	12 hours 12 hours	(2) (1) (1)
DOC M.2	E. One required RCS relief valve inoperable in MODE 4.	E.1 Restore required RCS relief valve to OPERABLE status.	7 days	

(1) **INSERT 4A**

, when only one is allowed to be capable of injecting into the RCS

(2) **INSERT 5**

266°F (Unit 1) and > 299°F (Unit 2)

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CTS

ACTIONS *(continued)*

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.4.9.3 Action a	F. One required RCS relief valve inoperable in MODE 5 or 6.	F.1	Restore required RCS relief valve to OPERABLE status.	24 hours	1
3.4.9.3 Action b DOC M.5	G. Two required RCS relief valves inoperable. OR Required Action and associated Completion Time of Condition A, [B,] D, E, or F not met. OR LTOP System inoperable for any reason other than Condition A, [B,] C, D, E, or F.	G.1	Depressurize RCS and establish RCS vent of ≥ [2.07] square inches.	12 hours	2 1 2 2

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.5.3.2	SR 3.4.12.1	Verify a maximum of one [HPI] pump is capable of injecting into the RCS.	12 hours	2 1
4.5.3.2	SR 3.4.12.2	[Verify a maximum of one charging pump is capable of injecting into the RCS.	12 hours]	2 1
DOC M.1	SR 3.4.12.3	Verify each accumulator is isolated.	12 hours	
4.4.9.3.2.a	SR 3.4.12.4	[Verify RHR suction valve is open for each required RHR suction relief valve.	12 hours	2 1

INSERT 5A — 9

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(9) INSERT 5A

-NOTE-
Valve position may be verified by use of administrative means.

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS		SURVEILLANCE	FREQUENCY	
3.4.9.3 Action c		- NOTE - Only required to be met when complying with LCO 3.4.12.b.		7
	SR 3.4.12.5	Verify required RCS vent ≥ [2.07] 2.0 square inches open or a single PORV is blocked open.	12 hours for unlocked open unsealed, and unsecured vent valve(s) AND 31 days for locked open other vent valve(s) path	10 1 2 7
4.4.9.3.1.c	SR 3.4.12.6	Verify PORV block valve is open for each required PORV.	72 hours	
	SR 3.4.12.7	[Verify associated RHR suction isolation valve is locked open with operator power removed for each required RHR suction relief valve.	31 days]	2
4.4.9.3.1.a	SR 3.4.12.8	- NOTE - Not required to be performed until 12 hours after decreasing RCS cold leg temperature to ≤ [275°F] [LTOP arming temperature specified in the PTLR]. INSERT 6		2
		Perform a COT on each required PORV, excluding actuation.	31 days	2
4.4.9.3.1.b	SR 3.4.12.9	Perform CHANNEL CALIBRATION for each required PORV actuation channel.	[18] 24 months	
4.4.9.3.1.e.1		INSERT 7		8

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(2) **INSERT 6**

266°F (Unit 1) and ≤ 299°F (Unit 2)

(8) **INSERT 7**

SR 3.4.12.7	Verify pressure in each required emergency air tank bank is ≥ 900 psig.	31 days

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.12, LOW TEMPERATURE OVERPRESURE PROTECTION (LTOP) SYSTEM

1. The ISTS LCO 3.4.12, including the Applicability Note, presents the LTOP System requirements. The CNP LTOP analysis provides two distinct options. One option allows for the ISTS LCO 3.4.12 number of charging pumps capable of injecting into the RCS (i.e., one), while the second option allows two charging pumps to be capable of injecting into the RCS. When the second option is used, the LTOP analysis requires three relief valves (i.e., two PORVs and one RHR suction relief valve) and all RCS cold leg temperatures must be ≥ 140°F. For clarity, ITS LCO 3.4.12 is split into these two options, A and B, with the logical connector OR separating the two options. The following changes have also been made:

    a) Proper plant specific information/values/nomenclature have been provided.

    b) The allowance for one high pressure injection pump to be capable of injecting into the RCS has not been adopted since the CNP LTOP analysis does not provide this allowance.

    c) CNP does not propose to use a PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) and therefore, will not relocate the power operated relief valve lift settings or the LTOP arming point to the PTLR. The current limits will be retained in the ITS.

    d) The Residual Heat Removal (RHR) System only includes one suction relief valve. Therefore, the bracketed ISTS LCO requirement allowing two RHR relief valves has not been adopted.

    e) The CTS allows a single blocked open PORV as an alternate to an RCS vent of ≥ 2.0 square inches. This is necessary since a blocked open PORV provides an RCS vent of < 2.0 square inches, but is analyzed as being acceptable in the CNP LTOP analysis.

    f) TSTF-285 (Rev. 1) has been approved on May 12, 1999. However, some of the changes have not been properly incorporated into NUREG-1431, Rev. 2. Specifically, the added allowance to operate two charging pumps for ≤ 1 hour during pump swapping operations and the change from stating "accumulator isolation is only required" to stating the "accumulator may be unisolated."

    g) The CNP analysis only allows the accumulators to be unisolated when they are depressurized and vented.

    h) The limitations on the reactor coolant pump startups have been added to ITS LCO 3.4.12 as a Note, consistent with the requirements in the CTS. These limitations are currently in ISTS 3.4.6 Note 2 and ISTS 3.4.7 Note 3, but are actually LTOP limitations, not RCS loop limitations; thus they are more appropriate to be included in this Specification.

    Based on the above changes, the ISTS ACTIONS and SRs have been modified accordingly.

2. The brackets are removed and the proper plant specific information/value is provided. Subsequent SRs have been renumbered as applicable.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.12, LOW TEMPERATURE OVERPRESURE PROTECTION (LTOP) SYSTEM

3. Not used.

4. Not used.

5. Not used.

6. Not used.

7. TSTF-243 (Rev. 0), TSTF-280 (Rev. 1), and TSTF-285 (Rev. 1) have been approved on September 24, 1998, July 26, 1999, and May 12, 1999, respectively. However, some of the changes have not been properly incorporated into NUREG-1431, Rev. 2. These changes reflect the appropriate changes resulting from these Travelers.

8. SR 3.4.12.7, the PORV emergency air tank bank pressure verification test, has been added consistent with the current licensing basis.

9. ISTS SR 3.4.12.3 requires verification that each accumulator is isolated. The ISTS Bases states that this is accomplished by closing and locking out the accumulator discharge isolation valves. At CNP, locking out the valve is accomplished by racking out the valve motor breaker. The CNP design does not include a method for remotely verifying that the accumulator discharge isolation valve is closed when power is removed from the valve motor. Thus, a containment entry would now be required every 12 hours to locally verify the valve is still closed, since this Surveillance Requirement is not in the CTS. In lieu of this requirement, a Note has been added that allows the valve position to be verified by administrative means. This allowance is similar to those found in other Specifications where valves are required to be deactivated in a closed position (e.g., ISTS 3.6.3 Required Action A.2). Allowing verification by administrative means is considered acceptable, since the valve position is verified prior to deactivating the valve, access to the containment is restricted, and valves are only operated under strict procedural control.

10. ISTS SR 3.4.12.5, first Frequency, states that the SR must be performed every 12 hours for "unlocked" open vent valve(s). The ISTS Bases states that the term "locked" includes valves that are sealed or secured in the open position. However, in other places in the ISTS, the term "locked" does not include "sealed or otherwise secured in position." The ISTS, in these cases, specifically lists in the appropriate Required Action or Surveillance Requirement all three terms: "locked," "sealed," and "or otherwise secured in position." Therefore, for clarity, consistency, and to ensure the Bases does not change the intent of the Specification, the words ", unsealed, and unsecured" have been added to the Frequency.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.12 Low Temperature Overpressure Protection (LTOP) System

BASES

BACKGROUND

The LTOP System controls RCS pressure at low temperatures so the integrity of the reactor coolant pressure boundary (RCPB) is not compromised by violating the pressure and temperature (P/T) limits of 10 CFR 50, Appendix G (Ref. 1). The reactor vessel is the limiting RCPB component for demonstrating such protection. The PTLR provides the maximum allowable actuation logic setpoints for the power operated relief valves (PORVs) and the maximum RCS pressure for the existing RCS cold leg temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES. (1)

ITS 3.4.3, "RCS Pressure and Temperature (P/T) Limits," provides

The reactor vessel material is less tough at low temperatures than at normal operating temperature. As the vessel neutron exposure accumulates, the material toughness decreases and becomes less resistant to pressure stress at low temperatures (Ref. 2). RCS pressure, therefore, is maintained low at low temperatures and is increased only as temperature is increased.

The potential for vessel overpressurization is most acute when the RCS is water solid, occurring only while shutdown; a pressure fluctuation can occur more quickly than an operator can react to relieve the condition. Exceeding the RCS P/T limits by a significant amount could cause brittle cracking of the reactor vessel. LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," requires administrative control of RCS pressure and temperature during heatup and cooldown to prevent exceeding the PTLR limits. (3) (1)

P/T — INSERT 1

This LCO provides RCS overpressure protection by having a minimum coolant input capability and having adequate pressure relief capacity. Limiting coolant input capability requires all but one high pressure injection (HPI) pump and one charging pump incapable of injection into the RCS and isolating the accumulators. The pressure relief capacity requires either two redundant RCS relief valves or a depressurized RCS and an RCS vent of sufficient size. One RCS relief valve or the open RCS vent is the overpressure protection device that acts to terminate an increasing pressure event. (1) (2) (1) (3) (6)

safety — all but — SI — (5) ion of — INSERT 2 — is available — specifically

INSERT 2A

With minimum coolant input capability, the ability to provide core coolant addition is restricted. The LCO does not require the makeup control system deactivated or the safety injection (SI) actuation circuits blocked. Due to the lower pressures in the LTOP MODES and the expected core (1) (1)

(1) **INSERT 1**

, limiting reactor coolant pump (RCP) startup transients,

(1) **INSERT 2**

RCPs shall not be started when RCS cold leg temperature is ≤ 152°F unless certain requirements are met.

(1) **INSERT 2A**

When all RCS cold leg temperatures are ≥ 140°F, the coolant input capability is allowed to be increased by allowing both charging pumps to be capable of injecting into the RCS. This is acceptable since requiring three RCS relief valves provides adequate pressure relief capacity under these conditions (one of the two PORVs and the RHR suction relief valve are the overpressure protection devices that are available to terminate an increasing pressure event).

BASES

BACKGROUND (continued)

decay heat levels, the makeup system can provide adequate flow via the makeup control valve. If conditions require the use of more than one HPI or charging pump for makeup in the event of loss of inventory, then pumps can be made available through manual actions. INSERT 3 (1) (2) (3)

or an SI pump

The LTOP System for pressure relief consists of two PORVs with reduced lift settings, or two residual heat removal (RHR) suction relief valves, or one PORV and one RHR suction relief valve, or a depressurized RCS and an RCS vent of sufficient size. Two RCS relief valves are required for redundancy. One RCS relief valve has adequate relieving capability to keep from overpressurization for the required coolant input capability. INSERT 3A (1) (3) (1)

prevent

PORV Requirements

As designed for the LTOP System, each PORV is signaled to open if the RCS pressure approaches a limit determined by the LTOP actuation logic. The LTOP actuation logic monitors both RCS temperature and RCS pressure and determines when a condition not acceptable in the PTLR limits is approached. The wide range RCS temperature indications are auctioneered to select the lowest temperature signal. INSERT 4 (4)

The lowest temperature signal is processed through a function generator that calculates a pressure limit for that temperature. The calculated pressure limit is then compared with the indicated RCS pressure from a wide range pressure channel. If the indicated pressure meets or exceeds the calculated value, a PORV is signaled to open. (4)

INSERT 5

The PTLR presents the PORV setpoints for LTOP. The LTOP setpoints are normally staggered so only one valve opens during a low temperature overpressure transient. Having the setpoints of both valves within the limits in the PTLR ensures that the Reference 1 limits will not be exceeded in any analyzed event. (1) (4) (1)

When a PORV is opened in an increasing pressure transient, the release of coolant will cause the pressure increase to slow and reverse. As the PORV releases coolant, the RCS pressure decreases until a reset pressure is reached and the valve is signaled to close. The pressure continues to decrease below the reset pressure as the valve closes.

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(3) **INSERT 3**

power operated relief valves

(1) **INSERT 3A**

When all RCS cold leg temperatures are ≥ 140°F and two charging pumps are capable of injecting into the RCS, the LTOP System for pressure relief includes all three RCS relief valves (two PORVs and the RHR suction relief valve). Three RCS relief valves are required for redundancy, since one PORV and one RHR suction relief valve have adequate relieving capability to prevent overpressurization at this coolant input capability.

(4) **INSERT 4**

When the RCS temperature is below the LTOP enable temperature, a safeguards circuit is manually armed which allows the PORVs to open in the event of a low temperature overpressurization transient. RCS pressure is monitored by two wide range pressure instruments with each instrument providing an opening signal to one PORV.

(4) **INSERT 5**

for both PORVs are the same

BASES

BACKGROUND (continued)

RHR Suction Relief Valve Requirements (2)

During LTOP MODES, the RHR System is operated for decay heat removal and low pressure letdown control. Therefore, the RHR suction isolation valves are open in the piping from the RCS hot legs to the inlets of the RHR pumps. While these valves are open and the RHR suction valves are open, the RHR suction relief valves are exposed to the RCS and are able to relieve pressure transients in the RCS. (4) (4)

The RHR suction isolation valves and the RHR suction valves must be open to make the RHR suction relief valves OPERABLE for RCS overpressure mitigation. Autoclosure interlocks are not permitted to cause the RHR suction isolation valves to close. The RHR suction relief valves are spring loaded, bellows type water relief valves with pressure tolerances and accumulation limits established by Section III of the American Society of Mechanical Engineers (ASME) Code (Ref. 3) for Class 2 relief valves. (4) (4) (4) (4) (2)

RCS Vent Requirements

Once the RCS is depressurized, a vent exposed to the containment atmosphere will maintain the RCS at containment ambient pressure in an RCS overpressure transient, if the relieving requirements of the transient do not exceed the capabilities of the vent. Thus, the vent path must be capable of relieving the flow resulting from the limiting LTOP mass or heat input transient, and maintaining pressure below the P/T limits. The required vent capacity may be provided by one or more vent paths. INSERT 6 (4)

For an RCS vent to meet the flow capacity requirement, it requires removing a pressurizer safety valve, removing a PORV's internals, and disabling its block valve in the open position, or similarly establishing a vent by opening an RCS vent valve. The vent path(s) must be above the level of reactor coolant, so as not to drain the RCS when open. INSERT 6A (4)

APPLICABLE SAFETY ANALYSES

Safety analyses (Ref. 4) demonstrate that the reactor vessel is adequately protected against exceeding the Reference 1 P/T limits. In MODES 1, 2, and 3, and in MODE 4 with RCS cold leg temperature exceeding [275°F] [LTOP arming temperature specified in the PTLR], the pressurizer safety valves will prevent RCS pressure from exceeding the Reference 1 limits. At about [275°F] [LTOP arming temperature specified in the PTLR] and below, overpressure prevention falls to two OPERABLE RCS relief valves or to a depressurized RCS and a sufficient INSERT 7 (1) (2) INSERT 8 (1) (2) INSERT 8A (1)

(4) **INSERT 6**

blocking open any one of the three PORVs

(4) **INSERT 6A**

s to provide a 2.0 square inch vent path

(1) (2) **INSERT 7**

266°F (Unit 1) and 299°F (Unit 2)

(1) (2) **INSERT 8**

266°F (Unit 1) and 299°F (Unit 2)

(1) **INSERT 8A**

(or three RCS relief valves when all RCS cold leg temperatures are $\geq$ 140°F and two charging pumps are capable of injecting into the RCS)

BASES

APPLICABLE SAFETY ANALYSES (continued)

sized RCS vent. Each of these means has a limited overpressure relief capability.

The actual temperature at which the pressure in the P/T limit curve falls below the pressurizer safety valve setpoint increases as the reactor vessel material toughness decreases due to neutron embrittlement. Each time the PTLR curves are revised, the LTOP System must be re-evaluated to ensure its functional requirements can still be met using the RCS relief valve method or the depressurized and vented RCS condition.

The PTLR contains the acceptance limits that define the LTOP requirements. Any change to the RCS must be evaluated against the Reference 4 analyses to determine the impact of the change on the LTOP acceptance limits.

Transients that are capable of overpressurizing the RCS are categorized as either mass or heat input transients, examples of which follow:

Mass Input Type Transients

a. Inadvertent safety injection or

b. Charging/letdown flow mismatch.

Heat Input Type Transients

a. Inadvertent actuation of pressurizer heaters,

b. Loss of RHR cooling, or

c. Reactor coolant pump (RCP) startup with temperature asymmetry within the RCS or between the RCS and steam generators.

The following are required during the LTOP MODES to ensure that mass and heat input transients do not occur, which either of the LTOP overpressure protection means cannot handle:

a. Rendering all but one HPI pump and one charging pump incapable of injection,

b. Deactivating the accumulator discharge isolation valves in their closed positions, and

(1) (5) **INSERT 8B**

unless all RCS cold leg temperatures are ≥ 140°F and three RCS relief valves are OPERABLE, then only all of the SI pumps must be rendered incapable of injection;

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BASES

APPLICABLE SAFETY ANALYSES (continued)

c. Disallowing start of an RCP if secondary temperature is more than [50]°F above primary temperature in any one loop. LCO 3.4.6, "RCS Loops - MODE 4," and LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," provide this protection. INSERT 9 (1)

The Reference 4 analyses demonstrate that either one RCS relief valve or the depressurized RCS and RCS vent can maintain RCS pressure below limits when only one [HPI] pump [and] one charging pump [are] is [are] actuated. Thus, the LCO allows only [one] [HPI pump [and] one charging pump] OPERABLE during the LTOP MODES. Since neither one RCS relief valve nor the RCS vent can handle the pressure transient need from accumulator injection, when RCS temperature is low, the LCO also requires the accumulators isolation when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR. (1) (2) (6) to be capable of injecting into the RCS; the (5) INSERT 10 (6) INSERT 11 (4)

The isolated accumulators must have their discharge valves closed and the valve power supply breakers fixed in their open positions. The analyses show the effect of accumulator discharge is over a narrower RCS temperature range ([175]°F and below) than that of the LCO ([275]°F and below). (4)

Fracture mechanics analyses established the temperature of LTOP Applicability at [275°F] [LTOP arming temperature specified in the PTLR]. INSERT 12 (1) (2)

The consequences of a small break loss of coolant accident (LOCA) in LTOP MODE 4 conform to 10 CFR 50.46 and 10 CFR 50, Appendix K (Refs. 5 and 6), requirements by having a maximum of [one] [HPI] pump [and one charging pump] OPERABLE and SI actuation enabled. (4)

PORV Performance

The fracture mechanics analyses show that the vessel is protected when the PORVs are set to open at or below the limit shown in the PTLR. The setpoints are derived by analyses that model the performance of the LTOP System, assuming the limiting LTOP transient of [one] [HPI pump [and] one charging pump] injecting into the RCS. These analyses consider pressure overshoot and undershoot beyond the PORV opening and closing, resulting from signal processing and valve stroke times. The PORV setpoints at or below the derived limit ensures the Reference 1 P/T limits will be met. specified setpoint (1) mass addition (2) or two INSERT 13 (4) (2) (4)

(1) **INSERT 9**

Disallowing a startup of an RCP with one or more RCS cold leg temperatures ≤ 152°F, unless the pressurizer water level is < 62% or the secondary water temperature of each steam generator is < 50°F above each of the RCS cold leg temperatures.

(1) **INSERT 10**

are not depressurized and vented.

(4) **INSERT 11**

The analyses also demonstrate that one PORV and one RHR suction relief valve can maintain RCS pressure below limits when both charging pumps are actuated, all RCS cold leg temperatures are ≥ 140°F. Thus, the LCO allows two charging pumps to be capable of injecting into the RCS under these conditions.

(1) (2) **INSERT 12**

≤ 266°F (Unit 1) and ≤ 299°F (Unit 2)

(4) **INSERT 13**

or the limiting heat input transient of an RCP startup with temperature asymmetry within the RCS or between the RCS and steam generators of 50°F above each of the RCS cold leg temperatures.

APPLICABLE SAFETY ANALYSES (continued)

The PORV setpoints in the PTLR will be updated when the revised P/T limits conflict with the LTOP analysis limits. The P/T limits are periodically modified as the reactor vessel material toughness decreases due to neutron embrittlement caused by neutron irradiation. Revised limits are determined using neutron fluence projections and the results of examinations of the reactor vessel material irradiation surveillance specimens. The Bases for LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," discuss these examinations.

The PORVs are considered active components. Thus, the failure of one PORV is assumed to represent the worst case, single active failure.

[RHR Suction Relief Valve Performance

The RHR suction relief valves do not have variable pressure and temperature lift setpoints like the PORVs. Analyses must show that one RHR suction relief valve with a setpoint at or between [436.5] psig and [463.5] psig will pass flow greater than that required for the limiting LTOP transient while maintaining RCS pressure less than the P/T limit curve. Assuming all relief flow requirements during the limiting LTOP event, an RHR suction relief valve will maintain RCS pressure to within the valve rated lift setpoint, plus an accumulation ≤ 10% of the rated lift setpoint.

Although each RHR suction relief valve may itself meet single failure criteria, its inclusion and location within the RHR System does not allow it to meet single failure criteria when spurious RHR suction isolation valve closure is postulated. Also, as the RCS P/T limits are decreased to reflect the loss of toughness in the reactor vessel materials due to neutron embrittlement, the RHR suction relief valves must be analyzed to still accommodate the design basis transients for LTOP.

The RHR suction relief valves are considered active components. Thus, the failure of one valve is assumed to represent the worst case single active failure.]

RCS Vent Performance

With the RCS depressurized, analyses show a vent size of 2.07 square inches is capable of mitigating the allowed LTOP overpressure transient. The capacity of a vent this size is greater than the flow of the limiting transient for the LTOP configuration, one HPI pump and one charging pump OPERABLE, maintaining RCS pressure less than the maximum pressure on the P/T limit curve.

(4) **INSERT 13A**

of one charging pump injecting into the RCS

(4) **INSERT 14**

the Appendix G limit curves and 110% of the RHR System design pressure (660 psig). When all RCS cold leg temperatures are ≥ 140°F and two charging pumps are capable of injecting into the RCS, the RHR suction relief valve and one PORV, in combination, will maintain RCS pressure less than the P/T limit curve.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The RCS vent size will be re-evaluated for compliance each time the P/T limit curves are revised based on the results of the vessel material surveillance.

The RCS vent is passive and is not subject to active failure.

The LTOP System satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires that the LTOP System is OPERABLE. The LTOP System is OPERABLE when the minimum coolant input and pressure relief capabilities are OPERABLE. Violation of this LCO could lead to the loss of low temperature overpressure mitigation and violation of the Reference 1 limits as a result of an operational transient.

To limit the coolant input capability, the LCO requires that a maximum of one HPI pump and one charging pump be capable of injecting into the RCS, and all accumulator discharge isolation valves be closed and immobilized when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed in the PTLR.

The LCO is modified by two Notes. Note 1 allows two charging pumps to be made capable of injecting for ≤ 1 hour during pump swap operations. One hour provides sufficient time to safely complete the actual transfer and to complete the administrative controls and surveillance requirements associated with the swap. The intent is to minimize the actual time that more than one charging pump is physically capable of injection. Note 2 states that accumulator isolation is only required when the accumulator pressure is more than or at the maximum RCS pressure for the existing temperature, as allowed by the P/T limit curves. This Note permits the accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions.

The elements of the LCO that provide low temperature overpressure mitigation through pressure relief are:

a. Two OPERABLE PORVs; or

A PORV is OPERABLE for LTOP when its block valve is open, its lift setpoint is set to the limit required by the PTLR and testing proves its ability to open at this setpoint, and motive power is available to the two valves and their control circuits.

Handwritten annotations: "(1) provides two options. The first option"; "s isolated (i.e., the (4)"; "SI"; "(5)"; "a maximum of"; "no"; "(1)(2)"; "(4)(3)"; "deactivated)."; "The first option, however,"; "(1)"; "(1)(2)"; "into the RCS (1)"; "(3)"; "(2)"; "In addition, a"; "may be unisolated (1)"; "depressurized and vented"; "(1)"; "Furthermore, the first LCO option requires one of the three pressure relief capabilities:"; "(5)"; "(3)"; "LCO"; "(1)"; "specified"; "INSERT 16"; "(4)(1)"

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INSERT 14A

Not Used

INSERT 15

Not Used

INSERT 15A

Not Used

INSERT 16

Motive power for the PORVs is through the use of air. Normally this air is supplied by the plant control air source. To assure OPERABILITY of the PORVs in the event of a loss of control air, a backup air supply is provided. The backup air supply consists of compressed air bottles (the emergency air tank bank), piping, and valves. The backup air supply contains enough air to support PORV operation for 10 minutes with no operator action upon a loss of control air. Only two of the three PORVs have a backup air supply, therefore they are the only PORVs that can be used to meet the LCO requirements.

BASES

LCO (continued)

b. Two OPERABLE RHR suction relief valves.

An RHR suction relief valve is OPERABLE for LTOP when its RHR suction isolation valve and its RHR suction valve are open, its setpoint is at or between [436.5] psig and [463.5] psig, and testing has proven its ability to open at this setpoint.

One OPERABLE PORV and one OPERABLE RHR suction relief valve, or

c. A depressurized RCS and an RCS vent.

An RCS vent is OPERABLE when open with an area of ≥ [2.07] square inches.

Each of these methods of overpressure prevention is capable of mitigating the limiting LTOP transient.

APPLICABILITY

This LCO is applicable in MODE 4 when any RCS cold leg temperature is ≤ [[ ]°F] [LTOP arming temperature specified in the PTLR], in MODE 5, and in MODE 6 when the reactor vessel head is on. The pressurizer safety valves provide overpressure protection that meets the Reference 1 P/T limits above [275°F] [LTOP arming temperature specified in the PTLR]. When the reactor vessel head is off, overpressurization cannot occur.

LCO 3.4.3 provides the operational P/T limits for all MODES. LCO 3.4.10, "Pressurizer Safety Valves," requires the OPERABILITY of the pressurizer safety valves that provide overpressure protection during MODES 1, 2, and 3, and MODE 4 above [275°F] [LTOP arming temperature specified in the PTLR].

Low temperature overpressure prevention is most critical during shutdown when the RCS is water solid, and a mass or heat input transient can cause a very rapid increase in RCS pressure when little or no time allows operator action to mitigate the event.

ACTIONS

A.1 and B.1

With two or more HPI pumps capable of injecting into the RCS, RCS overpressurization is possible.

(1) **INSERT 16A**

Consistent with the first option, the second option requires that no SI pumps be capable of injecting into the RCS and that the accumulators are isolated, except an accumulator may be unisolated when it is depressurized and vented. However, the second option allows both charging pumps to be capable of injecting into the RCS, provided all RCS cold leg temperatures are ≥ 140°F and all three of the relief valves (two PORVs and one RHR suction relief valve) described in the first option are OPERABLE.

Both LCO options are modified by a Note that places restrictions on RCP startups. This is necessary to ensure the limiting heat input transient is maintained within the analyses assumptions. Therefore, the Note states that reactor coolant pumps shall not be started with one or more RCS cold leg temperatures ≤ 152°F unless the pressurizer water level is < 62% or the secondary water temperature of each steam generator is < 50°F above each of the RCS cold leg temperatures.

(1) (2) **INSERT 17**

266°F (Unit 1) and ≤ 299°F (Unit 2)

(1) (2) **INSERT 18**

with all RCS cold leg temperatures > 266°F (Unit 1) and > 299°F (Unit 2)

(1) (2) **INSERT 19**

with all RCS cold leg temperatures > 266°F (Unit 1) and > 299°F (Unit 2)

(TSTF-359) **INSERT 19AA**

A Note prohibits the application of LCO 3.0.4.b to an inoperable LTOP system when entering MODE 4. There is an increased risk associated with entering MODE 4 from MODE 5 with LTOP inoperable and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

(1) **INSERT 19A**

In addition, when only one charging pump is allowed to be capable of injecting into the RCS and both charging pumps are actually capable, RCS overpressurization is possible.

BASES

ACTIONS (continued)

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition. (4)

C.1, D.1, and D.2 — not depressurized and vented — (1)

An unisolated accumulator requires isolation within 1 hour. This is only required when the accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves. (6)

If isolation is needed and cannot be accomplished in 1 hour, Required Action D.1 and Required Action D.2 provide two options, either of which must be performed in the next 12 hours. By increasing the RCS temperature to > [°F][LTOP arming temperature specified in the PTLR], INSERT 20 (1)(2) an accumulator pressure of [600] psig (2) 658 cannot exceed the LTOP limits if the accumulators are fully injected. Depressurizing the affected (6) accumulators below the LTOP limit from the PTLR and venting (1) also gives this protection.

The Completion Times are based on operating experience that these activities can be accomplished in these time periods and on engineering evaluations indicating that an event requiring LTOP is not likely in the allowed times.

E.1

In MODE 4 when any RCS cold leg temperature is ≤ [275°F][LTOP arming temperature specified in the PTLR], INSERT 21 (1)(2) with one required RCS relief valve inoperable, the RCS relief valve must be restored to OPERABLE status within a Completion Time of 7 days. Two or three RCS relief valves in any combination of the PORVs and the RHR suction relief valves are INSERT 21A required to provide low temperature overpressure mitigation while withstanding a single failure of an active component. (1)

The Completion Time considers the facts that only one or two of the RCS relief valves is are required to mitigate an overpressure transient INSERT 21A and that the likelihood of an single active failure of the remaining valve path during this time period is very low. (5)

F.1

The consequences of operational events that will overpressurize the RCS are more severe at lower temperature (Ref. 7). Thus, with one of the two RCS relief valves inoperable in MODE 5 or in MODE 6 with the head on,

(1) (2) **INSERT 20**

266°F (Unit 1) and > 299°F (Unit 2)

(1) (2) **INSERT 21**

266°F (Unit 1) and ≤ 299°F (Unit 2)

(1) **INSERT 21A**

(depending upon the condition of the charging pumps)

BASES

ACTIONS (continued)

the Completion Time to restore two valves to OPERABLE status is 24 hours.

The Completion Time represents a reasonable time to investigate and repair several types of relief valve failures without exposure to a lengthy period with only one OPERABLE RCS relief valve to protect against overpressure events.

G.1

The RCS must be depressurized and a vent must be established within 12 hours when:

a. Both required RCS relief valves are inoperable,

b. A Required Action and associated Completion Time of Condition A, [B], D, E, or F is not met, or

c. The LTOP System is inoperable for any reason other than Condition A, [B], C, D, E, or F.

The vent must be sized ≥ [2.07] square inches to ensure that the flow capacity is greater than that required for the worst case mass input transient reasonable during the applicable MODES. This action is needed to protect the RCPB from a low temperature overpressure event and a possible brittle failure of the reactor vessel.

The Completion Time considers the time required to place the plant in this Condition and the relatively low probability of an overpressure event during this time period due to increased operator awareness of administrative control requirements.

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1, [SR 3.4.12.2], and SR 3.4.12.3

To minimize the potential for a low temperature overpressure event by limiting the mass input capability, a maximum of [one] [HPI] pump [and a maximum of one charging pump] are verified incapable of injecting into the RCS and the accumulator discharge isolation valves are verified closed and locked out. The [HPI] pump[s] and charging pump[s] are rendered incapable of injecting into the RCS through removing the power from the pumps by racking the breakers out under administrative control. An alternate method of LTOP control may be employed using at least two independent means to prevent a pump start such that a single failure or

(1) **INSERT 21B**

s (depending upon whether the LCO Option A or B is being used)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

single action will not result in an injection into the RCS. This may be accomplished through the pump control switch being placed in pull to lock and at least one valve in the discharge flow path being closed. INSERT 21C (2) (7)

INSERT 21D (1)

The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment.

SR 3.4.12.4 (2)

Each required RHR suction relief valve shall be demonstrated OPERABLE by verifying its RHR suction valve and RHR suction isolation valves are open and by testing it in accordance with the Inservice Testing Program. (Refer to SR 3.4.12.7 for the RHR suction isolation valve Surveillance.) This Surveillance is only required to be performed if the RHR suction relief valve is being used to meet this LCO. (1) (4) (1)

The RHR suction valve is verified to be opened every 12 hours. The Frequency is considered adequate in view of other administrative controls such as valve status indications available to the operator in the control room that verify the RHR suction valve remains open. (1) (1)

The ASME Code, Section XI (Ref. 8), test per Inservice Testing Program verifies OPERABILITY by proving proper relief valve mechanical motion and by measuring and, if required, adjusting the lift setpoint. (2)

SR 3.4.12.5 (1)

The RCS vent of ≥ [2.07] square inches is proven OPERABLE by verifying its open condition either: (2)

a. Once every 12 hours for a valve that is not locked (valves that are sealed or secured in the open position are considered "locked" in this context) or (1) (5)

b. Once every 31 days for other vent path(s) (e.g., a vent valve that is locked, sealed, or secured in position or a removed pressurizer safety valve or open manway also fits this category). (6)

The passive vent path arrangement must only be open to be OPERABLE. This Surveillance is required to be met if the vent is being used to satisfy the pressure relief requirements of the LCO 3.4.12b. (1)

(7) **INSERT 21C**

, or at least one valve in the discharge flow path being closed and sealed or locked

(1) **INSERT 21D**

In addition, SR 3.4.12.3 is modified by a Note that allows the accumulator discharge isolation valve position to be verified by administrative means. This is acceptable since the valve position was verified prior to deactivating the valve, access to the containment is restricted, and valves are only operated under strict procedural control.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.12.6

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve must be remotely verified open in the main control room. [This Surveillance is performed if the PORV satisfies the LCO.] (5) (4) one or more (2)

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required removed, and the manual operator is not required locked in the inactive position. Thus, the block valve can be closed in the event the PORV develops excessive leakage or does not close (sticks open) after relieving an overpressure situation.

The 72 hour Frequency is considered adequate in view of other administrative controls available to the operator in the control room, such as valve position indication, that verify that the PORV block valve remains open.

[SR 3.4.12.7

Each required RHR suction relief valve shall be demonstrated OPERABLE by verifying its RHR suction valve and RHR suction isolation valve are open and by testing it in accordance with the Inservice Testing Program. (Refer to SR 3.4.12.4 for the RHR suction valve Surveillance and for a description of the requirements of the Inservice Testing Program.) This Surveillance is only performed if the RHR suction relief valve is being used to satisfy this LCO.] (1)

Every 31 days the RHR suction isolation valve is verified locked open, with power to the valve operator removed, to ensure that accidental closure will not occur. The "locked open" valve must be locally verified in its open position with the manual actuator locked in its inactive position. The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve position. INSERT 22 (1)

SR 3.4.12.8

Performance of a COT is required within 12 hours after decreasing RCS temperature to ≤ [275°F] [LTOP arming temperature specified in the PTLR] and every 31 days on each required PORV to verify and, as necessary, adjust its lift setpoint. A successful test of the required contact(s) of a channel relay may be performed by the verification of the (6)

(1) **INSERT 22**

Verification every 31 days that each required emergency air tank bank's pressure is ≥ 900 psig assures adequate air pressure for reliable PORV operation. With the emergency air supply at ≥ 900 psig, there will be enough air to support PORV operation for 10 minutes with no operator action upon a loss of control air. The 31 day Frequency takes into consideration administrative control over operation of the emergency air tank banks and alarms for low air pressure.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The COT will verify the setpoint is within the PTLR allowed maximum limits in the PTLR. PORV actuation could depressurize the RCS and is not required.

The 12 hour Frequency considers the unlikelihood of a low temperature overpressure event during this time.

A Note has been added indicating that this SR is required to be performed 12 hours after decreasing RCS cold leg temperature to ≤ [275°F] LTOP arming temperature specified in the PTLR. The COT cannot be performed until in the LTOP MODES when the PORV lift setpoint can be reduced to the LTOP setting. The test must be performed within 12 hours after entering the LTOP MODES.

SR 3.4.12.9

Performance of a CHANNEL CALIBRATION on each required PORV actuation channel is required every [18] months to adjust the whole channel so that it responds and the valve opens within the required range and accuracy to known input.

REFERENCES

1. 10 CFR 50, Appendix G.
2. Generic Letter 88-11.
3. ASME, Boiler and Pressure Vessel Code, Section III.
4. FSAR, Chapter [15].
5. 10 CFR 50, Section 50.46.
6. 10 CFR 50, Appendix K.
7. Generic Letter 90-06.
8. ASME, Boiler and Pressure Vessel Code, Section XI.

(1) (2) **INSERT 23**

266°F (Unit 1) and ≤ 299°F (Unit 2)

(4) **INSERT 24**

WCAP-13235, "Donald C. Cook Units 1 & 2, Analysis of Low Temperature Overpressurization Mass Injection Events with Pressurizer Steam Bubble and RHR Relief Valve, March 1992; "WCAP-12483 Revision 1, "Analysis of Capsule U From the American Electric Power Company D. C. Cook Unit 1 Reactor Vessel Radiation Surveillance Program, December 2002;" and WCAP-13515, Revision 1, "Analysis of Capsule U From Indiana Michigan Power Company D. C. Cook Unit 2 Reactor Vessel Radiation Surveillance Program, May 2002."

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.12 BASES, LOW TEMPERATURE OVERPRESURE PROTECTION (LTOP) SYSTEM

1. Changes are made to reflect those changes made to the ISTS. The following requirements are renumbered or revised, where applicable, to reflect the changes.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Editorial change made for enhanced clarity or to be consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

6. Changes are made to reflect the ISTS.

7. An additional method to isolate a pump has been provided.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.12, LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L.6

CNP is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below is the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

The LTOP System is designed to provide the capability, during operation at relatively low temperatures, to prevent RCS pressure from exceeding the 10 CFR 50 Appendix G limits. The PORVs, together with actuation logic from the pressurizer pressure wide range instrumentation channels, are used to automatically mitigate potential RCS overpressure transients whenever the LTOP System is enabled. In addition, the RHR suction relief valve provides an alternative RCS discharge path for mitigating the consequences of LTOP events. The RHR suction relief valve is a passive component that is available whenever the RHR suction isolation valves are open.

Automatic operation of the LTOP System is required by the current Technical Specifications when any RCS cold leg temperature is ≤ 152°F, and is required under current administrative controls when all RCS cold leg temperatures are > 152°F and any RCS cold leg temperature is ≤ 266°F (Unit 1) and 299°F (Unit 2). These requirements ensure that RCS pressure is maintained below 10 CFR 50 Appendix G limits during potential RCS overpressure transients. An analysis has been performed that demonstrates that the current administrative controls (and the proposed ITS controls) are acceptable for allowing two charging pumps to be capable of injecting into the RCS (and no SI pump) when the LTOP System is required to be OPERABLE. This evaluation concluded that:

a. With the availability of relief paths from both the RHR relief valve and a single pressurizer PORV, there are no restrictions on the number of RHR pumps or RCPs running, or on the initial pressurizer water level (i.e., water solid operation is not precluded by the analysis);

b. The RHR System design pressure limit will not be exceeded; and

c. During the mass injection from two centrifugal charging pumps, the steady state 10 CFR 50 Appendix G limits will not be violated for RCS temperatures ≥ 140°F.

In conclusion, the proposed less restrictive ITS limitations are acceptable based on the evaluations performed that demonstrate, with RHR aligned to the RCS and the availability of one pressurizer PORV and the RHR safety valve, the proposed two charging pump limits are conservative and will prevent exceeding both the RHR piping limit and the applicable steady state 10 CFR 50 Appendix G limits based on the following analytical bases:

a. Unit 1 pressure/temperature limits are less restrictive than provided in WCAP-12483, "Analysis of Capsule U from the American Electric Power

Company D. C. Cook Unit 1 Reactor Vessel Radiation Surveillance Program, January 1990," provided to the NRC by letter dated June 22, 1990;

b. Unit 2 pressure-temperature limits are less restrictive than provided in WCAP-13515, "Analysis of Capsule U from the Indiana Michigan Power Company D.C. Cook Unit 2 Reactor Vessel Radiation Surveillance Program, February 1993," provided to the NRC by letter dated December 3, 1993;

c. The accumulators are isolated or depressurized and vented;

d. Two PORVs with setpoints ≤ 435 psig (Note: The LTOP System is designed to use two of the three PORVs to provide relief, and in compliance with the single failure requirement, both PORVs are required to be OPERABLE but only one PORV is assumed to operate in all the analyses where LTOP System is enabled. In addition, although there are a total of three PORVs, only two PORVs are automatically reset to 435 psig from 2335 psig when LTOP System is enabled (energized) by the operators, and the controls for these two PORVs are independent and redundant in compliance with single failure requirements.);

e. PORV stroke open time ≤ 6 seconds (analysis includes an additional 0.95 seconds signal actuation time);

f. The RHR suction relief valve with a setpoint ≤ 450 psig (analysis includes a 10% accumulation effect);

g. All RCS cold leg temperatures ≥ 140°F;

h. No restriction on pressurizer water level;

i. No restriction on the number of RHR pumps in operation; and

j. No restriction on the number of RCPs in operation.

Therefore, the requested limitations are conservative with respect to the analytical bases and are acceptable.

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

The LTOP System analysis demonstrates that the limiting conditions proposed will bound the consequences of the credible mass injection events that may occur below the LTOP System enable temperature. This ensures that, during the mass injection from two centrifugal charging pumps, the steady state 10 CFR 50 Appendix G limits will not be violated for RCS temperature $\geq$ 140°F, and that the RHR System design pressure limit will not be exceeded. Since the LTOP System analysis demonstrates that the pressure boundary of the RCS and RHR System are adequately protected from the events previously analyzed, then even if there is an increase in the probability of a mass injection event occurring, the probability would not be significantly increased, and the consequences of a mass injection event would not be increased even if both charging pumps were to start and inject into the RCS. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

The LTOP System analysis demonstrates that the limiting conditions proposed will bound the consequences of the credible mass injection events that may occur below the LTOP System enable temperature. This ensures that, during the mass injection from two centrifugal charging pumps, the steady state 10 CFR 50 Appendix G limits will not be violated for RCS temperature $\geq$ 140°F, and that the RHR System design pressure limit will not be exceeded. The LTOP System analysis demonstrates that the pressure boundary of the RCS and RHR System are adequately protected both from the mass injection events currently considered in the Technical Specifications involving a single charging pump injecting into the RCS, as well as a mass injection event involving two charging pumps injecting into the RCS. As a result, a new or different kind of accident is not postulated to occur because the pressure boundary of the RCS and RHR System remains adequately protected, even under the proposed, less restrictive conditions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

   Response: No.

The margin of safety is not affected by this change because the safety analysis assumptions are not affected. The LTOP System analysis demonstrates that the limiting conditions proposed will bound the consequences of the credible mass injection events that may occur below the LTOP System enable temperature. This ensures that, during the mass injection from two centrifugal charging pumps, the steady state 10 CFR 50 Appendix G limits will not be violated for RCS temperature $\geq$ 140°F, and that the RHR System design pressure limit will not be exceeded. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.12, LOW TEMPERATURE OVERPRESSURE PROTECTION (LTOP) SYSTEM

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

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ATTACHMENT 13

ITS 3.4.13, RCS Operational Leakage

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.13

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

LCO 3.4.13 3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE, (M.1)

b. [1] 0.8 GPM UNIDENTIFIED LEAKAGE,

c. 600 gallons per day total primary-to-secondary leakage through all steam generators and 150 gallons per day through any one steam generator,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. Seal line resistance greater than or equal to 2.27E-1 ft/gpm^2 and, (See ITS 3.5.5)

f. The leakage from each Reactor Coolant System Pressure Isolation Valves specified in Table 3.4-0 shall be limited to 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm, at a Reactor Coolant System average pressure within 20 psi of the nominal full pressure value. (See ITS 3.4.14)

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

ACTION:

ACTION D a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed ACTIONS A and B (M.1)

ACTION C, ACTION D b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any reactor coolant system pressure isolation valve(s) leakage greater than the above limit, declare the leaking valve inoperable and isolate the high pressure portion of the affected system from the low pressure portion by the use of a combination of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. Verify the isolated condition of the closed de-energized motor operated valve at least once per 24 hours, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (See ITS 3.4.14)

* Specification 3.4.6.2.e is applicable with average pressure within 20 psi of the nominal full pressure value. (See ITS 3.5.5)

ITS 3.4.13

ITS

A.1

REACTOR COOLANT SYSTEM

LIMITING CONDITIONS FOR OPERATION (Continued)

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours.

b. Monitoring the containment sump inventory and discharge at least once per 12 hours.

L.1

c. Determining the seal line resistance at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. The seal line resistance measured during the surveillance must be greater than or equal to 2.27 E-1 ft/gpm². The seal line resistance, R_{SL}, is determined from the following expression:

$$R_{SL} = \frac{2.31\,(P_{CHP} - P_{SI})}{Q^2}$$

where: P_{CHP} = charging pump header pressure, psig

P_{SI} = 2112 psig (low pressure operation)

2262 psig (high pressure operation)

2.31 = conversion factor $(12\ in/ft)^2/(62.3\ lb/ft^3)$

Q = the total seal injection flow, gpm

The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4.

See ITS 3.5.5

Add proposed SR 3.4.13.1 Note — L.2

SR 3.4.13.1 d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation, and

e. Monitoring the reactor head flange leakoff system at least once per 24 hours.

L.1

4.4.6.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4-0 shall be demonstrated OPERABLE pursuant to Specification 4.0.5.

See ITS 3.4.14

ITS

A.1

TABLE 3.4-0

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVE

Valve Number	Valve Size (in.)	Function (a)	Maximum Allowable Leakage (gpm)
SI-170L2	10	ECCS to Reactor Coolant Loop #2 Cold Leg	5
RH 133	8	RHR to Reactor Coolant Loop #2 Cold Leg	4
SI-170L3	10	ECCS to Reactor Coolant Loop #3 Cold Leg	5
RH 134	8	RHR to Reactor Coolant Loop #3 Cold Leg	4

See ITS 3.4.14

(a) Minimum test differential pressure shall not be below 150 psid.

See ITS 3.4.14

ITS

A.1

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ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

STEAM GENERATORS

LIMITING CONDITION FOR OPERATION

3.4.5 Each steam generator shall be OPERABLE. A.2

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

ACTION: Add proposed ACTION B (Condition third part) M.2

With one or more steam generators inoperable, restore the inoperable generator(s) to OPERABLE status prior to increasing T_{avg} above 200°F.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.2 4.4.5.0 Each steam generator shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirement of Specification 4.0.5. A.2

4.4.5.1 Steam Generator Sample Selection and Inspection - Each steam generator shall be determined OPERABLE during shutdown by selecting and inspecting at least the minimum number of steam generators specified in Table 4.4-1.

4.4.5.2 Steam Generator Tube Sample Selection and Inspection - The steam generator tube minimum sample size, inspection result classification, and the corresponding action required shall be as specified in Table 4.4-2. The inservice inspection of steam generator tubes shall be performed at the frequencies specified in Specification 4.4.5.3 and the inspected tubes shall be verified acceptable per the acceptance criteria of Specification 4.4.5.4. The tubes selected for each inservice inspection shall include at least 3% of the total number of tubes in all steam generators; the tubes selected for these inspections shall be selected on a random basis except:

a. Where experience in similar plants with similar water chemistry indicates critical areas to be inspected, then at least 50% of the tubes inspected shall be from these critical areas.

b. The first sample of tubes selected for each inservice inspection (subsequent to the preservice inspection) of each steam generator shall include:

1. All tubes that previously had detectable wall penetrations (greater than or equal to 20%) that have not been plugged.

See ITS 5.5

* This Specification does not apply in Mode 4 while performing crevice flushing as long as Limiting Conditions for Operation for Specification 3.4.1.3 are maintained. A.3

ITS 3.4.13

ITS (A.1)

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

LCO 3.4.13 3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 1 GPM total primary-to-secondary leakage through all steam generators and 500 gallons per day through any one steam generator,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. Seal line resistance greater than or equal to 2.27E-1 ft/gpm² and, — See ITS 3.5.5

f. The leakage from each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-0 shall be limited to 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm, at a Reactor Coolant System average pressure within 20 psi of the nominal full pressure value. — See ITS 3.4.14

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

ACTION:

ACTION B a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION A b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE, reduce the leakage rate to within limits within 4 hours or

ACTION B be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any reactor coolant system pressure isolation valve(s) leakage greater than the above limit, declare the leaking valve inoperable and isolate the high pressure portion of the affected system from the low pressure portion by the use of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. Verify the isolated condition of the closed de-energized motor operated valve at least once per 24 hours, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. — See ITS 3.4.14

* Specification 3.4.6.2.e is applicable with average pressurizer pressure within 20 psi of the nominal full pressure value. — See ITS 3.5.5

ITS

A.1

REACTOR COOLANT SYSTEM

LIMITING CONDITIONS FOR OPERATION (Continued)

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours. L.1

b. Monitoring the containment sump inventory and discharge at least once per 12 hours.

c. Determining the seal line resistance at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. The seal line resistance measured during the surveillance must be greater than or equal to 2.27 E-1 ft/gpm². The seal line resistance, R_{SL}, is determined from the following expression:

$$R_{SL} = \frac{2.31\ (P_{CHP} - P_{SI})}{Q^2}$$

where: P_{CHP} = charging pump header pressure, psig

P_{SI} = 2262 psig (high pressure operation)

2.31 = conversion factor $(12\ in/ft)^2/(62.3\ lb/ft^3)$

Q = the total seal injection flow, gpm

The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4.

See ITS 3.5.5

Add proposed SR 3.4.13.1 Note — L.2

SR 3.4.13.1 d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation, and

e. Monitoring the reactor head flange leakoff system at least once per 24 hours. L.1

4.4.6.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4-0 shall be demonstrated OPERABLE pursuant to Specification 4.0.5.

See ITS 3.4.14

ITS 3.4.13

ITS

A.1

TABLE 3.4-0

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVE

Valve Number	Valve Size (in.)	Function [(a)]	Maximum Allowable Leakage (gpm)
SI-170L2	10	ECCS to Reactor Coolant Loop #2 Cold Leg	5
RH 133	8	RHR to Reactor Coolant Loop #2 Cold Leg	4
SI-170L3	10	ECCS to Reactor Coolant Loop #3 Cold Leg	5
RH 134	8	RHR to Reactor Coolant Loop #3 Cold Leg	4

See ITS 3.4.14

(a) Minimum test differential pressure shall not be below 150 psid.

See ITS 3.4.14

COOK NUCLEAR PLANT - UNIT 2 3/4 4-16a AMENDMENT NO. ~~146~~, 174 ~~Order dated April 20, 1981~~

ITS

A.1

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ITS 3.4.13

ITS

A.1

REACTOR COOLANT SYSTEM

STEAM GENERATORS

LIMITING CONDITION FOR OPERATION

3.4.5 Each steam generator shall be OPERABLE. (A.2)

APPLICABILITY: MODES 1, 2, 3 and 4.* (A.3)

ACTION: (M.2) Add proposed ACTION B (Condition third part)

With one or more steam generators inoperable, restore the inoperable generator(s) to OPERABLE status prior to increasing T_{avg} above 200°F.

SURVEILLANCE REQUIREMENTS

SR 3.4.13.2 — 4.4.5.0 Each steam generator shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirement of Specification 4.0.5. (A.2)

4.4.5.1 Steam Generator Sample Selection and Inspection - Each steam generator shall be determined OPERABLE during shutdown by selecting and inspecting at least the minimum number of steam generators specified in Table 4.4-1.

4.4.5.2 Steam Generator Tube Sample Selection and Inspection - The steam generator tube minimum sample size, inspection result classification, and the corresponding action required shall be as specified in Table 4.4-2. The inservice inspection of steam generator tubes shall be performed at the frequencies specified in Specification 4.4.5.3 and the inspected tubes shall be verified acceptable per the acceptance criteria of Specification 4.4.5.4. The tubes selected for each inservice inspection shall include at least 3% of the total number of tubes in all steam generators; the tubes selected for these inspections shall be selected on a random basis except: (See ITS 5.5)

a. Where experience in similar plants with similar water chemistry indicates critical areas to be inspected, then at least 50% of the tubes inspected shall be from these critical areas.

b. The first sample of tubes selected for each inservice inspection (subsequent to the preservice inspection) of each steam generator shall include:

* This Specification does not apply in Mode 4 while performing crevice flushing as long as Limiting Conditions For Operation for Specification 3.4.1.3 are maintained. (A.3)

D.C. COOK - UNIT 2 3/4 4-7 Amendment No. 89

DISCUSSION OF CHANGES
ITS 3.4.13, RCS OPERATIONAL LEAKAGE

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.5 requires each steam generator to be OPERABLE. CTS 4.4.5.0 requires each steam generator to be demonstrated OPERABLE by performance of the augmented inservice inspection program (CTS 4.4.5.1, 4.4.5.2, 4.4.5.3, 4.4.5.4, and 4.4.5.5) and the requirement of Specification 4.0.5. ITS LCO 3.4.13 specifies the RCS operational LEAKAGE limits and SR 3.4.13.2 requires the steam generator tube integrity to be performed in accordance with the Steam Generator Program. The augmented inservice inspection program has been moved to ITS 5.5.7, "Steam Generator (SG) Program," and the inspection requirements of Specification 4.0.5 have been moved outside of the Technical Specifications to the Inservice Inspection Program. This changes the CTS by deleting the explicit LCO to maintain the steam generator OPERABLE, however the testing requirements are still retained in SR 3.4.13.2 and the inservice inspection program.

The purpose of CTS 3.4.5 and 4.4.5 are to ensure the appropriate Steam Generator integrity testing is performed to help ensure the leakage limits are met. The ITS moves the Steam Generator tube inspection from CTS 3.4.5 to a program in the Administrative Controls section. SR 3.4.13.2 provide a link to the Steam Generator Program. The Inservice Inspection requirements of CTS 4.0.5 are still required by 10 CFR 50.55a and the cross reference is not needed in the Technical Specifications. This change is designated as administrative because it does not result in a technical change to the Specifications.

A.3 The Applicability of CTS 3.4.5 is MODES 1, 2, 3, and 4. CTS 3.4.5 Applicability Footnote * states that the Specification does not apply in MODE 4 while performing crevice flushing as long as the requirements of LCO 3.4.1.3, Reactor Coolant Loops and Coolant Circulation - Hot Shutdown, are maintained. CTS 3.4.1.3 specifies the requirements for circulation and heat removal capability of the reactor coolant loops during MODE 4 operations. The operational LEAKAGE limits are specified in ITS 3.4.13 and the Surveillance Requirements of CTS 4.4.5 have been included as ITS SR 3.4.13.2 as discussed in DOC A.2. The Applicability is MODES 1, 2, 3, and 4. There is no allowance for steam generator integrity not to be met in MODE 4. This changes the CTS by deleting the explicit Note concerning crevice flushing.

The purpose of CTS 3/4.4.5 is to ensure the integrity of the steam generators is maintained in MODES 1, 2, 3, and 4. The purpose of CTS 3/4.4.1.3 is to ensure the appropriate systems and components are available to ensure reactor coolant circulation and decay heat removal capability during MODE 4 operations. ITS 3.4.13 continues to help ensure the integrity of the steam generators and

DISCUSSION OF CHANGES
ITS 3.4.13, RCS OPERATIONAL LEAKAGE

ITS 3.4.6 continues to ensure the appropriate systems and components are available to ensure reactor coolant circulation and decay heat removal. The Note is not included since the allowance for steam generator integrity not being met is not used and needed. Steam generator integrity is always necessary during MODES 1, 2, 3, and 4 even during crevice flushing. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative as it incorporates an ITS convention with no technical change to the CTS.

MORE RESTRICTIVE CHANGES

M.1 (Unit 1 only) CTS 3.4.6.2.b states that the Reactor Coolant System leakage shall be limited to 1 gpm UNIDENTIFIED LEAKAGE. CTS 3.4.6.2 Action b allows 4 hours to reduce leakage to within limits with any RCS leakage greater than any one of the limits, excluding pressure boundary leakage. Unit 1 ITS LCO 3.4.13.b states that the RCS unidentified LEAKAGE limit is 0.8 gpm. Unit 1 ITS 3.4.13 ACTION A states that if the unidentified leakage is > 0.8 gpm, to verify the source of unidentified LEAKAGE is not the pressurizer surge line or to reduce unidentified LEAKAGE to within limit in 4 hours. Unit 1 ITS 3.4.13 ACTION B states that if unidentified LEAKAGE is > 1.0 gpm, to reduce unidentified LEAKAGE to ≤ 1.0 gpm within 4 hours. This changes the Unit 1 CTS by decreasing the unidentified LEAKAGE limit from 1 gpm to 0.8 gpm and provides additional Actions if the unidentified LEAKAGE is not within the new 0.8 gpm limit but ≤ 1.0 gpm.

The purpose of CTS 3.4.6.2.b is to provide requirements for unidentified LEAKAGE. The change is acceptable because it is consistent with the condition for application of leak-before-break methodology to the pressurizer surge line for Unit 1 as documented in a Letter from Indiana Michigan Power Company (M.W. Rencheck) to the NRC dated October 26, 2000 (Letter C1000-20). The leak-before-break methodology described in this letter was approved by the NRC in a letter from John F. Stang (NRC) to Robert P. Powers (Indiana Michigan Power Company) dated November 8, 2000, which includes a Safety Evaluation Report for application of the leak-before-break methodology. The changes to the LCO and ACTIONS described above are consistent with the requirements specified in the Safety Evaluation Report, Section 4.4, last paragraph. The change is designated as more restrictive because it reduces the unidentified LEAKAGE limit for Unit 1 and provides additional ACTIONS if the new unidentified LEAKAGE limit is not met for Unit 1.

M.2 CTS 4.4.5.0 requires the demonstration that each steam generator is OPERABLE. CTS 3.4.5 Action requires the restoration of the inoperable steam generator prior to increasing T_{avg} above 200°F. CTS 3.4.5 Action does not state what action to take if the steam generator testing is not met while in MODE 1, 2, 3, or 4; it only includes a requirement that the testing be performed prior to entering MODE 1, 2, 3, or 4 (i.e., increasing Reactor Coolant System temperature above 200°F). Thus, entry into CTS 3.0.3 is required if CTS 4.4.5.0 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for shutdown of the unit, and requires the unit to be in MODE 3 within 7 hours and

DISCUSSION OF CHANGES
ITS 3.4.13, RCS OPERATIONAL LEAKAGE

MODE 5 within 37 hours. ITS SR 3.4.13.2 requires the demonstration that each steam generator is OPERABLE. ITS 3.4.13 ACTION B requires the unit to be placed in MODE 3 within 6 hours and MODE 5 within 36 hours whenever SR 3.4.13.2 is not met in the applicable MODES. This changes the CTS by stating the ACTIONS rather than deferring to CTS 3.0.3. In addition, it deletes the CTS Actions to restore the limits prior to entering MODE 1, 2, 3, or 4.

The purpose of CTS 3.0.3 is to place the plant in a condition in which the Surveillance Requirement is not required to be met. The change is acceptable because 6 hours to reach MODE 3 and 36 hours to reach MODE 5 are reasonable times to reach the required unit conditions from full power conditions in an orderly manner without challenging unit systems. The 6 hour and 36 hour time is consistent with the majority of similar Required Action Completion Times. The change is designated as more restrictive because it reduces a Required Action time.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L.1 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.4.6.2.1.a requires monitoring of the containment atmosphere particulate radioactivity monitor at least once per 12 hours. CTS 4.4.6.2.1.b requires monitoring the containment sump inventory and discharge at least once per 12 hours. CTS 4.4.6.2.1.e requires monitoring the reactor head flange leakoff system at least once per 24 hours. The ITS does not contain these Surveillance Requirements. This changes the CTS by eliminating these Surveillance Requirements.

This change is acceptable because the deleted Surveillance Requirements are not necessary to verify that the LCO is being met. Thus, appropriate Surveillance Requirements continue to be performed in a manner and at a Frequency necessary to give confidence that the LCO is being met. The indications in the deleted Surveillance Requirements are not necessarily indications of failure to meet the LCO on RCS operational leakage. These items do provide useful information and the containment atmosphere particulate monitor and the containment sump monitors are required to be OPERABLE by ITS 3.4.15, "RCS Leakage Detection Instrumentation." However, under ITS SR 3.0.1, failure to meet the Surveillance results in failure to meet the LCO. As these indications do not necessarily indicate a failure to meet the LCO, it is not appropriate to retain these indications in this Specification. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

DISCUSSION OF CHANGES
ITS 3.4.13, RCS OPERATIONAL LEAKAGE

L.2 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.4.6.2.1.d requires the performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation. ITS SR 3.4.13.1 also requires that RCS operational leakage be verified to be within its limits by performance of an RCS water inventory balance every 72 hours during steady state operation. In addition, ITS SR 3.4.13.1 contains a Note that states that the Surveillance is not required to be performed until 12 hours after establishment of steady state operation. This changes the CTS by providing an exception to the Surveillance Frequency.

The purpose of this change is to allow establishment of steady state conditions before the Surveillance is required. Performance of the water inventory balance requires approximately one hour of steady state operation and it is not desired to stop required testing or escalation to a higher MODE solely for the performance of this test. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Other means of monitoring RCS operational leakage are available prior to establishment of steady state conditions, such as containment sump monitors, containment atmosphere particulate monitor, and visual inspection of the RCS. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

<Unit 1>

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.6.2 LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE, ① ②

b. 0.8 gpm unidentified LEAKAGE,

c. 10 gpm identified LEAKAGE,

INSERT 1 d. 1 gpm total primary to secondary LEAKAGE through all steam generators (SGs), and ③ ①

e. 150 gallons per day primary to secondary LEAKAGE through any one SG. ④

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Identified LEAKAGE not within limits ~~for reasons other than pressure boundary LEAKAGE~~. (Doc M.1, Action b) INSERT 2 ②	C.1	Reduce LEAKAGE to within limits. INSERT 3	4 hours
D. Required Action and associated Completion Time of Condition A, B, or C not met. OR Pressure boundary LEAKAGE exists. (Action a, Action b)	D.1 AND D.2	Be in MODE 3. Be in MODE 5.	6 hours ② 36 hours ②

INSERT 4 ⑤

<Unit 1>

(3) **INSERT 1**

600 gallons per day

(2) **INSERT 2**

A. Unidentified LEAKAGE > 0.8 gpm.	A.1 Verify source of unidentified LEAKAGE is not the pressurizer surge line. OR A.2 Reduce unidentified LEAKAGE to within limit.	4 hours 4 hours
B. Unidentified LEAKAGE > 1.0 gpm.	B.1 Reduce unidentified LEAKAGE to ≤ 1.0 gpm.	4 hours

(2) **INSERT 3**

OR

Primary to secondary LEAKAGE not within limits.

(5) **INSERT 4**

OR

SR 3.4.13.2 not met.

(Unit 2)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.13 RCS Operational LEAKAGE

LCO 3.4.6.2 — LCO 3.4.13 RCS operational LEAKAGE shall be limited to:

a. No pressure boundary LEAKAGE, ; (1)

b. 1 gpm unidentified LEAKAGE,

c. 10 gpm identified LEAKAGE,

d. 1 gpm total primary to secondary LEAKAGE through all steam generators (SGs), and ; (1)

e. [500] gallons per day primary to secondary LEAKAGE through any one SG. (4)

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

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action b	A. RCS LEAKAGE not within limits for reasons other than pressure boundary LEAKAGE.	A.1 Reduce LEAKAGE to within limits.	4 hours
Action c, Action b	B. Required Action and associated Completion Time of Condition A not met. OR Pressure boundary LEAKAGE exists.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

INSERT 5 (5)

(Unit 2)

(5) **INSERT 5**

OR

SR 3.4.13.2 not met.

<Units 1 and 2>

CTS

SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY	
4.4.6.2.1.d	SR 3.4.13.1	- NOTE - Not required to be performed in MODE 3 or 4 until 12 hours (after establishment) of steady state operation.		6
		Verify RCS Operational leakage is within limits by performance of RCS water inventory balance.	72 hours	
4.4.5.0	SR 3.4.13.2	Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program.	In accordance with the Steam Generator Tube Surveillance Program	7

<Units 1 and 2>

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.13, RCS OPERATIONAL LEAKAGE

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

2. The 1 gpm unidentified LEAKAGE limit for Unit 1 only has been reduced to 0.8 gpm. In addition, two new ACTIONS have been added for Unit 1 only for when the unidentified LEAKAGE is > 0.8 gpm and when it is > 1.0 gpm. This change is consistent with the condition for application of leak-before-break methodology to the pressurizer surge line as documented in a Letter from Indiana Michigan Power Company (M.W. Rencheck) to the NRC dated October 26, 2000 (Letter C1000-20). Subsequent ACTIONS (Unit 1 only) have been modified and renumbered as applicable.

3. The CNP Unit 1 total primary to secondary LEAKAGE through all steam generators limit (in gallons per day versus gallons per minute) has been included, consistent with the current licensing basis.

4. The brackets are removed and the proper plant specific information/value is provided.

5. A third Condition has been added (SR 3.4.13.2 not met) to ISTS 3.4.13 Condition B to clarify the appropriate Condition to enter when the requirements of SR 3.4.13.2 are not met. Without this new Condition, entry into LCO 3.0.3 would be required, since the Steam Generator Program is not covered by any of the current ISTS Conditions.

6. The ISTS SR 3.4.13.1 Note reference to "in MODE 3 or 4" has been deleted and the words "after establishment" have been added. TSTF-116, Rev. 2, approved these changes on September 24, 1998, but they were not properly adopted in NUREG-1431, Rev. 2.

7. Changes have been made to reflect changes made to the Program title in ITS 5.5.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.13 RCS Operational LEAKAGE

BASES

BACKGROUND

Components that contain or transport the coolant to or from the reactor core make up the RCS. Component joints are made by welding, bolting, rolling, or pressure loading, and valves isolate connecting systems from the RCS.

unit

During plant life, the joint and valve interfaces can produce varying amounts of reactor coolant LEAKAGE, through either normal operational wear or mechanical deterioration. The purpose of the RCS Operational LEAKAGE LCO is to limit system operation in the presence of LEAKAGE from these sources to amounts that do not compromise safety. This LCO specifies the types and amounts of LEAKAGE. (1)

Plant Specific Design Criterion 16

10 CFR 50, Appendix A, GDC 30 (Ref. 1), requires means for detecting and, to the extent practical, identifying the source of reactor coolant LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems. (1)

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE is necessary to provide quantitative information to the operators, allowing them to take corrective action should a leak occur that is detrimental to the safety of the facility and the public.

A limited amount of leakage inside containment is expected from auxiliary systems that cannot be made 100% leaktight. Leakage from these systems should be detected, located, and isolated from the containment atmosphere, if possible, to not interfere with RCS leakage detection.

This LCO deals with protection of the reactor coolant pressure boundary (RCPB) from degradation and the core from inadequate cooling, in addition to preventing the accident analyses radiation release assumptions from being exceeded. The consequences of violating this LCO include the possibility of a loss of coolant accident (LOCA).

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BASES

APPLICABLE SAFETY ANALYSES

Except for primary to secondary LEAKAGE, the safety analyses do not address operational LEAKAGE. However, other operational LEAKAGE is related to the safety analyses for LOCA; the amount of leakage can affect the probability of such an event. The safety analysis for an event resulting in steam discharge to the atmosphere assumes a 1 gpm primary to secondary LEAKAGE as the initial condition. at least a (1)

Primary to secondary LEAKAGE is a factor in the dose releases outside containment resulting from a steam line break (SLB) accident. To a lesser extent, and other accidents or transients involve secondary steam release to the atmosphere, such as a steam generator tube rupture (SGTR). The leakage contaminates the secondary fluid. (1)

The u FSAR (Ref. 3) analysis for SGTR assumes the contaminated secondary fluid is only briefly released via safety valves and the majority is steamed to the condenser. The 1 gpm primary to secondary LEAKAGE is relatively inconsequential. INSERT 1 (1)

The SLB is more limiting for site radiation releases. The safety analysis for the SLB accident assumes 1 gpm primary to secondary LEAKAGE in one generator as an initial condition. The dose consequences resulting from the SLB accident are well within the limits defined in 10 CFR 100 or the staff approved licensing basis (i.e., a small fraction of these limits). INSERT 2 (1) INSERT 3 and within GDC-19.

The RCS operational LEAKAGE satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). (1)

LCO

RCS operational LEAKAGE shall be limited to:

a. Pressure Boundary LEAKAGE

No pressure boundary LEAKAGE is allowed, being indicative of material deterioration. LEAKAGE of this type is unacceptable as the leak itself could cause further deterioration, resulting in higher LEAKAGE. Violation of this LCO could result in continued degradation of the RCPB. LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE.

b. Unidentified LEAKAGE The 0.8 (unit 1 only) (2)

One gallon per minute (gpm) of unidentified LEAKAGE is allowed as a reasonable minimum detectable amount that the containment air monitoring particulate and containment sump level monitoring equipment can detect within a reasonable time period. Violation of this LCO could INSERT 4 (unit 1 only) (1)

(1) **INSERT 1**

the steam generator power operated relief valves (and safety valves if their setpoint is reached) if offsite power is not available or if the condenser steam dump system fails to operate.

(1) **INSERT 2**

the amount of primary to secondary LEAKAGE in the three intact SGs is 1 gpm minus a faulted SG tube LEAKAGE of 500 gallons per day

(1) **INSERT 3**

events resulting in a steam discharge to the atmosphere

(1) **INSERT 4** <Unit 1 only>

The limit is established for the pressurizer surge line in the leak before break methodology.

BASES

LCO (continued)

result in continued degradation of the RCPB, if the LEAKAGE is from the pressure boundary.

c. Identified LEAKAGE

Up to 10 gpm of identified LEAKAGE is considered allowable because LEAKAGE is from known sources that do not interfere with detection of unidentified LEAKAGE and is well within the capability of the RCS Makeup System. Identified LEAKAGE includes LEAKAGE to the containment from specifically known and located sources, but does not include pressure boundary LEAKAGE or controlled reactor coolant pump (RCP) seal leakoff (a normal function not considered LEAKAGE). Violation of this LCO could result in continued degradation of a component or system.

d. Primary to Secondary LEAKAGE through All Steam Generators (SGs)

Total primary to secondary LEAKAGE amounting to 1 gpm through all SGs produces acceptable offsite doses in the SLB accident analysis. Violation of this LCO could exceed the offsite dose limits for this accident. Primary to secondary LEAKAGE must be included in the total allowable limit for identified LEAKAGE.

e. Primary to Secondary LEAKAGE through Any One SG

The 500 gallons per day limit on one SG is based on the assumption that a single crack leaking this amount would not propagate to a SGTR under the stress conditions of a LOCA or a main steam line rupture. If leaked through many cracks, the cracks are very small, and the above assumption is conservative.

APPLICABILITY

In MODES 1, 2, 3, and 4, the potential for RCPB LEAKAGE is greatest when the RCS is pressurized.

In MODES 5 and 6, LEAKAGE limits are not required because the reactor coolant pressure is far lower, resulting in lower stresses and reduced potentials for LEAKAGE.

LCO 3.4.14, "RCS Pressure Isolation Valve (PIV) Leakage," measures leakage through each individual PIV and can impact this LCO. Of the two PIVs in series in each isolated line, leakage measured through one PIV does not result in RCS LEAKAGE when the other is leak tight. If both

(2) (1) **INSERT 5** [Unit 1 only]

For the SLB accident, the amount of primary to secondary LEAKAGE in the three intact SGs is assumed to be 1 gpm minus a faulted SG tube LEAKAGE of 500 gallons per day. The LCO limit of 600 gallons per day is more conservative than the 1 gpm value assumed in the offsite dose calculations. This limit is imposed to help minimize the potential for excessive leakage or tube burst in the event of a MSLB or LOCA consistent with the LCO limit on primary to secondary LEAKAGE through any one SG. In addition, the conservative limit is appropriate due to the increased steam release as a result of the replacement SGs.

(1) **INSERT 6** [Unit 2 only]

For the SLB accident, the amount of primary to secondary LEAKAGE in the three intact SGs is assumed to be 1 gpm minus a faulted SG tube LEAKAGE of 500 gallons per day.

BASES

APPLICABILITY (continued)

valves leak and result in a loss of mass from the RCS, the loss must be included in the allowable identified LEAKAGE.

ACTIONS (C) A.1 INSERT 7 (Unit 1 only) (2)

(Unit 1 only)

Unidentified LEAKAGE, identified LEAKAGE, or primary to secondary LEAKAGE in excess of the LCO limits must be reduced to within limits within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB. (2)

(Unit 1 only) (D) B.1 and B.2 (2)

If any pressure boundary LEAKAGE exists, or if unidentified LEAKAGE, identified LEAKAGE, or primary to secondary LEAKAGE cannot be reduced to within limits within 4 hours, INSERT 8 (2) the reactor must be brought to lower pressure conditions to reduce the severity of the LEAKAGE and its potential consequences. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. The reactor must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. This action reduces the LEAKAGE and also reduces the factors that tend to degrade the pressure boundary.

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant unit conditions from full power conditions in an orderly manner and without challenging plant systems. In MODE 5, the pressure stresses acting on the RCPB are much lower, and further deterioration is much less likely. (1)

SURVEILLANCE REQUIREMENTS

SR 3.4.13.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance. Primary to secondary LEAKAGE is also measured by performance of an RCS water inventory balance in conjunction with effluent monitoring within the secondary steam and feedwater systems.

(2) **INSERT 7**

[Unit 1 only]

A.1 and A.2

With unidentified LEAKAGE > 0.8 gpm, the pressurizer surge line must be verified not to be the source of unidentified LEAKAGE or the unidentified LEAKAGE must be reduced to within limit within 4 hours. These Required Actions are necessary to satisfy the requirements for the application of Leak-Before-Break methodology to the pressurizer surge line as documented in Reference 4 and approved by the NRC as documented in Reference 5, and are necessary to prevent further deterioration of the RCPB associated with the pressurizer surge line. The Completion Time allows time to verify leakage rates and either identify the unidentified LEAKAGE or reduce LEAKAGE to within limit before the reactor must be shut down.

B.1

Unidentified LEAKAGE > 1.0 gpm must be reduced to ≤ 1.0 gpm within 4 hours. This Completion Time allows time to verify leakage rates and either identify unidentified LEAKAGE or reduce LEAKAGE to within limits before the reactor must be shut down. This action is necessary to prevent further deterioration of the RCPB.

(2) **INSERT 8**

Required Action and associated Completion Time of Condition A, B, or C (Unit 1) and Condition A (Unit 2) is not met, if any pressure boundary LEAKAGE exists, or if the SR 3.4.13.2 is not met

BASES

SURVEILLANCE REQUIREMENTS (continued) INSERT 9 (5)

The RCS water inventory balance must be met with the reactor at steady state operating conditions. Therefore, a Note is added allowing that this SR is not required to be performed until 12 hours after establishing steady state operation. The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established. performed (4) unit (1)

Steady state operation is required to perform a proper inventory balance since calculations during maneuvering are not useful. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows. and (5)

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.

SR 3.4.13.2

This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam Generator Tube Surveillance Program emphasizes the importance of SG tube integrity, even though this Surveillance cannot be performed at normal operating conditions. (2)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30. UFSAR, Section 1.4.3 (1)
2. Regulatory Guide 1.45, May 1973.
3. (U)FSAR, Section 15. 14.2.4 (1) (3)

INSERT 10 (Unit 1 only) (1)

(5) **INSERT 9**

(stable RCS pressure, temperature, and power level)

(1) **INSERT 10** [Unit 1 only]

4. Letter from Indiana Michigan Power Company (M. W. Rencheck) to the NRC dated October 26, 2000 (Letter C1000-20).

5. Letter from NRC (John F. Stang) to Indiana Michigan Power Company (Robert P. Powers), dated November 8, 2000.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.13 BASES, RCS OPERATIONAL LEAKAGE

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes made to be consistent with changes made to the ISTS.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Changes are made to be consistent with the Specification.

5. The steady state definition used in ISTS SR 3.4.13.1 Bases has been modified to delete the pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows. The pressurizer and makeup tank levels change over the duration of the water inventory measurement. This change is the primary measure of RCS LEAKAGE, therefore, they are not normally stable. Any changes in makeup and letdown flows, as well as RCP seal injection and return flows, are reflected in corresponding changes in pressurizer and makeup tank levels. In addition, a new parenthetical statement, which also describes the term steady state, is being added to ISTS SR 3.4.13.1 Bases. TSTF-116, Rev. 2, approved these changes on September 24, 1998, but they were not properly adopted in NUREG-1431, Rev. 2. The statement is modified consistent with the changes described above.

Attachment 1, Volume 9, Rev. 1, Page 424 of 632

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.13, RCS OPERATIONAL LEAKAGE

There are no specific NSHC discussions for this Specification.

ATTACHMENT 14

ITS 3.4.14, RCS Pressure Isolation Valve (PIV) Leakage

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 600 gallons per day total primary-to-secondary leakage through all steam generators and 150 gallons per day through any one steam generator,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

(See ITS 3.4.13)

e. ~~Seal line resistance greater than or equal to 2.27E-1 ft/gpm² and,~~ (See ITS 3.5.5)

LCO 3.4.14 — f. The leakage from each Reactor Coolant System Pressure Isolation Valves ~~specified in Table 3.4-0~~ (LA.1)
SR 3.4.14.1 — shall be limited to 0.5 gpm per nominal inch of valve size up to a ~~maximum of 5 gpm~~, at a Reactor Coolant System average pressure ~~within 20 psi of the nominal full pressure value~~. (A.2) (L.1)

APPLICABILITY: MODES 1, 2, 3 and 4* (See ITS 3.5.5)

ACTION:

Add proposed ACTIONS Note 1 (A.3)

Add proposed ACTIONS Note 2 (A.4)

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (See ITS 3.4.13)

ACTION A — c. With any reactor coolant system pressure isolation valve(s) leakage greater than the above limit, declare the leaking valve inoperable and isolate the high pressure portion of the affected system from the low pressure portion by the use of a combination of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. Verify the isolated condition of the closed de-energized motor operated valve at least ~~once per 24 hours~~, (L.2)

ACTION B — ~~or be~~ in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed Required Actions A.1 and A.2 Note (M.1)

* ~~Specification 3.4.6.2.e is applicable with average pressure within 20 psi of the nominal full pressure value.~~ (See ITS 3.5.5)

ITS

A.1

REACTOR COOLANT SYSTEM

LIMITING CONDITIONS FOR OPERATION (Continued)

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours.

b. Monitoring the containment sump inventory and discharge at least once per 12 hours.

See ITS 3.4.13

c. Determining the seal line resistance at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. The seal line resistance measured during the surveillance must be greater than or equal to 2.27 E-1 ft/gpm². The seal line resistance, R_{SL}, is determined from the following expression:

$$R_{SL} = \frac{2.31\,(P_{CHP} - P_{SI})}{Q^2}$$

where: P_{CHP} = charging pump header pressure, psig

P_{SI} = 2112 psig (low pressure operation)

2262 psig (high pressure operation)

2.31 = conversion factor $(12\ in/ft)^2/(62.3\ lb/ft^3)$

Q = the total seal injection flow, gpm

The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4.

See ITS 3.5.5

d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation, and

e. Monitoring the reactor head flange leakoff system at least once per 24 hours.

See ITS 3.4.13

SR 3.4.14.1 4.4.6.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4-0 shall be demonstrated OPERABLE pursuant to Specification 4.0.5.

Add proposed SR 3.4.14.1 Note — L.3

LA.1

ITS 3.4.14

ITS

A.1

LA.2

LA.1

TABLE 3.4-0

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVE

Valve Number	Valve Size (in.)	Function (a)	Maximum Allowable Leakage (gpm)
SI-170L2	10	ECCS to Reactor Coolant Loop #2 Cold Leg	5
RH 133	8	RHR to Reactor Coolant Loop #2 Cold Leg	4
SI-170L3	10	ECCS to Reactor Coolant Loop #3 Cold Leg	5
RH 134	8	RHR to Reactor Coolant Loop #3 Cold Leg	4

A.5

(a) Minimum test differential pressure shall not be below 150 psid.

LA.2

COOK NUCLEAR PLANT - UNIT 1 3/4 4-17a AMENDMENT NO. ~~162, 166, 178~~ , 188
~~Order dated April 20, 1981~~

ITS 3.4.14

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

Add proposed LCO 3.4.14 part 2 (A.6)

SURVEILLANCE REQUIREMENTS (Continued)

24 months (L.4)

SR 3.4.14.2

d. At least once per ~~18~~ months by: (A.7)

1. Verifying the ~~automatic~~ interlock action to prevent opening of the suction of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig.

2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per 18 months by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a Safety Injection test signal.

2. Verifying that each of the following pumps start automatically upon receipt of a Safety Injection signal:

a) Centrifugal charging pump

b) Safety injection pump

c) Residual heat removal pump

f. By verifying that each of the following pumps' developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to specification 4.0.5.

1. Centrifugal charging pumps

2. Safety injection pumps

3. Residual heat removal pumps

g. By verifying the correct position of each mechanical stop for the following Emergency Core Cooling System throttle valves:

1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.

See ITS 3.5.2

Add proposed ACTION C (L.5)

ITS

A.1

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 1 GPM total primary-to-secondary leakage through all steam generators and 500 gallons per day through any one steam generator,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

(See ITS 3.4.13)

e. Seal line resistance greater than or equal to 2.27E-1 ft/gpm² and, (See ITS 3.5.5)

LCO 3.4.14
SR 3.4.14.1

f. The leakage from each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-0 shall be limited to 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm, at a Reactor Coolant System average pressure within 20 psi of the nominal full pressure value. (LA.1) (A.2) (L.1)

APPLICABILITY: MODES 1, 2, 3 and 4 * (See ITS 3.5.5)

ACTION: Add proposed ACTIONS Note 1 (A.3) Add proposed ACTIONS Note 2 (A.4)

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (See ITS 3.4.13)

ACTION A

c. With any reactor coolant system pressure isolation valve(s) leakage greater than the above limit, declare the leaking valve inoperable and isolate the high pressure portion of the affected system from the low pressure portion by the use of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. Verify the isolated condition of the closed de-energized motor operated valve at least once per 24 hours, or be in (Add proposed Required Actions A.1 and A.2 Note) (M.1) (L.2)

ACTION B

at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

* Specification 3.4.6.2.e is applicable with average pressurizer pressure within 20 psi of the nominal full pressure value. (See ITS 3.5.5)

ITS 3.4.14

ITS

A.1

REACTOR COOLANT SYSTEM

LIMITING CONDITIONS FOR OPERATION (Continued)

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours.

b. Monitoring the containment sump inventory and discharge at least once per 12 hours.

See ITS 3.4.13

c. Determining the seal line resistance at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. The seal line resistance measured during the surveillance must be greater than or equal to 2.27 E-1 ft/gpm². The seal line resistance, R_{SL}, is determined from the following expression:

$$R_{SL} = \frac{2.31\ (P_{CHP} - P_{SI})}{Q^2}$$

where: P_{CHP} = charging pump header pressure, psig

P_{SI} = 2262 psig (high pressure operation)

2.31 = conversion factor $(12\ in/ft)^2/(62.3\ lb/ft^3)$

Q = the total seal injection flow, gpm

The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4.

See ITS 3.5.5

d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation, and

e. Monitoring the reactor head flange leakoff system at least once per 24 hours.

See ITS 3.4.13

SR 3.4.14.1 4.4.6.2.2. Each reactor coolant system pressure isolation valve ~~specified in Table 3.4-0~~ shall be demonstrated OPERABLE pursuant to Specification 4.0.5.

Add proposed SR 3.4.14.1 Note — L.3

LA.1

COOK NUCLEAR PLANT - UNIT 2 3/4 4-16 AMENDMENT NO. ~~146~~, 174 ~~Order dated April 20, 1981~~

ITS 3.4.14

ITS

A.1

LA.2

TABLE 3.4-0

REACTOR COOLANT SYSTEM PRESSURE ISOLATION VALVE

LA.1

Valve Number	Valve Size (in.)	Function (a)	Maximum Allowable Leakage (gpm)
SI-170L2	10	ECCS to Reactor Coolant Loop #2 Cold Leg	5
RH 133	8	RHR to Reactor Coolant Loop #2 Cold Leg	4
SI-170L3	10	ECCS to Reactor Coolant Loop #3 Cold Leg	5
RH 134	8	RHR to Reactor Coolant Loop #3 Cold Leg	4

A.5

(a) Minimum test differential pressure shall not be below 150 psid.

LA.2

ITS 3.4.14

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

Add proposed LCO 3.4.14 part 2 — A.6

24 months — L.4

SR 3.4.14.2 d. At least once per 18 months by:

A.7

1. Verifying the automatic interlock action to prevent opening of the suction of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig.

2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

e. At least once per 18 months by:

1. Verifying that each automatic valve in the flow path actuates to its correct position on a Safety Injection test signal.

2. Verifying that each of the following pumps start automatically upon receipt of a Safety Injection signal:

a) Centrifugal charging pump

b) Safety injection pump

See ITS 3.5.2

Add proposed ACTION C — L.5

DISCUSSION OF CHANGES
ITS 3.4.14, RCS PIV LEAKAGE

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.6.2.f specifies the leakage limits for the Reactor Coolant System pressure isolation valves at a Reactor Coolant System average pressure within 20 psi of the nominal full pressure value. ITS SR 3.4.14.1 also specifies the leakage limit, but specifies it for the allowed Reactor Coolant System pressure range ≥ 2065 psig and ≤ 2105 psig (Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2). This changes the CTS by providing the actual pressure limits.

The purpose of specifying the Reactor Coolant System pressure range is to ensure the PIV leakage tests are performed within 20 psi of the RCS normal operating pressure. The proposed values continue to ensure the test is performed within 20 psi of the RCS normal operating pressure. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3.4.6.2 Action c specifies the compensatory actions to take when the leakage by any RCS PIV(s) is greater than the specified limit. ITS ACTIONS A and B also state the appropriate compensatory actions under the same condition, however, ITS 3.4.14 ACTIONS Note 1 has been added. ITS 3.4.14 ACTIONS Note 1 allows separate entry condition for each RCS PIV flow path. This changes the CTS by explicitly stating that the Action is to be taken separately for each inoperable RCS PIV flow path.

The purpose of the Note is to provide explicit instructions for proper application of the ACTION for Technical Specification compliance. In conjunction with proposed Specification 1.3, "Completion Times," this Note provides direction consistent with the intent of the existing Action for inoperable PIVs. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 3.4.6.2 Action c specifies the compensatory actions to take when the leakage through any RCS PIV(s) is greater than the specified limit. ITS 3.4.14 ACTIONS A and B also state the appropriate compensatory actions under the same condition, however, ITS 3.4.14 ACTIONS Note 2 has been added. ITS 3.4.14 ACTIONS Note 2 states "Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable RCS PIV." This changes the CTS by explicitly stating that the Conditions and Required Actions for systems made inoperable by an inoperable RCS PIV must be entered.

The purpose of the Note is to provide explicit instructions for proper application of the ACTION for Technical Specification compliance. This Note facilitates the use

DISCUSSION OF CHANGES
ITS 3.4.14, RCS PIV LEAKAGE

and understanding of the intent to consider any system affected by inoperable PIVs, which is to have its ACTIONS also apply if it is determined to be inoperable. With the addition of ITS LCO 3.0.6, this intent would not necessarily apply. This clarification is consistent with the intent and interpretation of the existing Technical Specifications, and is therefore considered an administrative presentation preference. This change is designated as administrative because it does not result in technical changes to the CTS.

A.5 CTS Table 3.4-0 contains the maximum allowable leakage value for each RCS PIV. ITS SR 3.4.14.1 specifies the limit to be ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm. This changes the CTS by deleting the explicit value for each valve.

The purpose of CTS Table 3.4-0 is to provide the maximum allowable leakage value for each valve. Since the maximum allowable leakage value for each valve is based on the ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm this information in the Table is redundant. This change is acceptable since the limits for each valve continue to be controlled by the Technical Specifications (SR 3.4.14.1). This change is designated as administrative because it does not result in technical changes to the CTS.

A.6 CTS 4.5.2.d.1 requires verification, when the Reactor Coolant System pressure is above 600 psig, that the automatic interlock action to prevent opening of the suction of the RHR System from the Reactor Coolant System is OPERABLE. In the ITS, this Surveillance has been included as ITS SR 3.4.14.2. In addition, a new LCO has been added which requires the Residual Heat Removal System interlock to be OPERABLE. This changes the CTS by including the Residual Heat Removal System interlock Surveillance Requirement with the RCS PIV leakage limits and adding a new LCO for the interlock.

The purpose of CTS 4.5.2.d.1 is to ensure the RHR low pressure piping is not overpressurized. This Surveillance is not directly related to the OPERABLITY of the RHR System. The Operability of the RHR System is affected when this valve is open, not when the interlock is inoperable. Therefore, the transfer of this requirement to the RCS PIV Specification is appropriate. A discussion of a change to the Required Actions when the interlock is found to be inoperable is discussed in DOC L.5. This change is acceptable since the RHR interlock is retained in the Technical Specifications. This change is designated as administrative because it does not result in technical changes to the CTS.

A.7 CTS 4.5.2.d.1 requires the "automatic" interlock action to prevent opening of the suction of the Residual Heat Removal (RHR) System from the Reactor Coolant System (RCS) when the RCS pressure is above 600 psig. ITS SR 3.4.14.2 requires the verification that the RHR System interlock prevents the valves from being opened with a RCS pressure signal greater than or equal to 600 psig. This changes the CTS by deleting the word "automatic" from the Surveillance requirement.

The purpose of CTS 4.5.2.d.1 is to test the interlock action to prevent opening of the suction of the RHR System from the RCS. This change is acceptable because the RHR System interlock prevents the manual opening of the RHR

DISCUSSION OF CHANGES
ITS 3.4.14, RCS PIV LEAKAGE

System suction valves when the RCS pressure is greater than the specified limit; and the design does not provide an "autoclosure" signal if the RHR System valves are open and RCS pressure increase above the limit. Therefore, the word "autoclosure" is not correct for the specific design of the CNP RHR System interlock, and is not adopted in ITS SR 3.4.14.2. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.6.2 Action c specifies the compensatory actions to take when the leakage by any RCS PIV(s) is greater than the specified limit. The compensatory action is to isolate the high pressure portion of the affected system from the low pressure portion by the use of a combination of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. The CTS does not include any leakage restrictions concerning the valves that may be used to satisfy the isolation requirement of this action. ITS 3.4.14 ACTION A is consistent with the requirement in CTS 3.4.6.2 Action c, however, a Note has been added to the Required Actions (ITS 3.4.14 Required Actions A.1 and A.2 Note) which specifies that each valve used to satisfy ITS 3.4.14 Required Actions A.1 and A.2 must have been verified to meet SR 3.4.14.1, the RCS PIV leakage limit Surveillance Requirement, and either be in the reactor coolant pressure boundary or the high pressure portion of the system. This changes the CTS by providing a Note which explicitly states that the valves used to satisfy Required Action must satisfy the same requirements of the RCS PIVs.

The purpose of CTS 3.4.6.2 Action c is to isolate the flow path in order to minimize the leakage from the high pressure portion of the RCS to the low pressure piping. The Note requires the valves used to provide isolation between the high pressure and low pressure portions of the affected system to have been verified to meet the PIV leakage limits within the required Surveillance Frequency. The addition of the Note represents an additional restriction on unit operation necessary to help ensure the valves used to isolate the high pressure portion from the low pressure portion of the affected system are capable of preventing the overpressurization of the low pressure portion of the system. This change is designated as more restrictive because it adds a new requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.4.6.2.f requires the leakage from each RCS PIV specified in Table 3.4-0 to be limited and CTS 4.4.6.2.2 requires the RCS PIVs in Table 3.4-0 to be periodically tested. CTS Table 3.4-0 contains a list of the RCS

PIVs, their associated size, and their associated leakage limits. ITS 3.4.14 does not contain a list of the RCS PIVs or their size, and the leakage limits are located in SR 3.4.14.1. This changes the CTS by relocating the list of PIVs, including their associated size, to the Technical Requirements Manual (TRM).

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still requires the RCS PIVs to be OPERABLE. It is not necessary for the list of RCS PIVs to be in the Technical Specifications in order to ensure that the RCS PIVs are OPERABLE. Other lists of components, such as containment isolation valves and equipment response times, have been relocated from the Technical Specifications to licensee-controlled documents while retaining the requirements on these components in the Technical Specifications. Also, this change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is incorporated by reference into the UFSAR and any changes to the TRM are made under 10 CFR 50.59, which ensure changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 3.4-0 specifies the minimum test differential pressure for the RCS PIVs to not be below 150 psid. ITS 3.4.14 does not specify this limit. This changes the CTS by relocating the minimum test differential pressure to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS 3.4.14 still retains the requirement that the RCS PIV leakage must be within limit and provides the appropriate Surveillance that includes the leakage limit. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 2 – Relaxation of Applicability)* CTS 3.4.6.2.f is applicable in MODES 1, 2, 3, and 4. ITS 3.4.14 is applicable in MODES 1, 2, and 3, and in MODE 4, except valves in the residual heat removal (RHR) flow path when in, or during the transition to or from, the RHR mode of operation. This changes CTS by exempting the RHR isolation PIVs from the leakage requirements when in or during the transition to or from the RHR mode of operation.

DISCUSSION OF CHANGES
ITS 3.4.14, RCS PIV LEAKAGE

The purpose of CTS 3.4.6.2.f is to ensure the RCS PIVs are within leakage limits. This change is acceptable because the LCO requirements continue to ensure that the components are maintained consistent with the safety analyses and licensing basis. It is not necessary for the RHR PIVs to meet the leakage limits when in or during transition to or from the RHR mode of operation. These valves are not opened until RCS pressure is less than the design pressure of the RHR system, so overpressurization of the RHR system is not a concern. In addition, an automatic interlock prevents opening the RHR suction valve when ≥ 600 psig. This interlock is maintained in the ITS. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.2 *(Category 3 – Relaxation of Completion Time)* CTS 3.4.6.2 Action c requires verification that the isolated condition of the closed valves be verified "once per 24 hours." ITS 3.4.14 Required Actions A.1 and A.2 require the valves to be closed within 24 hours and 72 hours, respectively. This changes the CTS by eliminating the "once per 24 hours" verification of closure and extends the requirement to close the second valve from 24 hours to 72 hours.

The purpose of CTS 3.4.6.2 Action c is to allow time to reduce leakage before isolating the pathway. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. The time to close the first valve remains the same and the time to close the second valve has been changed from 24 hours to 72 hours. The requirement to verify the closure of the valves every 24 hours has been deleted. The 24 hour Completion Time to close the first valve provides time to reduce leakage in excess of the allowable limit and to isolate the flow path if leakage cannot be reduced while corrective actions to reseat the leaking PIVs are taken. The 24 hours Completion Time is consistent with the NRC Order dated April 20, 1981. The 24 hours allows time for these actions and restricts the time of operation with leaking valves. The 72 hours Completion Time to close the second valve considers the time required to complete the Required Action and the low probability of the first valve failing during this period. Verification every 24 hours is not necessary because the closed valves are normally tagged in accordance with procedures. Therefore, permission to open or cycle these closed valves will require shift management approval. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L.3 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.4.6.2.2 requires the performance of the RCS PIV leakage test pursuant to Specification 4.0.5. ITS SR 3.4.14.1 requires the same testing, however, a Note has been included that requires the performance of the leakage test only in MODES 1 and 2. This changes the CTS by adding a Note that requires RCS PIV testing only in certain MODES.

The purpose of CTS 4.4.6.2.2 is to perform the RCS PIV leakage test in accordance with the Frequency of the Inservice Test Program (CTS 4.0.5). This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The SR is modified by a Note that states the leakage Surveillance is only required to be performed in MODES 1 and 2. This permits leakage testing at high differential pressures with stable conditions not possible in MODES with lower pressures. Entry into MODE 3 and 4 is permitted for leakage testing at high differential pressures with stable conditions not possible in the lower MODES. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.5.2.d.1 requires verification, when the Reactor Coolant System pressure is above 600 psig, that the automatic interlock action to prevent opening of the suction of the RHR System from the Reactor Coolant System is OPERABLE. This test is required to be performed every 18 months. ITS SR 3.4.14.2 requires this test to be performed every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.5.2.d.1 is to test the automatic interlock action to prevent opening of the suction of the RHR System from the RCS when the RCS pressure is above 600 psig. This interlock is provided only for equipment protection to prevent an intersystem LOCA scenario, and credit for the interlock is not assumed in the accident or transient analysis in the UFSAR. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. The motor operated valves associated with the RHR suction from the RCS, have the circuit breaker for the valve motor racked out during normal operation, and it is not possible to operate the valve without specific controls and direction. The multi-channel design for these protective circuits ensures no single failure or out-of-tolerance condition can prevent the proper operation of the protective function. Extending the Surveillance test interval for the RHR interlock is acceptable because the valve is normally closed, with the breaker for the valve operator racked out, and is only opened when the RHR System is being used to cooldown the unit under direct supervision of the control room. When the unit is being cooled precautions are taken to ensure the RCS pressure is below the interlock setpoint, therefore the interlock is not challenged. Based on the above discussion, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less

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restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.5 *(Category 4 – Relaxation of Required Action)* CTS 4.5.2.d.1 requires verification, when the Reactor Coolant System pressure is above 600 psig, that the automatic interlock action to prevent opening of the suction of the RHR System from the Reactor Coolant System is OPERABLE. When the interlock is inoperable, LCO 3.0.3 entry is required since this inoperability affects both RHR trains. ITS 3.4.14 ACTION C has been added which requires the isolation of the penetration by use of one closed manual or deactivated power operated valve within 4 hours. This changes the CTS by allowing the penetration to be isolated and to continue operation of the unit for an unlimited amount of time without entry into LCO 3.0.3.

The purpose of ITS 3.4.14 ACTION C is to isolate the penetration to ensure RHR System is not overpressurized by the RCS. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. ITS 3.4.14 ACTION C has been added that requires the isolation of the penetration by use of one closed manual or deactivated power operated valve within 4 hours. This change allows the unit to continue to operate and avoids an unnecessary entry into LCO 3.0.3. Deactivating the power operated valve or closing a manual valve will ensure the function of the interlock is met. Therefore, since the penetration is isolated by closing and deactivating a power operated valve or by closing a manual valve, the function of the interlock is satisfied and this change is acceptable. In addition, the added ACTION avoids an unnecessary reduction in unit power to enter MODE 5. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.6.2.f LCO 3.4.14 Leakage from each RCS PIV shall be within limit. INSERT 1 ①

APPLICABILITY: MODES 1, 2, and 3,
MODE 4, except valves in the residual heat removal (RHR) flow path when in, or during the transition to or from, the RHR mode of operation. ①

ACTIONS

- NOTES -

DOC A.3 1. Separate Condition entry is allowed for each flow path.

DOC A.4 2. Enter applicable Conditions and Required Actions for systems made inoperable by an inoperable RCS PIV. ②

Action C

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more flow paths with leakage from one or more RCS PIVs not within limit.	- NOTE - Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.14.1 and be in the reactor coolant pressure boundary [or the high pressure portion of the system]. ⑤	
	A.1 Isolate the high pressure portion of the affected system from the low pressure portion by use of one closed manual, deactivated automatic, or check valve.	~~4~~ 24 hours ③
	AND	

1

INSERT 1

AND

The Residual Heat Removal (RHR) System interlock shall be OPERABLE.

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CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action c		A.2	Isolate the high pressure portion of the affected system from the low pressure portion by use of a second closed manual, deactivated automatic, or check valve.	72 hours	5
		[or]	Restore RCS PIV to within limits.	72 hours]	5
Action c	B. Required Action and associated Completion Time of Condition A not met. (of)	B.1	Be in MODE 3.	6 hours	
		AND			
		B.2	Be in MODE 5.	36 hours	9
DOC L.5	C. RHR System autoclosure interlock function inoperable.	C.1	Isolate the affected penetration by use of one closed manual or deactivated automatic (power operated) valve.	4 hours	5

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.14.1	- NOTES - 1. Not required to be performed in MODES 3 and 4. Only 1 and 2 (6) 2. Not required to be performed on the RCS PIVs located in the RHR flow path when in the shutdown cooling mode of operation. (7) 3. RCS PIVs actuated during the performance of this Surveillance are not required to be tested more than once if a repetitive testing loop cannot be avoided. (8)	
L10 3.4.6.2.f	Verify leakage from each RCS PIV is equivalent to ≤ 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm at an RCS pressure ≥ [2215] psig [2065] and ≤ [2255] psig [2105]. INSERT 2 (5)	In accordance with the Inservice Testing Program, and [18] months AND Prior to entering MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months AND Within 24 hours following valve actuation due to automatic or manual action or flow through the valve (8)

5

INSERT 2

(Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2).

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SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.14.2	- NOTE - [Not required to be met when the RHR System autoclosure interlock is disabled in accordance with SR 3.4.12.7.	
4.5.2.d.1	Verify RHR System autoclosure interlock prevents the valves from being opened with a simulated or actual RCS pressure signal ≥ [425] psig. 600	[18] months] 24
SR 3.4.14.3	- NOTE - [Not required to be met when the RHR System autoclosure interlock is disabled in accordance with SR 3.4.12.7.	
	Verify RHR System autoclosure interlock causes the valves to close automatically with a simulated or actual RCS pressure signal ≥ [600] psig.	[18] months]

5

4

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.14, RCS PIV LEAKAGE

1. The second part of the LCO has been added to ensure consistency between the LCO, ACTIONS, and Surveillance Requirements. The ISTS LCO, Actions, and Surveillances do not match up since there is no explicit statement in the LCO requiring the RHR System interlock function to be OPERABLE. LCO 3.0.1 requires LCOs to be met during the MODES or other specified conditions in the Applicability. LCO 3.0.2 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. Currently, if the RHR System interlock function is inoperable, the LCO is still met. Thus, ACTION C is not required to be entered since the LCO is still met. Therefore, the inclusion of the second portion of the LCO ensures consistency between the LCO, ACTIONS, and Surveillance Requirements. In addition, due to the addition of the term "RHR" into the LCO statement, the use of the term "residual heat removal (RHR)" in the Applicability has been changed to "RHR."

2. Change made to be consistent with usage of the term in all other places in this Specification.

3. The ISTS 3.4.14 Required Action A.1 Completion Time has been extended from 4 hours to 24 hours. The 24 hours is consistent with the current licensing basis and with the NRC Order dated April 20, 1981.

4. The requirements of ISTS SR 3.4.14.3 have been deleted consistent with the changes approved in License Amendment 219 (Unit 1) and 203 (Unit 2). The CNP design does not include an autoclosure interlock that automatically closes the RHR System suction valves on a high RCS pressure signal. In addition, the word "autoclosure" in ISTS 3.4.14 Condition C and ISTS SR 3.4.14.2 has also been deleted. Furthermore, the Note to ISTS SR 3.4.14.2 has been deleted since ISTS SR 3.4.12.7 is not included in the ITS.

5. The brackets are removed and the proper plant specific information/value is provided.

6. Editorial changes have been made to be consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 4.1.7.g.

7. Note 2 to ISTS SR 3.4.14.1 has been deleted since it is not necessary. The ISTS 3.4.14 Applicability does not require leakage to be met for RHR valves in the flow path when in MODE 4 and when in, or during the transition to or from, the RHR mode of operation.

8. The 18 month Frequency, the third Frequency, the fourth Frequency, and Note 3 to ISTS SR 3.4.14.1 have been deleted since they are not required by the current licensing basis. The Inservice Testing Program Frequency is adequate to ensure the valves are OPERABLE.

9. Typographical/grammatical error corrected.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.14 RCS Pressure Isolation Valve (PIV) Leakage

BASES

BACKGROUND

10 CFR 50.2, 10 CFR 50.55a(c), and GDC 55 of 10 CFR 50, Appendix A (Refs. 1, 2, and 3), define RCS PIVs as any two normally closed valves in series within the reactor coolant pressure boundary (RCPB), which separate the high pressure RCS from an attached low pressure system. During their lives, these valves can produce varying amounts of reactor coolant leakage through either normal operational wear or mechanical deterioration. The RCS PIV Leakage LCO allows RCS high pressure operation when leakage through these valves exists in amounts that do not compromise safety.

INSERT 1 (1)

The PIV leakage limit applies to each individual valve. Leakage through both series PIVs in a line must be included as part of the identified LEAKAGE, governed by LCO 3.4.13, "RCS Operational LEAKAGE." This is true during operation only when the loss of RCS mass through two series valves is determined by a water inventory balance (SR 3.4.13.1). A known component of the identified LEAKAGE before operation begins is the least of the two individual leak rates determined for leaking series PIVs during the required surveillance testing; leakage measured through one PIV in a line is not RCS operational LEAKAGE if the other is leaktight.

Although this specification provides a limit on allowable PIV leakage rate, its main purpose is to prevent overpressure failure of the low pressure portions of connecting systems. The leakage limit is an indication that the PIVs between the RCS and the connecting systems are degraded or degrading. PIV leakage could lead to overpressure of the low pressure piping or components. Failure consequences could be a loss of coolant accident (LOCA) outside of containment, an unanalyzed accident, that could degrade the ability for low pressure injection.

The basis for this LCO is the 1975 NRC "Reactor Safety Study" (Ref. 4) that identified potential intersystem LOCAs as a significant contributor to the risk of core melt. A subsequent study (Ref. 5) evaluated various PIV configurations to determine the probability of intersystem LOCAs. (1)

PIVs are provided to isolate the RCS from the following typically connected systems: (1)

required by the LCO

a. Residual Heat Removal (RHR) System, (2)

(1) **INSERT 1**

The 1975 Reactor Safety Study, WASH-1400, (Ref. 3) identified intersystem loss of coolant accidents (LOCAs) as a significant contributor to the risk of core melt. The study considered designs containing two in-series check valves and two check valves in series with a motor operated valve that isolated the high pressure RCS from the low pressure safety injection system. The scenario considered is a failure of the two check valves leading to overpressurization and rupture of the low pressure injection piping which results in a LOCA that bypasses containment. A letter was issued (Ref. 4) by the NRC requiring plants to describe the PIV configuration of the plant. On April 20, 1981, the NRC issued an Order modifying the Cook Nuclear Plant Unit 1 and Unit 2 Technical Specifications to include testing requirements on PIVs and to specify the PIVs to be tested (Ref. 5).

BASES

BACKGROUND (continued)

b. Safety Injection System, and

c. Chemical and Volume Control System.

Technical Requirements Manual

(1)

required by this LCO

The PIVs are listed in the FSAR, Section [ ] (Ref. 6).

the PIV leakage limit

Violation of this LCO could result in continued degradation of a PIV, which could lead to overpressurization of a low pressure system and the loss of the integrity of a fission product barrier. INSERT 2 (1)(2)

(3)

APPLICABLE SAFETY ANALYSES

Reference 4 identified potential intersystem LOCAs as a significant contributor to the risk of core melt. The dominant accident sequence in the intersystem LOCA category is the failure of the low pressure portion of the RHR System outside of containment. The accident is the result of a postulated failure of the PIVs, which are part of the RCPB, and the subsequent pressurization of the RHR System downstream of the PIVs from the RCS. Because the low pressure portion of the RHR System is typically designed for 600 psig, overpressurization failure of the RHR low pressure line would result in a LOCA outside containment and subsequent risk of core melt.

Reference 5 evaluated various PIV configurations, leakage testing of the valves, and operational changes to determine the effect on the probability of intersystem LOCAs. This study concluded that periodic leakage testing of the PIVs can substantially reduce the probability of an intersystem LOCA. (1)

RCS PIV leakage satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). (1)

LCO

RCS PIV leakage is identified LEAKAGE into closed systems connected to the RCS. Isolation valve leakage is usually on the order of drops per minute. Leakage that increases significantly suggests that something is operationally wrong and corrective action must be taken.

The PIVs required by this LCO are listed in the Technical Requirements Manual (Ref. 6).

The LCO PIV leakage limit is 0.5 gpm per nominal inch of valve size with a maximum limit of 5 gpm. The previous criterion of 1 gpm for all valve sizes imposed an unjustified penalty on the larger valves without providing information on potential valve degradation and resulted in higher personnel radiation exposures. A study concluded a leakage rate limit based on valve size was superior to a single allowable value. INSERT 3 (1)

(1) (2) **INSERT 2**

Two motor operated valves are included in series in the suction piping of the RHR System to isolate the high pressure RCS from the low pressure piping of the RHR System when the RCS pressure is above the design pressure of the RHR System piping and components. Ensuring the RHR interlock that prevents the valves from being opened is OPERABLE ensures that RCS pressure will not pressurize the RHR System beyond its design pressure of 600 psig.

(1) **INSERT 3**

at an RCS pressure ≥ 2065 psig and ≤ 2105 psig (Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2). This criteria is based on a study by the Idaho National Engineering Laboratory (Ref. 7).

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BASES

(1)

LCO (continued)

Reference (8) permits leakage testing at a lower pressure differential than between the specified maximum RCS pressure and the normal pressure of the connected system during RCS operation (the maximum pressure differential) in those types of valves in which the higher service pressure will tend to diminish the overall leakage channel opening. In such cases, the observed rate may be adjusted to the maximum pressure differential by assuming leakage is directly proportional to the pressure differential to the one half power. INSERT 4 (1)

INSERT 5 (1)

APPLICABILITY

In MODES 1, 2, 3, and 4, this LCO applies because the PIV leakage potential is greatest when the RCS is pressurized. In MODE 4, valves in the RHR flow path are not required to meet the requirements of this LCO when in, or during the transition to or from, the RHR mode of operation.

In MODES 5 and 6, leakage limits are not provided because the lower reactor coolant pressure results in a reduced potential for leakage and for a LOCA outside the containment.

ACTIONS

The Actions are modified by two Notes. Note 1 provides clarification that each flow path allows separate entry into a Condition. This is allowed based upon the functional independence of the flow path. Note 2 requires an evaluation of affected systems if a PIV is inoperable. The leakage may have affected system operability, or isolation of a leaking flow path with an alternate valve may have degraded the ability of the interconnected system to perform its safety function.

A.1 and A.2 INSERT 6 (3)

The flow path must be isolated by two valves. Required Actions A.1 and A.2 are modified by a Note that the valves used for isolation must meet the same leakage requirements as the PIVs and must be within the RCPB or the high pressure portion of the system. (2)

Required Action A.1 requires that the isolation with one valve must be performed within (24) hours. (Twenty-four) hours provides time to reduce leakage in excess of the allowable limit and to isolate the affected system if leakage cannot be reduced. The (24) hour Completion Time allows the actions and restricts the operation with leaking isolation valves. (2)

Required Action A.2 specifies that the double isolation barrier of two valves be restored by closing some other valve qualified for isolation or (4)

(1) **INSERT 4**

However, in all cases, the minimum test differential pressure shall be ≥ 150 psid.

(1) **INSERT 5**

Ensuring the RHR interlock that prevents the valves from being opened is OPERABLE ensures that RCS pressure will not pressurize the RHR System beyond its design pressure of 600 psig.

(3) **INSERT 6**

If leakage from one or more RCS PIVs is not within limit,

BASES

ACTIONS (continued)

Required 3

restoring one leaking PIV. The 72 hour Completion Time after exceeding the limit considers the time required to complete the Action and the low probability of a second valve failing during this time period. 4

[or] 4 2

The 72 hour Completion Time after exceeding the limit allows for the restoration of the leaking PIV to OPERABLE status. This timeframe considers the time required to complete this Action and the low probability of a second valve failing during this period.]

- REVIEWER'S NOTE -
Two options are provided for Required Action A.2. The second option (72 hour restoration) is appropriate if isolation of a second valve would place the unit in an unanalyzed condition. 1

B.1 and B.2

unit 1 3

INSERT 7

If leakage cannot be reduced, the system cannot be isolated, or the other Required Actions accomplished, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to MODE 3 within 6 hours and MODE 5 within 36 hours. This Action may reduce the leakage and also reduces the potential for a LOCA outside the containment. 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. 1 1

Unit

C.1

The inoperability of the RHR autoclosure interlock renders the RHR suction isolation valves incapable of isolating in response to a high pressure condition and preventing inadvertent opening of the valves at RCS pressures in excess of the RHR systems design pressure. If the RHR autoclosure interlock is inoperable, operation may continue as long as the affected RHR suction penetration is closed by at least one closed manual or deactivated automatic valve within 4 hours. This Action accomplishes the purpose of the autoclosure function. 2 2 3 2

Power operated 6

Required

(3) **INSERT 7**

If any Required Action and associated Completion Time of Condition A is not met

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.14.1

Performance of leakage testing on each RCS PIV or isolation valve used to satisfy Required Action A.1 and Required Action A.2 is required to verify that leakage is below the specified limit and to identify each leaking valve. The leakage limit of 0.5 gpm per inch of nominal valve diameter up to 5 gpm maximum applies to each valve. Leakage testing requires a stable pressure condition. (3)

For the two PIVs in series, the leakage requirement applies to each valve individually and not to the combined leakage across both valves. If the PIVs are not individually leakage tested, one valve may have failed completely and not be detected if the other valve in series meets the leakage requirement. In this situation, the protection provided by redundant valves would be lost.

Testing is to be performed every [18] months, a typical refueling cycle, if the plant does not go into MODE 5 for at least 7 days. The [18 month] Frequency is consistent with 10 CFR 50.55a(g) (Ref. 8) as contained in the Inservice Testing Program, is within frequency allowed by the American Society of Mechanical Engineers (ASME) Code, Section XI (Ref. 7), and is based on the need to perform such surveillances under the conditions that apply during an outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. (2) (OM) INSERT 8 (1) (5) (9)

In addition, testing must be performed once after the valve has been opened by flow or exercised to ensure tight reseating. PIVs disturbed in the performance of this Surveillance should also be tested unless documentation shows that an infinite testing loop cannot practically be avoided. Testing must be performed within 24 hours after the valve has been reseated. Within 24 hours is a reasonable and practical time limit for performing this test after opening or reseating a valve. (2)

The leakage limit is to be met at the RCS pressure associated with MODES 1 and 2. This permits leakage testing at high differential pressures with stable conditions not possible in the MODES with lower pressures. INSERT 9 (2)

Entry into MODES 3 and 4 is allowed to establish the necessary differential pressures and stable conditions to allow for performance of this Surveillance. The Note that allows this provision is complementary to the Frequency of prior to entry into MODE 2 whenever the unit has been in MODE 5 for 7 days or more, if leakage testing has not been performed in the previous 9 months. In addition, this Surveillance is not required to (2)

(2) INSERT 8

The Frequency required by

(2) INSERT 9

Therefore, this SR is modified by a Note that states the Surveillance is only required to be performed in MODES 1 and 2.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

be performed on the RHR System when the RHR System is aligned to the RCS in the shutdown cooling mode of operation. PIVs contained in the RHR shutdown cooling flow path must be leakage rate tested after RHR is secured and stable unit conditions and the necessary differential pressures are established. (5)

INSERT 9A (1)

SR 3.4.14.2 and SR 3.4.14.3 (2)

Verifying that the RHR autoclosure interlocks are OPERABLE ensures that RCS pressure will not pressurize the RHR system beyond 125% of its design pressure of [600] psig. The interlock setpoint that prevents the valves from being opened is set so the actual RCS pressure must be < [425] psig to open the valves. This setpoint ensures the RHR design pressure will not be exceeded and the RHR relief valves will not lift. The [18] month Frequency is based on the need to perform the Surveillance under conditions that apply during a plant outage. The [18] month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. (1) (2) (4) (2) (24) (24) (4)

These SRs are modified by Notes allowing the RHR autoclosure function to be disabled when using the RHR System suction relief valves for cold overpressure protection in accordance with SR 3.4.12.7. (2)

REFERENCES

1. 10 CFR 50.2.

2. 10 CFR 50.55a(c).

3. 10 CFR 50, Appendix A, Section V, GDC 55. (1)

(3) 4. WASH-1400 (NUREG-75/014), Appendix V, October 1975.

5. NUREG-0677, May 1980. INSERT 10 (1)

6. Document containing list of PIVs.

(9) 7. ASME, Boiler and Pressure Vessel Code, Section XI.

8. 10 CFR 50.55a(g). INSERT 11 (1)

(1) **INSERT 9A**

that prevents the valves from being opened is

(1) **INSERT 10**

4. Letter from D.G. Eisenhut, NRC, to all LWR licensees, LWR Primary Coolant System Pressure Isolation Valves, February 23, 1980.
5. Letter from S.A. Varga, NRC, to J. Dolan, Order for Modification of Licenses Concerning Primary Coolant System Pressure Isolation Valves, April 20, 1981.
6. Technical Requirements Manual.
7. EGG-NTAP-6175, Inservice Testing of Primary Pressure Isolation Valves, Idaho National Engineering Laboratory, February 1983.
8. NRC Safety Evaluation for License Amendment 188 (Unit 1) and 174 (Unit 2).

(1) **INSERT 11**

Operation and Maintenance Standards and Guides (OM Codes)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.14 BASES, RCS PIV LEAKAGE

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. The Bases are modified to reflect changes made to the ISTS.
3. The Bases are changed to reflect the requirements of the ISTS.
4. The brackets have been removed and the proper plant specific information/value has been provided.
5. Typographical/grammatical error corrected.
6. Changes made to be consistent with changes made to the Specifications.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.14, RCS PIV LEAKAGE

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 15

ITS 3.4.15, RCS Leakage Detection Instrumentation

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.4.15

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

LCO 3.4.15 — 3.4.6.1 The following Reactor Coolant System leakage detection systems shall be OPERABLE:

LCO 3.4.15.b — a. One of the containment atmosphere particulate radioactivity monitoring channels (ERS-1301 or ERS-1401), (L.1)

LCO 3.4.15.a — b. The containment sump level and flow monitoring system, and (A.2)

LCO 3.4.15.c — c. Either the containment humidity monitor or one of the containment atmosphere gaseous radioactivity monitoring channels (ERS-1305 or ERS-1405). (L.1)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: (L.5)

Add proposed Required Action A.1 (M.1)

Add proposed Required Actions B.1.2 and C.2 (L.4)

ACTIONS A, B, C, and D — With only two of the above required leakage detection systems OPERABLE, operation may continue for up to 30 days provided grab samples of the containment atmosphere are obtained and analyzed at least once per 24 hours
Required Actions B.1.1 and C.1 — when the required gaseous and/or particulate radioactivity monitoring channels are inoperable; otherwise, be in at (L.5)
ACTION E — least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (M.2)

Add proposed ACTION F (L.5)

SURVEILLANCE REQUIREMENTS

4.4.6.1 The leakage detection systems shall be demonstrated OPERABLE by:

SR 3.4.15.1, SR 3.4.15.2, SR 3.4.15.4 — a. Containment atmosphere particulate and gaseous (if being used) monitoring system-performance of CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST at the frequencies specified in Table 4.3-3. (COT — A.3) (A.2)

SR 3.4.15.3 — b. Containment sump level and flow monitoring system-performance of CHANNEL CALIBRATION at least once per 18 months. (24 — L.6)

SR 3.4.15.5 — c. Containment humidity monitor (if being used) - performance of CHANNEL CALIBRATION at least once per 18 months. (24 — L.6)

ITS 3.4.15

A.1

ITS

TABLE 3.3-6
RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4 3.3.1)

See ITS 3.3.3 (ALARM SETPOINT)
See ITS 3.3.6 and CTS 3/4.3.3.1 (TRIP SETPOINT)

ITS	OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION	
	1. Modes 1, 2, 3 & 4					
	A. Area Monitors					
	i. Upper Containment* (VRS 1101/1201)	1	N/A	≤ 54 mR/hr	21	See ITS 3.3.6 and CTS 3/4.3.3.1
	ii. Containment High Range (VRA 1310/1410)	2	≤ 10R/hr	N/A	22A	See ITS 3.3.3
	B. Process Monitors					See ITS 3.3.6
LCO 3.4.15.b	i. Particulate Channel+ (ERS 1301/1401)	1	N/A	≤ 2.52 µCi	20 B, C, D, E	L.1
LCO 3.4.15.c	ii. Noble Gas Channel+ (ERS 1305/1405)	1	N/A	≤ 4.4x10^{-3} µCi/cc	20 B, C, D, E	
	C. Noble Gas Effluent Monitors					See CTS 3/4.3.3.1
	i. Unit Vent Effluent Monitors					
	a. Low Range (VRS 1505)	------------(see the ODCM)------------				
	b. Mid Range (VRS 1507)	1	N/A	N/A	22B	
	c. High Range (VRS 1509)	1	N/A	N/A	22B	
	ii. Steam Generator PORV					
	a. MRA 1601 (Loop 1)	1	N/A	N/A	22B	
	b. MRA 1602 (Loop 4)	1	N/A	N/A	22B	
	c. MRA 1701 (Loop 2)	1	N/A	N/A	22B	
	d. MRA 1702 (Loop 3)	1	N/A	N/A	22B	
	iii. Gland Steam Condenser Vent Monitor					
	a. Low Range (SRA 1805)	------------(see the ODCM)------------				
	iv. Steam Jet Air Ejector Vent Monitors					
	a. Low Range (SRA 1905)	------------(see the ODCM)------------				
	b. Mid Range (SRA 1907)	1	N/A	N/A	22B	
	c. High Range (SRA 1909)	1	N/A	N/A	22B	

ITS 3.4.15

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-6 (Continued)

TABLE NOTATION

ACTIONS B, C, D, E

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 21 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per day. (See CTS 3/4.3.3.1)

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirements, comply with the ACTION requirements of Specification 3.9.9. This ACTION is not required during the performance of containment integrated leak rate test. (See ITS 3.3.6)

ACTION 22A- With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements: (See ITS 3.3.3)

1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status. (See ITS 5.6)

3. Technical Specification Section 3.0.3 is Not Applicable. (See ITS 3.3.3)

ACTION 22B- With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements.

1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or

2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.

3. In the event of an accident involving radiological releases initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours.

4. Technical Specification Section 3.0.3 is Not Applicable.

(See CTS 3/4.3.3.1)

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ITS 3.4.15

A.1

ITS

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

COT — A.3

OPERATION MODE/INSTRUMENT	SR 3.4.15.1 CHANNEL CHECK	SR 3.4.15.4 CHANNEL CALIBRATION	SR 3.4.15.2 ~~CHANNEL FUNCTIONAL TEST~~	APPLICABLE MODES	
1. Modes 1, 2, 3 & 4					See CTS 3/4.3.3.1
A. Area Monitors					
i. Upper Containment (VRS 1101/1201)	S*	R	Q	1, 2, 3, 4	
ii. Containment High Range (VRA 1310/1410)	S	R	Q	1, 2, 3, 4	See ITS 3.3.3
LCO 3.4.15.b B. Process Monitors					
i. Particulate Channel (~~ERS~~ 1301/~~1401~~)	S*	~~R~~ 24 months	Q	1, 2, 3, 4	L.6; L.1
C. Noble Gas Effluent Monitors					See CTS 3/4.3.3.1
i. Unit Vent Effluent Monitors					
a. Low Range (VRS 1505)	(see the ODCM)				
b. Mid Range (VRS 1507)	S	R	N/A	1, 2, 3, 4	
c. High Range (VRS 1509)	S*	R	N/A	1, 2, 3, 4	
ii. Steam Generator PORV					
a. MRA 1601 (Loop 1)	S*	R	Q	1, 2, 3, 4	
b. MRA 1602 (Loop 4)	S*	R	Q	1, 2, 3, 4	
c. MRA 1701 (Loop 2)	S*	R	Q	1, 2, 3, 4	
d. MRA 1702 (Loop 3)	S*	R	Q	1, 2, 3, 4	
iii. Gland Steam Condenser Vent Monitor					
a. Low Range (SRA 1805)	(see the ODCM)				
iv. Steam Jet Air Ejector Vent Monitors					
a. Low Range (SRA 1905)	(see the ODCM)				
b. Mid Range (SRA 1907)	S	R	Q	1, 2, 3, 4	
c. High Range (SRA 1909)	S*	R	N/A	1, 2, 3, 4	

A.1

ITS

TABLE 4.3-3 (Continued)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

COT — A.3

ITS	OPERATION MODE/INSTRUMENT	SR 3.4.15.1 CHANNEL CHECK	SR 3.4.15.4 CHANNEL CALIBRATION	SR 3.4.15.2 ~~CHANNEL FUNCTIONAL TEST~~ (COT)	APPLICABLE MODES	
	2. Mode 6					
	A. Train A				6	See ITS 3.3.6
	i. Containment Area Radiation Channel (VRS 1101)	S*	R	Q		See ITS 3.3.6
LCO 3.4.15.b	ii. Particulate Channel ~~(ERS 1301)~~	S*	~~R~~ 24 months	Q		L.6, L.1
LCO 3.4.15.c	iii. Noble Gas Channel ~~(ERS 1305)~~	S*	~~R~~ 24 months	Q		L.6, L.1
	B. Train B				6	See ITS 3.3.6
	i. Containment Area Radiation Channel (VRS 1201)	S*	R	Q		See ITS 3.3.6
LCO 3.4.15.b	ii. Particulate Channel ~~(ERS 1401)~~	S*	~~R~~ 24 months	Q		L.6, L.1
LCO 3.4.15.c	iii. Noble Gas Channel ~~(ERS 1405)~~	S*	~~R~~ 24 months	Q		L.6, L.1
	3. Mode **					See CTS 3/4.3.3.1
	A. Spent Fuel Storage (RRC-330)	S	R	Q	**	See CTS 3/4.3.3.1

~~* To include SOURCE CHECK per T/S Section 1.27~~ — L.7

** With fuel in storage pool or building — See CTS 3/4.3.3.1

COOK NUCLEAR PLANT - UNIT 1 3/4 3-38a AMENDMENT NO. ~~94~~, ~~134~~, ~~183~~, 189

ITS 3.4.15

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

LCO 3.4.15 — 3.4.6.1 The following Reactor Coolant System leakage detection systems shall be OPERABLE: [L.2]

LCO 3.4.15.b — a. One [of /the] containment atmosphere particulate radioactivity monitoring channels [(ERS-2301 or ERS-2401)]. [L.1] [A.2]

LCO 3.4.15.a — b. [The] containment sump [level and] flow monitoring [system], and [One] [L.2]

LCO 3.4.15.c — c. [Either the] containment humidity monitor [or] [one of the] containment atmosphere gaseous

LCO 3.4.15.b — radioactivity monitoring channels [(ERS/2305 or ERS-2405)]. [L.1]

APPLICABILITY: MODES 1, 2, 3 and 4

ACTION: [L.5]

ACTIONS A, B, C, and D; Required Actions B.1.1 and C.1; ACTION E —

[Add proposed Required Action A.1] [M.1]

[With] [only two] [of the above required leakage detection systems OPERABLE], operation may continue for up to [30] [days] provided grab samples of the containment atmosphere are obtained and analyzed at least once per 24 hours when the required gaseous and/or particulate radioactivity monitoring channels are inoperable; [otherwise], [be in at] least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. [L.5] [Add proposed Required Actions B.1.2 and C.2] [L.4]

[Add proposed ACTION F] [L.5]

SURVEILLANCE REQUIREMENTS

4.4.6.1 The leakage detection systems shall be demonstrated OPERABLE by: [L.2]

SR 3.4.15.1, SR 3.4.15.2, SR 3.4.15.4 — a. Containment atmosphere [particulate and gaseous (if being used)] monitoring system performance of CHANNEL CHECK, CHANNEL CALIBRATION and [CHANNEL FUNCTIONAL TEST] at the frequencies specified in Table 4.3-3. [COT] [A.3] [A.2]

SR 3.4.15.3 — b. Containment sump [level/ and] flow monitoring [system] performance of CHANNEL CALIBRATION at least once per [18] months. [24] [L.6]

SR 3.4.15.5 — c. Containment humidity monitor [(if being used)] - performance of CHANNEL CALIBRATION at least once per [18] months. [24] [L.2] [L.6]

COOK NUCLEAR PLANT-UNIT 2 — Page 3/4 4-14 — AMENDMENT ~~98, 131, 159~~ 224

ITS 3.4.15

A.1

ITS

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4 3.3.1)

See ITS 3.3.3

See ITS 3.3.6 and CTS 3/4.3.3.1

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
1. Modes 1, 2, 3 & 4				
A. Area Monitors				
i. Upper Containment* (VRS 2101/2201)	1	N/A	≤ 54 mR/hr	21
ii. Containment High Range (VRA 2310/2410)	2	≤ 10R/hr	N/A	22A
B. Process Monitors				
LCO 3.4.15.b — i. Particulate Channel* (ERS 2301/2401)	1	N/A	≤ 2.52 µCi	20 B, D, E
LCO 3.4.15.b — ii. Noble Gas Channel* (ERS 2305/2405)	1	N/A	≤ 4.4x10⁻³ µCi/cc	20 B, D, E
C. Noble Gas Effluent Monitors				
i. Unit Vent Effluent Monitors				
a. Low Range (VRS 2505)	------------(see the ODCM)------------			
b. Mid Range (VRS 2507)	1	N/A	N/A	22B
c. High Range (VRS 2509)	1	N/A	N/A	22B
ii. Steam Generator PORV				
a. MRA 2601 (Loop 1)	1	N/A	N/A	22B
b. MRA 2602 (Loop 4)	1	N/A	N/A	22B
c. MRA 2701 (Loop 2)	1	N/A	N/A	22B
d. MRA 2702 (Loop 3)	1	N/A	N/A	22B
iii. Gland Steam Condenser Vent Monitor				
a. Low Range (SRA 2805)	------------(see the ODCM)------------			
iv. Steam Jet Air Ejector Vent Monitors				
a. Low Range (SRA 2905)	------------(see the ODCM)------------			
b. Mid Range (SRA 2907)	1	N/A	N/A	22B
c. High Range (SRA 2909)	1	N/A	N/A	22B

See ITS 3.3.6 and CTS 3/4.3.3.1

See ITS 3.3.3

See ITS 3.3.6

L.1

See CTS 3/4.3.3.1

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.3 INSTRUMENTATION

TABLE 3.3-6 (Continued)

TABLE NOTATION

ITS	Action	Requirement	Reference
ACTIONS B, D, E	ACTION 20 -	With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.4.6.1.	
	ACTION 21 -	With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per day.	See CTS 3/4.3.3.1
	ACTION 22 -	With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.9.9. This ACTION is not required during the performance of containment integrated leak rate test.	See ITS 3.3.6
	ACTION 22A-	With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements:	See ITS 3.3.3
		1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or	See ITS 3.3.3
		2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.	See ITS 5.6
		3. Technical Specification Section 3.0.3 Not Applicable.	See ITS 3.3.3
	ACTION 22B-	With the number of OPERABLE Channels less than required by the Minimum Channels OPERABLE requirements.	See CTS 3/4.3.3.1
		1. either restore the inoperable Channel(s) to OPERABLE status within 7 days of the event, or	
		2. prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to OPERABLE status.	
		3. In the event of an accident involving radiological releases initiate the preplanned alternate method of monitoring the appropriate parameter(s) within 72 hours.	
		4. Technical Specification Section 3.0.3 Not Applicable.	

ITS 3.4.15

A.1

ITS

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

COT — A.3

OPERATION MODE/INSTRUMENT	CHANNEL CHECK (SR 3.4.15.1)	CHANNEL CALIBRATION (SR 3.4.15.4)	~~CHANNEL FUNCTIONAL TEST~~ (SR 3.4.15.2)	APPLICABLE MODES
1. Modes 1, 2, 3 & 4				
A. Area Monitors				
i. Upper Containment (VRS 2101/2201)	S*	R	Q	1, 2, 3, 4
ii. Containment High Range (VRA 2310/2410)	S	R	Q	1, 2, 3, 4
B. Process Monitors				
i. Particulate Channel (~~ERS~~ 2301/~~2401~~)	S*	~~R~~ 24 months	Q	1, 2, 3, 4
C. Noble Gas Effluent Monitors				
i. Unit Vent Effluent Monitors				
a. Low Range (VRS 2505)	(see the ODCM)			
b. Mid Range (VRS 2507)	S	R	N/A	1, 2, 3, 4
c. High Range (VRS 2509)	S*	R	N/A	1, 2, 3, 4
ii. Steam Generator PORV				
a. MRA 2601 (Loop 1)	S*	R	Q	1, 2, 3, 4
b. MRA 2602 (Loop 4)	S*	R	Q	1, 2, 3, 4
c. MRA 2701 (Loop 2)	S*	R	Q	1, 2, 3, 4
d. MRA 2702 (Loop 3)	S*	R	Q	1, 2, 3, 4
iii. Gland Steam Condenser Vent Monitor				
a. Low Range (SRA 2805)	(see the ODCM)			
iv. Steam Jet Air Ejector Vent Monitors				
a. Low Range (SRA 2905)	(see the ODCM)			
b. Mid Range (SRA 2907)	S	R	Q	1, 2, 3, 4
c. High Range (SRA 2909)	S*	R	N/A	1, 2, 3, 4

LCO 3.4.15.b (B.i Particulate Channel)

Margin notes: See CTS 3/4.3.3.1 (1.A.i); See ITS 3.3.3 (1.A.ii); L.6 (24 months); L.1 (C. Noble Gas Effluent Monitors); See CTS 3/4.3.3.1 (C.ii)

ITS 3.4.15

(A.1)

ITS

TABLE 4.3-3 (Continued)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

COT (A.3)

OPERATION MODE/INSTRUMENT	CHANNEL CHECK (SR 3.4.15.1)	CHANNEL CALIBRATION (SR 3.4.15.4)	~~CHANNEL FUNCTIONAL TEST~~ (SR 3.4.15.2)	APPLICABLE MODES	
2. Mode 6					
A. Train A				6	See ITS 3.3.6
i. Containment Area Radiation Channel (VRS 2101)	S*	R	Q		
LCO 3.4.15.b ii. Particulate Channel ~~(ERS 2301)~~	S*	~~R~~ 24 months	Q		L.6, L.1
LCO 3.4.15.b iii. Noble Gas Channel ~~(ERS 2305)~~	S*	~~R~~ 24 months	Q		L.6, L.1
B. Train B				6	See ITS 3.3.6
i. Containment Area Radiation Channel (VRS 2201)	S*	R	Q		
LCO 3.4.15.b ii. Particulate Channel ~~(ERS 2401)~~	S*	~~R~~ 24 months	Q		L.6, L.1
LCO 3.4.15.b iii. Noble Gas Channel ~~(ERS 2405)~~	S*	~~R~~ 24 months	Q		L.6, L.1
3. Mode **					See CTS 3/4.3.3.1
A. Spent Fuel Storage (RRC-330)	S	R	Q	**	

~~* To include SOURCE CHECK per T/S Section 1.27~~ (L.7)

** With fuel in storage pool or building (See CTS 3/4.3.3.1)

DISCUSSION OF CHANGES
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS LCO 3.4.6.1.b requires the containment sump "level and flow" monitoring "system" to be OPERABLE. CTS 4.4.6.1.b requires the containment sump "level and flow" monitoring "system" to be calibrated. ITS LCO 3.4.15.a requires one containment sump monitor in each sump to be OPERABLE and ITS SR 3.4.15.3 requires the performance of CHANNEL CALIBRATION of the required containment sump monitors. This changes the CTS by explicitly writing the LCO statement and SR to match the CNP design.

The purpose of CTS 3.4.6.1 is to ensure diverse RCS leakage detection system channels are OPERABLE. At CNP, there are actually three distinct containment sumps, each collecting leakage from a different area. The only monitoring instruments that can be used to monitor actual leakage rates are the containment sump pump run times, which provide flow monitoring. The CTS requirements are met by ensuring one of the two flow monitors for each of the three sumps is OPERABLE. Therefore, the ITS has been explicitly written to be consistent with the actual design of CNP. This design and its relationship to CTS 3.4.6.1 was reviewed by the NRC during the closeout of Generic Letter 84-04, as documented in the NRC Safety Evaluation Report for Unit 2 Amendment 76 (Letter from the NRC to (S.A. Varga) to Indiana and Michigan Electric Company (J. Dolan) dated 11/22/85). Therefore, since this change is consistent with the current requirements and is only providing clarification, it is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 4.4.6.1.a and Table 4.3-3 require that the Leakage Detection System particulate and noble gas channels be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST. ITS SR 3.4.15.2 requires the performance of a CHANNEL OPERATIONAL TEST (COT) of the required containment atmosphere radioactivity monitors. This changes the CTS by changing the CHANNEL FUNCTIONAL TEST requirements to a COT.

This change is acceptable because the COT continues to perform a test similar to the current CHANNEL FUNCTIONAL TEST. The change is one of format only. In addition, the change to the CHANNEL FUNCTIONAL TEST definition is described in Discussion of Changes for ITS Chapter 1.0. This change is designated as administrative because it does not result in technical changes to the CTS.

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DISCUSSION OF CHANGES
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.6.1 does not contain an explicit requirement to perform a Reactor Coolant System (RCS) water inventory balance (CTS 3.3.3.3, ITS SR 3.4.13.1) when the required RCS containment sump monitoring system is found to be inoperable. ITS 3.4.15 Required Action A.1 requires the performance of ITS SR 3.4.13.1, the RCS water inventory balance Surveillance, once per 24 hours when it is discovered that the required containment sump monitor is inoperable. This changes the CTS by adding the requirement to perform ITS SR 3.4.13.1 when the specified RCS leakage detection instrumentation is found to be inoperable.

The purpose of performing ITS SR 3.4.13.1 is to provide additional assurance that the existing RCS LEAKAGE is within the prescribed limits of ITS LCO 3.4.13. This change is acceptable because the added Required Actions provides additional assurance that the RCS LEAKAGE is within the prescribed limits of ITS LCO 3.4.13 prior to the performance of the normally scheduled Surveillance (once per 72 hours). This change is designated as more restrictive, because it adds Required Actions to the CTS.

M.2 (Unit 1 only) CTS 3.4.6.1 Action requires a grab sample of the containment atmosphere to be obtained and analyzed at least once per 24 hours when the required gaseous and/or particulate radioactivity monitoring channels are inoperable. Unit 1 ITS 3.4.15 Required Action B.1.1 requires the same requirement at a 12 hour Frequency when no containment atmosphere particulate radioactivity monitoring channels are OPERABLE. This changes the Unit 1 CTS by adding the requirement to analyze grab samples of the containment atmosphere every 12 hours instead of every 24 hours.

The purpose of analyzing the grab samples of the containment atmosphere is to help ensure the RCS leakage has not increased since the last performance of the Surveillance. This change is consistent with a condition of approval for application of leak-before-beak methodology to the pressurizer surge line for Unit 1 when no containment atmosphere particulate radioactivity monitoring channels are OPERABLE (Letter from Indiana Michigan Power Company (M.W. Rencheck) to the NRC dated October 26, 2000). This change is acceptable because the increased Frequency of the Required Action provides additional assurance that the RCS leakage has not increased significantly since the previous performance of the Surveillance. This change is designated as more restrictive, because it adds Required Actions to the Unit 1 CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

DISCUSSION OF CHANGES
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

LESS RESTRICTIVE CHANGES

L.1 *(Category 1 – Relaxation of LCO Requirements)* CTS LCO 3.4.6.1.a, CTS Table 3.3-6 Instrument 1.B.i, and Table 4.3-3 Instruments 1.B.i, 2.A.ii, and 2.B.ii specify the containment atmosphere particulate radioactivity monitoring channel instrument numbers to be ERS-1301 and ERS-1401 (Unit 1) and ERS-2301 and ERS-2401 (Unit 2). CTS LCO 3.4.6.1.c, CTS Table 3.3-6 Instrument 1.B.ii, and CTS Table 4.3-3 Instruments 2.A.iii and 2.B.iii specify the containment atmosphere gaseous (noble gas) radioactivity monitoring channel instrument numbers to be ERS-1305 and ERS-1405 (Unit 1) and ERS-2305 and ERS-2405 (Unit 2). ITS LCO 3.4.15 and the associated Surveillances do not specify the instrument numbers. This changes the CTS by deleting the containment atmosphere particulate and gaseous radioactivity monitoring channels instrument numbers from the Technical Specifications.

The purpose of CTS 3.4.6.1, CTS Table 3.3-6, and CTS Table 4.3-3 are to ensure the appropriate RCS leakage detection system channels are OPERABLE. This change is acceptable because the LCO and associated Surveillance requirements continue to ensure that the instrumentation is maintained consistent with the safety analyses and licensing basis. The containment atmosphere particulate and gaseous radioactivity monitoring channel instrument numbers have been deleted from the Technical Specifications. The instrument numbers are not necessary to ensure the equipment is OPERABLE. The requirements to maintain the instrumentation (containment atmosphere radioactivity monitor) OPERABLE is sufficient to ensure the appropriate equipment is maintained OPERABLE. The use of a description of the instrument channel in the Technical Specifications has been proven to be sufficient. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.2 *(Category 1 – Relaxation of LCO Requirements)* (Unit 2 only) CTS LCO 3.4.6.1.a requires one of the containment atmosphere particulate radioactivity channels to be OPERABLE while CTS LCO 3.4.6.1.c requires either the containment humidity monitor or one of the containment atmosphere gaseous radioactivity monitoring channels to be OPERABLE. CTS 4.4.6.1.a requires the containment atmosphere particulate and gaseous (if being used) monitoring system to be tested (CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST) at the Frequencies specified in Table 4.3-3. CTS 4.4.6.1.c requires a CHANNEL CALIBRATION of the containment humidity monitor (if being used). Unit 2 ITS LCO 3.4.15.b requires one containment atmosphere radioactivity monitor (gaseous or particulate) and Unit 2 ITS LCO 3.4.15.c requires one containment humidity monitor to be OPERABLE. Unit 2 ITS SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. Unit 2 ITS SR 3.4.15.2 requires the performance of a COT of the required containment atmosphere radioactivity monitor. Unit 2 ITS SR 3.4.15.4 requires the performance of a CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor. Unit 2 ITS SR 3.4.15.5 requires the performance of a CHANNEL CALIBRATION of the required containment humidity monitor. This changes the CTS by allowing all of the containment atmosphere particulate radioactivity channels to be inoperable without requiring any compensatory actions to be taken. That is, the containment atmosphere gaseous radioactivity monitoring channel can replace a particulate channel. It also revises the Surveillances as necessary to clarify that only the required channels must be tested.

The purpose of CTS 3.4.6.1 is to ensure diverse RCS leakage detection system channels are OPERABLE. This change is acceptable because the LCO requirements continue to ensure that the instrumentation is maintained consistent with the safety analyses and licensing basis. The CTS LCO 3.4.6.1 has been changed by allowing all of the containment atmosphere particulate radioactivity channels to be inoperable without any requiring any compensatory actions to be taken. However, at the same time the containment humidity monitor is required to be OPERABLE without any alternate channel. This change is acceptable because ITS LCO 3.4.15 continues to require diverse methods to monitor RCS LEAKAGE. ITS LCO 3.4.15 requires one containment atmosphere radioactivity monitor, a containment sump monitoring method, and a containment humidity channel to be OPERABLE. The changes to the Surveillances are made to align the proposed LCO with the Surveillances. This change is designated as less restrictive because less stringent LCO requirements are being applied in the Unit 2 ITS than were applied in the Unit 2 CTS.

L.3 Not used.

L.4 *(Category 4 – Relaxation of Required Action)* CTS 3.4.6.1 Action requires a grab sample of the containment atmosphere to be obtained and analyzed at a specified frequency when the required gaseous and/or particulate radioactivity monitoring channels are inoperable. ITS 3.4.15 Required Actions B.1.1 and C.1 also include this requirement, however ITS 3.4.15 Required Actions B.1.2 and C.2 provide an option to perform an RCS water inventory balance under the same conditions. This changes the CTS by providing an option to perform an RCS water inventory balance instead of analyzing a grab sample of the containment atmosphere under the same conditions.

The purpose of the CTS 3.4.6.1 Action is to provide periodic information that is adequate to detect RCS LEAKAGE. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. Performing an RCS water inventory balance quantifies the actual RCS LEAKAGE therefore the method provides adequate periodic information on the RCS integrity. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.5 *(Category 4 – Relaxation of Required Action)* CTS 3.4.6.1 Action states the actions to take when only two of the above required Reactor Coolant System (RCS) leakage detection systems are OPERABLE (one required leakage detection system inoperable). With more than one required RCS leakage detection system inoperable entry into CTS LCO 3.0.3 would be required. ITS 3.4.15 ACTION C covers the situation when a) Unit 1 only - the required containment humidity or containment atmosphere gaseous radioactivity monitor is inoperable; and b) Unit 2 only - the required containment humidity monitor is inoperable. The ITS 3.4.15 Required Actions are to analyze grab samples of the containment atmosphere every 24 hours or to perform SR 3.4.13.1 once every 24 hours. ITS 3.4.15 ACTION D covers the situation when the required containment atmosphere (particulate - Unit 1 only) radioactivity monitor is inoperable and when a) Unit 1 only - the required containment humidity or containment atmosphere gaseous radioactivity monitor is inoperable; and b) Unit 2 only - the required containment humidity monitor is inoperable. The ITS 3.4.15 Required Actions are to restore of least one of the associated required monitors to OPERABLE status within 30 days. ITS 3.4.15 ACTION F requires the immediate entry into ITS LCO 3.0.3 when all three types of required leakage detection instrumentation are found to be inoperable (i.e., LCO 3.4.15.a, b, and c are not met). This changes the CTS 3.4.6.1 Actions by allowing more than one leakage detection system channel to be inoperable at the same time without requiring entry into LCO 3.0.3.

The purpose of the CTS 3.4.6.1 Action is to provide appropriate compensatory measures when Reactor Coolant System leakage detection instrumentation is found to be inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. This change allows more than one required RCS leakage detection system channel to be inoperable at the same time without requiring entry into LCO 3.0.3. This change is acceptable because if a required RCS leakage detection instrumentation monitor is inoperable, then entry into the appropriate Conditions is necessary. If more than one RCS leakage detection instrumentation monitor is inoperable, then entry into at least two Conditions will be required. The proposed compensatory actions either require the determination of RCS leakage by requiring the performance of SR 3.4.13.1 (RCS water inventory balance), or in some cases an option is to analyze grab samples of the containment atmosphere once per 24 hours. These Required Actions ensure with sufficient Frequency that RCS LEAKAGE is within limit thus performing the function of the instrumentation. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.6 *(Category 11 – 18 to 24 Month Surveillance Frequency Change, Channel Calibration Type)* CTS 4.4.6.1.b requires the performance of a CHANNEL CALIBRATION of the containment sump level and flow monitoring system at least once per 18 months. CTS 4.4.6.1.c requires the performance of a CHANNEL CALIBRATION of the containment humidity monitor at least once per 18 months. CTS 4.4.6.1.a and Table 4.3-3 for the Process Monitors requires the

DISCUSSION OF CHANGES
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

CHANNEL CALIBRATION of the particulate and gaseous channels to be performed every 18 months. ITS SR 3.4.15.3 requires a CHANNEL CALIBRATION of the required containment sump monitors every 24 months. ITS SR 3.4.15.4 requires a CHANNEL CALIBRATION of the required containment atmospheric radioactivity monitors and ITS SR 3.4.15.5 requires a CHANNEL CALIBRATION of the required containment humidity monitor every 24 months. This changes the CTS by extending the Frequency of the Surveillances from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.4.6.1 is to ensure the RCS leakage detection system instrumentation is OPERABLE. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. A separate drift evaluation has not been performed for the leakage detection instrumentation for the following reasons:

a) The containment sump monitoring instrumentation is used as the primary method for evaluation of RCS Operational LEAKAGE. The process variable being monitored is a change in LEAKAGE over a relatively short time interval (i.e., hours, not refueling outage to refueling outage). Instrument drift is considered a long-term affect, and the drift that occurs during the short duration between readings on the leakage instruments is insignificant and will not affect the conclusions drawn relative to RCS LEAKAGE. Therefore, the short-term LEAKAGE change measurement is unaffected by long term drift of the instrumentation. Normal operation of all leakage detection instrumentation is also confirmed at the end of the day by totaling the LEAKAGE and confirming that no abnormal conditions exist. This verification would identify any significant changes in the leakage detection instruments and therefore confirms proper operation. Since drift of the detector is not a consideration, the projected performance is based on the historical performance of the monitoring circuits.

b) The containment atmospheric radioactivity instruments monitor only for a sudden increase of radioactivity, which could be due to steam or water leakage. The containment atmospheric radioactivity monitoring instruments are not capable of quantifying LEAKAGE rates, but are sensitive enough to indicate increased LEAKAGE rates. Additionally, the major error contributor is the accuracy of the detector and the calibration sources. In the case of the calibration sources, normally multiple readings are required and an average reading is used to confirm operation. The decay curves and the detector sensitivity may be from 12% to 30% accurate. This accuracy far overshadows the accuracy of the electronic signal conditioning circuit. Therefore, drift of the electronic circuit does not provide a measure of functional performance over time between calibrations. This is substantiated by the ANSI N42.18 acceptance criteria of ± 20% which also recognizes ± 30% for alarm

DISCUSSION OF CHANGES
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

points. Since drift of the detector is not a consideration, the projected performance is based on the historical performance of the monitoring circuits.

c) The containment humidity monitoring instruments only monitor for short-term increases in area humidity and are not assumed to detect small humidity changes over long periods of time. This short-term LEAKAGE change measurement is unaffected by long-term drift of the instrumentation. Since drift of the instrument is not a consideration, the projected performance is based on the historical performance of the monitoring circuits. The ability to detect LEAKAGE is not degraded due to any long-term drift considerations.

The Reactor Coolant Leakage Detection instrumentation provides a monitoring function only to alert the operator to a potential unit problem. The alarm setpoints of these devices are not an assumption in any safety analyses. ITS SR 3.4.15.1 and SR 3.4.15.2 require that a CHANNEL CHECK and CHANNEL OPERATIONAL TEST, respectively, be performed on a more frequent basis on the required containment atmosphere (particulate and gaseous radioactivity) channels. Based on the redundant detection methods, the other functional tests performed on the required containment atmosphere (particulate and gaseous radioactivity) channels, the historical calibration records, and the design of the instrumentation and the drift evaluations, it is concluded that the impact, if any, from this change on system availability is minimal. A review of the Surveillance test history was performed to validate the above conclusion. This review demonstrates that there are no failures that would invalidate the conclusion that the impact, if any, on system availability from this change is minimal. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.7 *(Category 5 – Deletion of Surveillance Requirement)* CTS Table 4.3-3 requires a CHANNEL CHECK of the particulate and gaseous channels every 12 hours. In addition, per Table 4.3-3 Note *, this CHANNEL CHECK includes a SOURCE CHECK. ITS SR 3.4.15.1 requires a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. This changes the CTS by deleting the SOURCE CHECK of the particulate and gaseous channels.

The purpose of CTS Table 4.3-3 is to provide the appropriate Surveillance schedule for the associated monitors. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, the equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. The requirement to perform a SOURCE CHECK on the particulate and gaseous channels has been deleted. The CHANNEL CHECK gives reasonable confidence that the channel is operating properly every 12 hours. A verification that the channel will respond to a source will be performed during a CHANNEL CALIBRATION every 24 months since the CHANNEL CALIBRATION is a test of

DISCUSSION OF CHANGES
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

the entire channel. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.8 Not Used

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.6.1

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump (level or discharge flow) monitor; in each sump; (5) (1)

b. One containment atmosphere radioactivity monitor (gaseous or particulate); and particulate (Unit 1 only) (2) (Unit 1 only) ; (1)

c. One containment air cooler condensate flow rate humidity monitor. INSERT 1 (Unit 1 only) (3) (2)

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

ACTIONS

- NOTE -
LCO 3.0.4 is not applicable.

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Action

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor (s) inoperable. (5)	A.1 - NOTE - Not required until 12 hours after establishment of steady state operation. Perform SR 3.4.13.1.	 Once per 24 hours
	AND	
	A.2 Restore required containment sump monitor (s) to OPERABLE status. (5)	30 days

(2) (3) (Unit 1 only)
INSERT 1

or containment atmosphere gaseous radioactivity

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CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required containment atmosphere radioactivity monitor inoperable. (particulate (Unit 1 only) ②)	B.1.1	Analyze grab samples of the containment atmosphere.	Once per 24 hours (Unit 2) ② 12 hours (Unit 1) and
	OR		
	B.1.2	- NOTE - Not required until 12 hours after establishment of steady state operation. Perform SR 3.4.13.1.	Once per 24 hours (Unit 2) ②
	AND		
	B.2①	Restore required (particulate (Unit 1 only) ② ③) containment atmosphere radioactivity monitor to OPERABLE status.	30 days
	OR		③
	B.2.2	Verify containment air cooler condensate flow rate monitor is OPERABLE.	30 days]
C. Required containment (humidity) air cooler condensate flow rate monitor inoperable. (② INSERT 2 (Unit 1 only))	C.1	Perform SR 3.4.15.1.	Once per 24 hours INSERT 3 ④ ③
	OR		②
	C.2	- NOTE - Not required until 12 hours after establishment of steady state operation. Perform SR 3.4.13.1.	30 days (Once per 24 hours) ③ ④

Action

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2

(Unit 1 only)
<u>**INSERT 2**</u>

or containment atmosphere gaseous radioactivity

4

<u>**INSERT 3**</u>

Analyze grab samples
of the containment
atmosphere

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CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action	D. Required containment atmosphere radioactivity [particulate (Unit 1 only)] monitor inoperable. AND (Unit 1 only) Required containment ~~air cooler condensate flow rate~~ [humidity] monitor [or containment atmosphere gaseous radioactivity] inoperable.	D.1 Restore required containment atmosphere [particulate] radioactivity monitor to OPERABLE status. OR D.2 Restore required containment ~~air cooler condensate flow rate~~ [humidity] monitor to OPERABLE status.	30 days 30 days	1 3
Action	E. Required Action and associated Completion Time [of Condition A, B, C, or D] not met.	E.1 Be in MODE 3. AND E.2 Be in MODE 5.	6 hours 36 hours	7
DOC L.6	F. ~~All required monitors inoperable.~~ [LCO 3.4.15.a, b, and c Not met.]	F.1 Enter LCO 3.0.3.	Immediately	5

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.4.6.1.a, Table 4.3-3	SR 3.4.15.1	Perform CHANNEL CHECK of the required containment atmosphere radioactivity monitor (5).	12 hours [Unit 1 only]	2
4.4.6.1.a, Table 4.3-3	SR 3.4.15.2	Perform COT of the required containment atmosphere radioactivity monitor (5).	92 days	
4.4.6.1.b	SR 3.4.15.3	Perform CHANNEL CALIBRATION of the required containment sump monitor (5).	~~[18]~~ [24] months	3

5

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
4.4.6.1.a, Table 4.3-3	SR 3.4.15.4	Perform CHANNEL CALIBRATION of the required containment atmosphere radioactivity monitor.	~~18~~ 24 months Unit 1 only	3 2
4.4.6.1.c	SR 3.4.15.5	Perform CHANNEL CALIBRATION of the required containment ~~air cooler condensate flow rate~~ humidity monitor.	~~18~~ 24 months	3 2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

2. ISTS LCO 3.4.15.b and LCO 3.4.15.c for Unit 1 have been revised to be consistent with the current licensing basis. ITS 3.4.15 ACTIONS B, C, and D for Unit 1 have also been revised to be consistent with the equipment reflected in the LCO. In addition, the Completion Times for Unit 1 of "Once per 24 hours" in ISTS 3.4.15 Required Actions B.1.1 and B.1.2 have been changed to "Once per 12 hours." These changes have been made to be consistent with the condition for application of leak-before-break methodology to the pressurizer surge line as documented in a Letter from Indiana Michigan Power Company (M.W. Rencheck) to the NRC dated October 26, 2000 (Letter C1000-20) for Unit 1.

3. The brackets are removed and the proper plant specific information/value is provided.

4. ISTS 3.4.15 Required Action C.1 has been changed from "Perform SR 3.4.15.1" to "Analyze grab samples of the containment atmosphere." The Completion Time of this Required Action is "Once per 24 hours." SR 3.4.15.1 is the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitors. The Surveillance Frequency for SR 3.4.15.1 is every 12 hours. ISTS 3.4.15 Required Action C.1 does not add any additional requirements since SR 3.4.15.1 is normally performed every 12 hours. ITS 3.4.15 Required Action C.1 is consistent with the current licensing basis and is considered appropriate. In addition, the Completion Time of ISTS 3.4.15 Required Action C.2 has been changed from "30 days" to "Once per 24 hours." The normal Frequency of SR 3.4.13.1 is every 72 hours. The ISTS 3.4.15 Required Action C.2 Completion Time of 30 days does not add any additional requirements since SR 3.4.13.1 is normally performed every 12 hours. The Completion Time of ITS 3.4.15 Required Action C.2 of "Once per 24 hours" is consistent with the Completion Time of ITS 3.4.15 Required Action C.1. These changes are necessary since when ITS 3.4.15 Condition C is entered either Required Actions C.1 or Required Action C.2 are required to be met.

5. At CNP, there are actually three distinct containment sumps, each collecting leakage from a different area. The only monitoring instruments that can be used to monitor leakage are the pump runout timers, which provide flow monitoring. Therefore, ISTS LCO 3.4.15, ACTION A, Condition F, and SR 3.4.15.3 are modified to reflect this design.

6. Not Used.

7. The specific Conditions the ACTION applies to have been added, since there is one ACTION it does not apply to (ACTION F). This is also consistent with the BWR/4 and BWR/6 ISTS, NUREGs-1433 and -1434.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.15 RCS Leakage Detection Instrumentation

BASES

Plant Specific Design Criterion 16 ①

BACKGROUND

GDC 30 of Appendix A to 10 CFR 50 (Ref. 1) requires means for detecting and, to the extent practical, identifying the location of the source of RCS LEAKAGE. Regulatory Guide 1.45 (Ref. 2) describes acceptable methods for selecting leakage detection systems. (RG) INSERT 1 ①

Leakage detection systems must have the capability to detect significant reactor coolant pressure boundary (RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus, an early indication or warning signal is necessary to permit proper evaluation of all unidentified LEAKAGE.

Industry practice has shown that water flow changes of 0.5 to 1.0 gpm can be readily detected in contained volumes by monitoring changes in water level, in flow rate, or in the operating frequency of a pump. The containment sump used to collect unidentified LEAKAGE is (or) and air cooler condensate flow rate monitor (are) instrumented to alarm for increases of 0.5 to 1.0 gpm in the normal flow rates. This sensitivity is acceptable for detecting increases in unidentified LEAKAGE. ① INSERT 1A ① has been found ①

The reactor coolant contains radioactivity that, when released to the containment, can be detected by radiation monitoring instrumentation. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. Instrument sensitivities of 10^{-9} µCi/cc radioactivity for particulate monitoring and of 10^{-6} µCi/cc radioactivity for gaseous monitoring are practical for these leakage detection systems. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE.

An increase in humidity of the containment atmosphere would indicate release of water vapor to the containment. Dew point temperature measurements can thus be used to monitor humidity levels of the containment atmosphere as an indicator of potential RCS LEAKAGE. A 1°F increase in dew point is well within the sensitivity range of available instruments.

Since the humidity level is influenced by several factors, a quantitative evaluation of an indicated leakage rate by this means may be

(1) <u>INSERT 1</u>

While Cook Nuclear Plant (CNP) is not committed to RG 1.45, the requirements of RG 1.45 were followed to the extent practical. This was documented in D.C. Cook's response to Generic Letter 84-04 (Ref. 3), and accepted by the NRC as documented in the associated Safety Evaluation Report (Ref. 4).

(1) <u>INSERT 1A</u>

and the monitoring system is capable of detecting a 1 gpm leak within 4 hours.

BASES

BACKGROUND (continued)

questionable and should be compared to observed increases in liquid flow into or from the containment sump (and condensate flow from air coolers). Humidity level monitoring is considered most useful as an indirect alarm or indication to alert the operator to a potential problem. Humidity monitors are not required by this LCO. (1)

Air temperature and pressure monitoring methods may also be used to infer unidentified LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during plant operation, but a rise above the normally indicated range of values may indicate RCS leakage into the containment. The relevance of temperature and pressure measurements are affected by containment free volume and, for temperature, detector location. Alarm signals from these instruments can be valuable in recognizing rapid and sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO. unit (1)

APPLICABLE SAFETY ANALYSES

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary. The system response times and sensitivities are described in the FSAR (Ref. 3). Multiple instrument locations are utilized, if needed, to ensure that the transport delay time of the leakage from its source to an instrument location yields an acceptable overall response time. U (1)

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring RCS LEAKAGE into the containment area is necessary. Quickly separating the identified LEAKAGE from the unidentified LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should a leakage occur detrimental to the safety of the unit and the public. (1) INSERT 1B (Unit 1 only)

RCS leakage detection instrumentation satisfies Criterion 1 of 10 CFR 50.36(c)(2)(ii). (1)

LCO

One method of protecting against large RCS leakage derives from the ability of instruments to rapidly detect extremely small leaks. This LCO requires instruments of diverse monitoring principles to be OPERABLE to provide a high degree of confidence that extremely small leaks are detected in time to allow actions to place the plant in a safe condition, when RCS LEAKAGE indicates possible RCPB degradation. unit (1)

(1) **INSERT 1B** <unit 1 only>

In addition, a specific leak before break analysis was performed for the pressurizer surge line (Ref. 6), which assumed the operators would be capable of identifying a leak from this location prior to propagation of the break. The containment atmosphere particulate radioactivity monitor was specifically assumed in this analysis.

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INSERT 2A (unit 1 only) (3)

BASES

LCO (continued)

INSERT 2 (unit 1 only) (3)

Unit 1 Only

The LCO is satisfied when monitors of diverse measurement means are available. Thus, the containment sump monitor, in combination with a gaseous or particulate radioactivity monitor and a containment air cooler condensate flow rate monitor, provides an acceptable minimum. (3) (3) INSERT 2A (unit 1 only) (3)

humidity

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE. INSERT 3 (Unit 2 only)

In MODE 5 or 6, the temperature is to be ≤ 200°F and pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation are much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6. INSERT 4 (1)

ACTIONS

The Actions are modified by a Note that indicates that the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when the containment sump and required radiation monitors are inoperable. This allowance is provided because other instrumentation is available to monitor RCS LEAKAGE. TSTF-359

A.1 and A.2

one or more (3)

With the required containment sump monitor(s) inoperable, no other form of sampling can provide the equivalent information; however, the containment atmosphere radioactivity monitor will provide indications of changes in leakage. Together with the atmosphere monitor, the periodic surveillance for RCS water inventory balance, SR 3.4.13.1, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable temperature, RCS pressure, power level, and pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant unit conditions are established. (4) (1)

Restoration of the required sump monitor(s) to OPERABLE status within a Completion Time of 30 days is required to regain the function after the monitor's failure of the monitor(s). This time is acceptable, considering the Frequency and (3) (3)

(3) **(Unit 1 only)**
INSERT 2

in each sump (lower containment, reactor cavity, and pipe tunnel)

(3) **(Unit 1 only)**
INSERT 2A

or containment gaseous radioactivity

(3) **(Unit 1 only)**
INSERT 2B

In addition, for a containment sump monitor to be OPERABLE, its associated sump pump and integrator must also be OPERABLE.

(3) **(Unit 2 only)**
INSERT 3

The LCO is satisfied when monitors of diverse measurement means are available. Thus, one containment sump monitor in each sump (lower containment, reactor cavity, and pipe tunnel), in combination with a gaseous or particulate radioactivity monitor and a containment humidity monitor, provide an acceptable minimum. In addition, for a containment sump monitor to be OPERABLE, its associated sump pump and integrator must also be OPERABLE.

(1) **INSERT 4**

In MODE 6 the temperature is low and the pressure is maintained low or at atmospheric pressure.

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BASES

ACTIONS (continued)

adequacy of the RCS water inventory balance required by Required Action A.1.

B.1.1, B.1.2, B.2.1, and B.2.2

With both gaseous and particulate containment atmosphere radioactivity monitoring instrumentation channels inoperable, alternative action is required. Either grab samples of the containment atmosphere must be taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information.

With a sample obtained and analyzed or water inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of the required containment atmosphere radioactivity monitors. Alternatively, continued operation is allowed if the air cooler condensate flow rate monitoring system is OPERABLE, provided grab samples or water inventory balances performed are taken every 24 hours.

The 24 hour interval provides periodic information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state operation (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established. The 30 day Completion Time recognizes at least one other form of leakage detection is available.

C.1 and C.2

With the required containment air cooler condensate flow rate monitor inoperable, alternative action is again required. Either SR 3.4.15.1 must be performed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information. Provided a CHANNEL CHECK is performed every 8 hours or a water inventory balance is performed every 24 hours, reactor operation may continue while awaiting restoration of the containment air cooler condensate flow rate monitor to OPERABLE status.

The 24 hour interval provides periodic information that is adequate to detect RCS LEAKAGE. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after establishing steady state

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3

(Unit 1 only)
INSERT 5

or containment gaseous radioactivity

3

INSERT 6

grab samples of the containment atmosphere must be taken and analyzed or water inventory balances,

3

(Unit 1 only)
INSERT 7

or containment gaseous radioactivity

BASES

ACTIONS (continued)

operation (stable temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established.

D.1 and D.2

With the required containment atmosphere radioactivity monitor and the required containment air cooler condensate flow rate monitor inoperable, the only means of detecting leakage is the containment sump monitor. This Condition does not provide the required diverse means of leakage detection. The Required Action is to restore either of the inoperable required monitors to OPERABLE status within 30 days to regain the intended leakage detection diversity. The 30 day Completion Time ensures that the plant will not be operated in a reduced configuration for a lengthy time period.

E.1 and E.2

If a Required Action of Condition A, B, C, or D cannot be met, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 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.

F.1

With all required monitors inoperable, no automatic means of monitoring leakage are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. The check gives reasonable confidence that the channel is operating properly. The Frequency of 12 hours is based on instrument reliability and is reasonable for detecting off normal conditions.

(2) **INSERT 8**

The 30 day Completion Time recognizes at least one other form of leakage detection is available.

(4) **INSERT 9**

and associated Completion Time

(3) **INSERT 10**

(i.e., LCO 3.4.15.a, b, and c not met)

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.15.2

SR 3.4.15.2 requires the performance of a COT on the required containment atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. The test verifies the alarm setpoint and relative accuracy of the instrument string. The Frequency of 92 days considers instrument reliability, and operating experience has shown that it is proper for detecting degradation.

SR 3.4.15.3, SR 3.4.15.4, and SR 3.4.15.5

These SRs require the performance of a CHANNEL CALIBRATION for each of the RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. The Frequency of [18] months is a typical refueling cycle and considers channel reliability. Again, operating experience has proven that this Frequency is acceptable.

(2) (2) (24) (1) (and) (4)

REFERENCES

1. 10 CFR 50, Appendix A, Section IV, GDC 30. (UFSAR, Section 1.4.3) (1)
2. Regulatory Guide 1.45, (Rev. 0) (1)
3. FSAR, Section [ ]. (4.2.7) (5) (4) (1) (2)

INSERT 11 (1)

INSERT 12 (Unit 1 only) (1)

(1) **INSERT 11**

3. AEP Letter to NRC, AEP:NRC:0137D, "NRC Generic Letter 84-04; Elimination Of Postulated Pipe Breaks In Primary Main Loops Generic Issue A-2, Asymmetric Blowdown Loads On PWR Primary Systems Request For License Condition Deletion," dated September 10, 1984.

4. NRC Letter to AEP, "Generic Letter 84-04, Safety Evaluation of Westinghouse Topical Reports Dealing With Elimination of Postulated Pipe Breaks in PWR Primary Main Loops," dated November 22, 1985.

(1) **(Unit 1 only)**
INSERT 12

6. WCAP-15435, Rev. 1, Technical Justification for Eliminating Pressurizer Surge Line Rupture as the Structural Design Basis for D.C. Cook Units 1 and 2 Nuclear Power Plant, August 2000.

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.15 BASES, RCS LEAKAGE DETECTION INSTRUMENTATION

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The brackets are removed and the proper plant specific information/value is provided.

3. Changes are made to reflect changes made to the ISTS. The subsequent requirements are renumbered or revised, where applicable, to reflect the changes.

4. Editorial change made for consistency with other places in the Bases.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.15, RCS LEAKAGE DETECTION INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 16

ITS 3.4.16, RCS Specific Activity

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

LCO 3.4.16 3.4.8 The specific activity of the reactor coolant shall be limited to:

SR 3.4.16.2 a. Less than or equal to 1 microCurie per gram DOSE EQUIVALENT I-131, and

SR 3.4.16.1 b. Less than or equal to 100/Ē microCuries per gram of gross radioactivity.

APPLICABILITY: MODES 1, 2, 3, 4 and 5 — L.1

ACTION:

MODES 1, 2 and 3*

ACTION A / ACTION B a. With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in HOT STANDBY with T_{avg} less than 500°F within 6 hours.

ACTION B b. With the specific activity of the reactor coolant greater than 100/ Ē microCuries per gram, be in HOT STANDBY with T_{avg} less than 500°F within 6 hours.

ACTION A Note c. Specification 3.0.4.c is applicable.

MODES 1, 2, 3, 4 and 5 — L.1

ACTION A a. With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 or greater than 100/Ē microCuries per gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the reactor coolant is restored to within its limits. — L.3, A.2

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1, SR 3.4.16.2, SR 3.4.16.3 4.4.8 The specific activity of the reactor coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

APPLICABILITY *With T_{avg} greater than or equal to 500°F.

A.1

ITS

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TABLE 4.4-4

PRIMARY COOLANT SPECIFIC ACITIVITY SAMPLE AND ANALYSIS PROGRAM

ITS	TYPE OF MEASUREMENT AND ANALYSIS	MINIMUM FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED	
SR 3.4.16.1	1. Gross Activity Determination	3 times per 7 days with a maximum time of 72 hours between samples.	1, 2, 3, 4	L.1, L.4
SR 3.4.16.2	2. Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration	1 per 14 days	1	LA.1
SR 3.4.16.3	3. Radiochemical for Ē Determination	1 per 6 months* (Add proposed Note to SR 3.4.16.3)		L.5, A.1
Required Action A.1	4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 µCi/gram DOSE EQUIVALENT I-131 or 100/Ē µCi/gram, and	1#, 2#, 3#, 4#, 5#	L.1, LA.1, L.3
SR 3.4.16.2		b) One sample between 2 & 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3	L.1

#Until the specific activity of the primary coolant system is restored within its limits. (A.2)

SR 3.4.16.3 *Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer.

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A.1

ITS

Figure 3.4.16-1

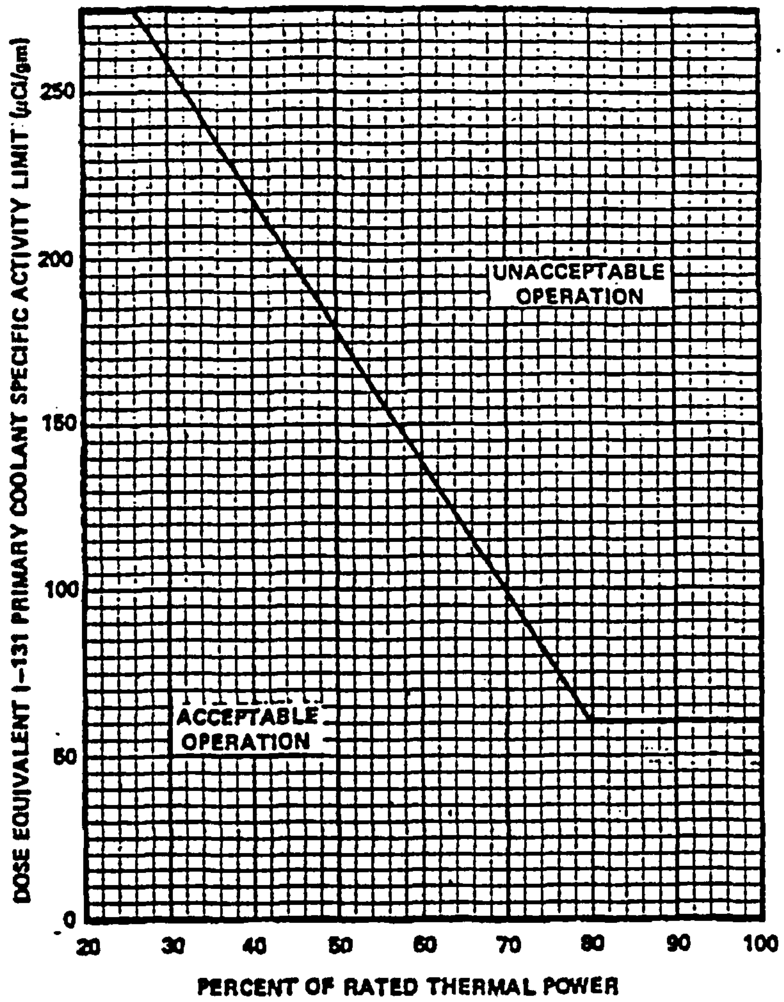

FIGURE 3.4-1

DOSE EQUIVALENT I-131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity >1.0μCi/gram Dose Equivalent I-131

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

LCO 3.4.16 3.4.8 The specific activity of the primary coolant shall be limited to:

SR 3.4.16.2 a. Less than or equal to 1 microCurie per gram DOSE EQUIVALENT I-131, and

SR 3.4.16.1 b. Less than or equal to 100/ Ē microCuries per gram of gross radioactivity.

APPLICABILITY: MODES 1, 2, 3, 4 and 5 (L.1)

ACTION:

MODES 1, 2 and 3*

ACTION A, ACTION B a. With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1, be in HOT STANDBY with T_{avg} less than 500°F within 6 hours.

ACTION B b. With the specific activity of the reactor coolant greater than 100/ Ē microCuries per gram, be in HOT STANDBY with T_{avg} less than 500°F within 6 hours.

ACTION A Note c. Specification 3.0.4.c is applicable.

MODES 1, 2, 3, 4 and 5 (L.1)

ACTION A a. With the specific activity of the reactor coolant greater than 1 microCurie per gram DOSE EQUIVALENT I-131 ~~or greater than 100/ Ē microCuries per gram~~, perform the sampling and analysis requirements of item 4a of Table 4.4-4 ~~until the specific activity of the reactor coolant is restored to within its limits~~. (L.3) (A.2)

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1, SR 3.4.16.2, SR 3.4.16.3 4.4.8 The specific activity of the reactor coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

* With T_{avg} greater than or equal to 500°F.

APPLICABILITY

ITS 3.4.16

A.1

ITS

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TABLE 4.4-4

PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM

D.C. COOK - UNIT 2

ITS		TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
SR 3.4.16.1	1.	Gross Activity Determination	At least once per 72 hours (7 days) L.4	1, 2, 3, 4 L.1
SR 3.4.16.2	2.	Isotopic Analysis for DOSE EQUIVALENT I-131 Concentration LA.1	1 per 14 days	1
SR 3.4.16.3	3.	Radiochemical for Ē Determination	1 per 6 months* (Add proposed Note to SR 3.4.16.3) L.5	1
Required Action A.1	4.	Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 1.0 µCi/gram DOSE EQUIVALENT I-131 or 100/Ē µCi/gram, and LA.1 L.3	1#, 2#, 3#, 4#, 5# L.1
SR 3.4.16.2			b) One sample between 2 & 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3 L.1

#Until the specific activity of the primary coolant system is restored within its limits. A.2

SR 3.4.16.3 *Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since reactor was last subcritical for 48 hours or longer.

A.1

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ITS 3.4.16

A.1

Figure 3.4.16-1

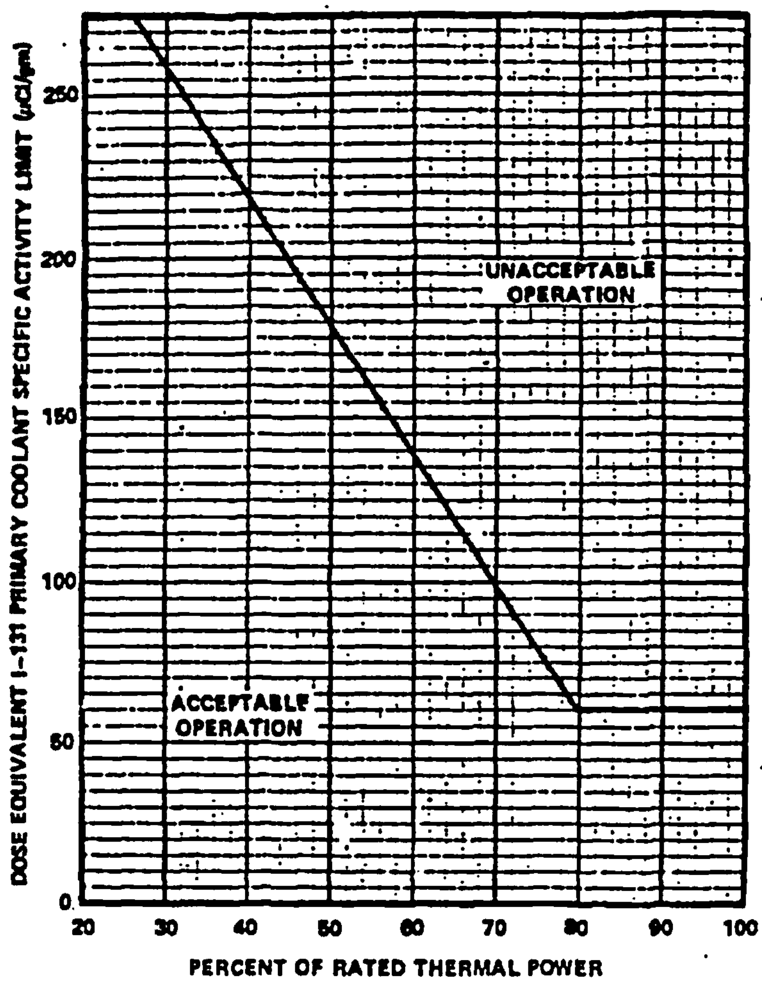

FIGURE 3.4-1

DOSE EQUIVALENT I-131 Primary Coolant Specific Activity Limit Versus Percent of RATED THERMAL POWER with the Primary Coolant Specific Activity > 1.0μCi/gram Dose Equivalent I-131

DISCUSSION OF CHANGES
ITS 3.4.16, RCS SPECIFIC ACTIVITY

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.8 Action a (MODES 1, 2, 3, 4, and 5) and CTS Table 4.4-4, Footnote #, require the isotopic analysis for iodine to be performed until the specific activity of the primary coolant system is restored to within limits. ITS 3.4.16 Required Action A.1 requires this same analysis, however the explicit statement to perform the isotopic analysis for iodine until the limits are met has been deleted. This changes the CTS by deleting the explicit statement to perform the isotopic analysis for iodine until the limits are met.

The purpose of the CTS 3.4.8 Action a (MODES 1, 2, 3, 4, and 5) and CTS Table 4.4-4 is to ensure the Surveillance is performed to determine whether the specific activity is met. This statement is not necessary in the ITS, because ITS LCO 3.0.2 requires the Required Actions of the associated Conditions to be met upon discovery of failure to meet an LCO. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. This change is acceptable since ITS LCO 3.0.4 will require the Required Action to be performed until the LCO is met. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Table 4.4-4, Item 2 requires an isotopic analysis to determine whether DOSE EQUIVALENT I-131 concentration is within limit. CTS Table 4.4-4, Item 4 requires an isotopic analysis for iodine including I-131, I-133, and I-135. ITS SR 3.4.16.2 requires the verification that reactor coolant DOES EQUIVALENT I-131 specific activity is within limit. ITS 3.4.16 Required Action A.1 requires the verification that DOSE EQUIVALENT I-131 is within the acceptable region. This changes the CTS by moving the detail that an isotopic analysis must be performed to satisfy the requirements of the Surveillances to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.4.16.2 and ITS 3.4.16 Required Action A.1 still retain the requirements to verify reactor coolant DOSE EQUIVALENT I-131 is within limit. Also, this change is acceptable because these types of procedural details will be adequately controlled ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 2 – Relaxation of Applicability)* CTS 3.4.8 is applicable in MODES 1, 2, 3, 4, and 5. In addition, the testing for gross activity determination in CTS Table 4.4-4 is required in MODES 1, 2, 3, and 4 and the isotopic analysis for iodine requirement in CTS Table 4.4-4 is required periodically in MODES 1, 2, 3, 4, and 5 and after a 15% RTP change in MODES 1, 2, and 3. ITS 3.4.16, including the Surveillances, is applicable in MODES 1 and 2, and MODE 3 with RCS $T_{avg} \geq 500°F$. This changes the CTS by reducing the MODES in which the LCO is applicable, including the Surveillances, to only MODES 1 and 2, and MODES 3 with RCS $T_{avg} \geq 500°F$.

The purpose of CTS 3.4.8 is to ensure that the specific activity of the RCS is within the assumptions of the Steam Generator Tube Rupture (SGTR) analysis. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. During operation in MODE 3 with RCS $T_{avg} < 500°F$, and in MODES 4 and 5, the release of radioactivity in the event of a SGTR is unlikely because the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L.2 Not used.

L.3 *(Category 4 – Relaxation of Required Action)* CTS 3.4.8 Action a (MODES 1, 2, 3, 4, and 5) and CTS Table 4.4-4, Item 4, part a, require isotopic analysis for iodine once per 4 hours when the specific activity exceeds $100/\bar{E}$ μCi/gm. The ITS does not contain this Action. This changes the CTS by eliminating a conditionally performed Surveillance when gross activity exceeds $100/\bar{E}$ μCi/gm.

DISCUSSION OF CHANGES
ITS 3.4.16, RCS SPECIFIC ACTIVITY

The purpose of CTS 3.4.8 Action a (MODES 1, 2, 3, 4, and 5) and CTS Table 4.4-4, Item 4, part a is to monitor iodine activity when the specific activity limits are exceeded. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. When specific activity exceeds $100/\bar{E}$ µCi/gm, ITS 3.4.16 Required Action B.1 and CTS 3.4.8 Action b (MODES 1 and 2, and MODE 3 with $T_{avg} \geq 500°F$) require the plant to be in MODE 3 with $T_{avg} < 500°F$ within 6 hours. Monitoring of $\bar{E}$ is required in order to determine if the LCO is met and the ACTION can be exited. Furthermore, if the Condition is entered and the unit is in MODE 2 in 4 hours or less, the Required Action is in conflict with the Note of ITS SR 3.4.16.2, which states that this SR is only required in MODE 1. Finally, this action is an unnecessary burden as the unit is required to be in MODE 3 with $T_{avg} < 500°F$ within 6 hours, exiting the Applicability. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.4 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS Table 4.4-4, Item 1, requires gross activity to be determined three times per 7 days with a maximum time of 72 hours between samples (Unit 1) and at least once per 72 hours (Unit 2). ITS SR 3.4.16.1 requires verification that the reactor coolant gross specific activity is $\leq 100/\bar{E}$ µCi/gm every 7 days. This changes the CTS by reducing the Frequency from three times per 7 days with a maximum time of 72 hours between samples (Unit 1) and at least once per 72 hours (Unit 2) to 7 days for both units.

The purpose of CTS Table 4.4-4, Item 1, is to obtain a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, which provides an indication of increases in gross specific activity. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of monitoring. A Frequency of 7 days provides sufficient information to trend the results in order to detect gross fuel failure, while considering the low probability of a gross fuel failure between performances. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.5 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS Table 4.4-4, Item 3, requires radiochemical determination of $\bar{E}$ once per 6 months. Footnote * states that the sample is to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since the reactor was last subcritical for 48 hours or longer. ITS SR 3.4.16.3 requires $\bar{E}$ to be determined from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours. ITS SR 3.4.16.3 is modified by a

DISCUSSION OF CHANGES
ITS 3.4.16, RCS SPECIFIC ACTIVITY

Note which states, "Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for $\geq$ 48 hours." This changes the CTS by putting a limit, 31 days, on when the Surveillance must be performed after the requisite conditions are met.

The purpose of CTS Table 4.4-4, Item 3, is to determine the value of $\overline{E}$ when the isotopic concentrations in the core are stable. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of monitoring. Circumstances could arise in which the 6 month Frequency for performance of the SR has passed but the operating conditions for performance of the test have not been met. In this circumstance, the Surveillance would be immediately past due as soon as the operating conditions are met. The ITS Note allows 31 days to perform the Surveillance after the operating conditions are met. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

LCO 3.4.8

LCO 3.4.16 The specific activity of the reactor coolant shall be within limits.

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS average temperature (T_{avg}) ≥ 500°F.

ACTIONS

Action a, Action c

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	- NOTE - LCO 3.0.4 is ~~not~~ .c applicable.	
	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1.	Once per 4 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	48 hours
B. Gross specific activity of the reactor coolant not within limit.	B.1 Be in MODE 3 with T_{avg} < 500°F.	6 hours

TSTF-359

1

CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Actions a and b (MODES 1, 2, and 3)	~~C.~~ B. Required Action and associated Completion Time of Condition A not met.	~~C~~.1 B Be in MODE 3 with T_{avg} < 500°F.	6 hours	①
	OR			
Action a (MODE 1, 2, 3, 4, and 5)	DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.	INSERT 1		①
Action b				

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY
4.4.8 Table 4.4-4	SR 3.4.16.1	Verify reactor coolant gross specific activity ≤ 100/Ē μCi/gm.	7 days
4.4.8 Table 4.4-4	SR 3.4.16.2	- NOTE - Only required to be performed in MODE 1. Verify reactor coolant DOSE EQUIVALENT I-131 specific activity ≤ 1.0 μCi/gm.	14 days AND Between 2 and 6 hours after a THERMAL POWER change of ≥ 15% RTP within a 1 hour period

(1)

INSERT 1

OR

Gross specific activity of the reactor coolant not within limit.

4.4.8
Table 4.4-4

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.4.16.3	- NOTE - Not required to be performed until 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	
	Determine Ē from a sample taken in MODE 1 after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for ≥ 48 hours.	184 days

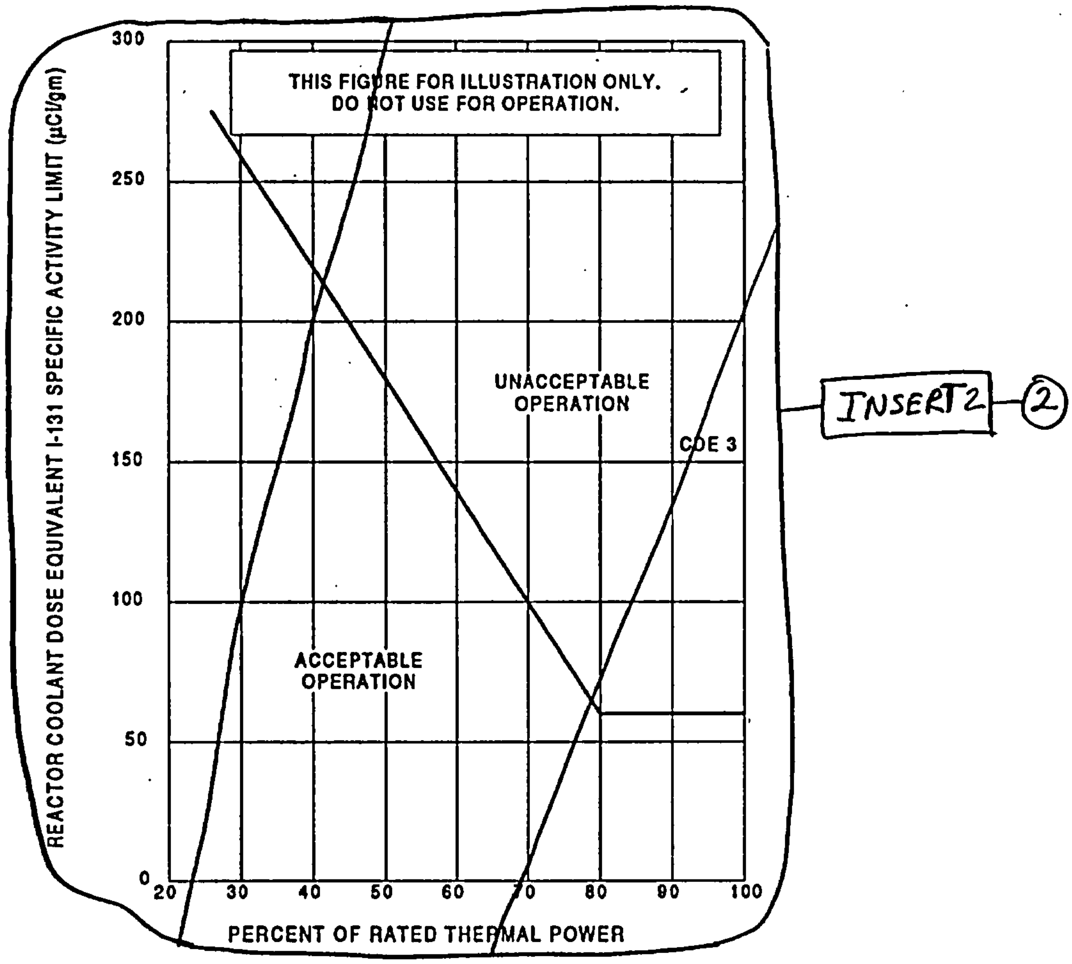
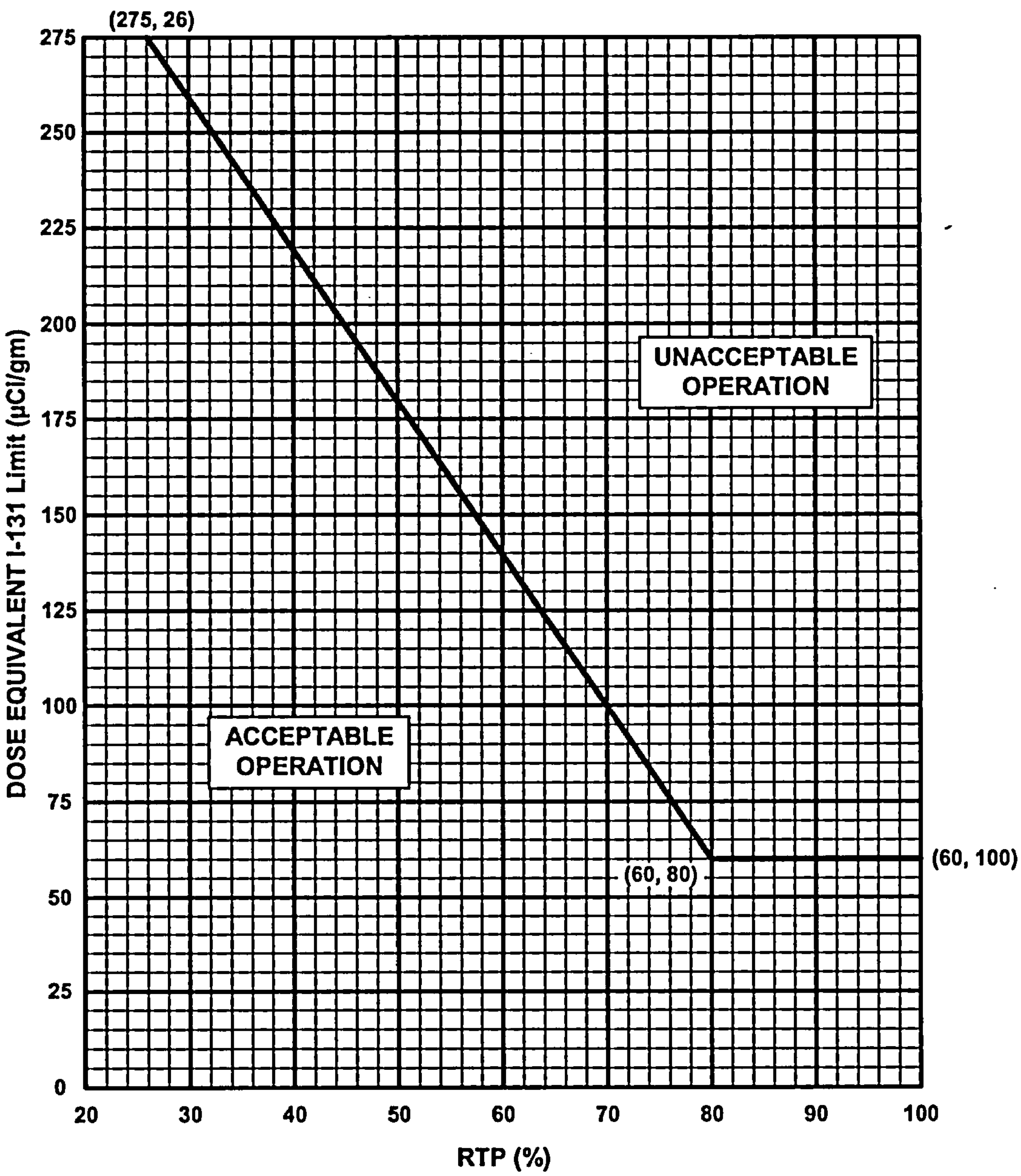


Figure 3.4.16-1 (page 1 of 1)
Reactor Coolant DOSE EQUIVALENT I-131 Specific Activity Limit Versus Percent of RATED THERMAL POWER

2

INSERT 2


(275, 26)
275
250
225
200
175
150
125
100
75
50
25
0
DOSE EQUIVALENT I-131 Limit (μCi/gm)
UNACCEPTABLE OPERATION
ACCEPTABLE OPERATION
(60, 80)
(60, 100)
20
30
40
50
60
70
80
90
100
RTP (%)

JUSTIFICATION FOR DEVIATIONS
ITS 3.4.16, RCS SPECIFIC ACTIVITY

1. ISTS 3.4.16 ACTION B has been deleted and incorporated in ISTS 3.4.16 ACTION C (ITS 3.4.16 ACTION B) because the Required Actions are identical (be in MODE 3 with $T_{avg} < 500°F$). In NUREG-1431, Rev. 1, ISTS 3.4.16 ACTION B contained an additional Required Action. This Required Action was deleted in NUREG-1431, Rev. 2, as a result of approved TSTF-28. ACTION B should have been deleted as a result of the application of TSTF-28, but was not. This changes the ISTS to be consistent with other Specifications where ACTION Conditions are combined when the same Required Actions apply.

2. The CNP reactor coolant DOSE EQUIVALENT I-131 specific power limit verses percent of RATED THERMAL POWER curve is substituted for the curve provided for illustration in the ISTS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.16 RCS Specific Activity

BASES

BACKGROUND

The maximum dose to the whole body and the thyroid that an individual at the site boundary can receive for 2 hours during an accident is specified in 10 CFR 100 (Ref. 1). The limits on specific activity ensure that the doses are held to a small fraction of the 10 CFR 100 limits during analyzed transients and accidents.

The RCS specific activity LCO limits the allowable concentration level of radionuclides in the reactor coolant. The LCO limits are established to minimize the offsite radioactivity dose consequences in the event of a steam generator tube rupture (SGTR) accident.

The LCO contains specific activity limits for both DOSE EQUIVALENT I-131 and gross specific activity. The allowable levels are intended to limit the 2 hour dose at the site boundary to a small fraction of the 10 CFR 100 dose guideline limits. The limits in the LCO are standardized, based on parametric evaluations of offsite radioactivity dose consequences for typical site locations.

The parametric evaluations showed the potential offsite dose levels for a SGTR accident were an appropriately small fraction of the 10 CFR 100 dose guideline limits. Each evaluation assumes a broad range of site applicable atmospheric dispersion factors in a parametric evaluation.

APPLICABLE SAFETY ANALYSES

The LCO limits on the specific activity of the reactor coolant ensures that the resulting 2 hour doses at the site boundary will not exceed a small fraction of the 10 CFR 100 dose guideline limits following a SGTR accident. The SGTR safety analysis (Ref. 2) assumes the specific activity of the reactor coolant at the LCO limit and an existing reactor coolant steam generator (SG) tube leakage rate of 1 gpm. The safety analysis assumes the specific activity of the secondary coolant at its limit of 0.1 μCi/gm DOSE EQUIVALENT I-131 from LCO 3.7.8 (17), "Secondary Specific Activity." (3)

The analysis for the SGTR accident establishes the acceptance limits for RCS specific activity. Reference to this analysis is used to assess changes to the unit that could affect RCS specific activity, as they relate to the acceptance limits. (6)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The analysis is for two cases of reactor coolant specific activity. One case assumes specific activity at 1.0 μCi/gm DOSE EQUIVALENT I-131 with a concurrent large iodine spike that increases the I-131 activity in the reactor coolant by a factor of about 50 immediately after the accident. The second case assumes the initial reactor coolant iodine activity at 60.0 μCi/gm DOSE EQUIVALENT I-131 due to a pre-accident iodine spike caused by an RCS transient. In both cases, the noble gas activity in the reactor coolant assumes 1% failed fuel, which closely equals the LCO limit of 100/Ē μCi/gm for gross specific activity.

evolution (1)
increase in
INSERT 1

The analysis also assumes a loss of offsite power at the same time as the SGTR event. The SGTR causes a reduction in reactor coolant inventory. The reduction initiates a reactor trip from a low pressurizer pressure signal or an RCS overtemperature ΔT signal.

The coincident loss of offsite power causes the steam dump valves to close to protect the condenser. The rise in pressure in the ruptured SG discharges radioactively contaminated steam to the atmosphere through the SG power operated relief valves and the main steam safety valves. The unaffected SGs remove core decay heat by venting steam to the atmosphere until the cooldown ends.

(if their setpoint is reached) (1)

The safety analysis shows the radiological consequences of an SGTR accident are within a small fraction of the Reference 1 dose guideline limits. Operation with iodine specific activity levels greater than the LCO limit is permissible, if the activity levels do not exceed the limits shown in Figure 3.4.16-1, in the applicable specification, for more than 48 hours. The safety analysis has concurrent and pre-accident iodine spiking levels up to 60.0 μCi/gm DOSE EQUIVALENT I-131.

INSERT 1A (1)

The remainder of the above limit permissible iodine levels shown in Figure 3.4.16-1 are acceptable because of the low probability of a SGTR accident occurring during the established 48 hour time limit. The occurrence of an SGTR accident at these permissible levels could increase the site boundary dose levels, but still be within 10 CFR 100 dose guideline limits.

The limits on RCS specific activity are also used for establishing standardization in radiation shielding and plant personnel radiation protection practices. (1)

RCS specific activity satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). (1)

(1) **INSERT 1**

based on an evolution rate that is 500 times normal equilibrium rate for a spike duration of 6 hours

(1) **INSERT 1A**

and, for the concurrent iodine spike case, has a linear increasing DOSE EQUIVALENT I-131 level beginning immediately after the accident and reaching a maximum level in 6 hours (when fuel cladding gap iodine inventory has been depleted).

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BASES

LCO	The specific iodine activity is limited to 1.0 µCi/gm DOSE EQUIVALENT I-131, and the gross specific activity in the reactor coolant is limited to the number of µCi/gm equal to 100 divided by Ē (average disintegration energy of the sum of the average beta and gamma energies of the coolant nuclides). The limit on DOSE EQUIVALENT I-131 ensures the 2 hour thyroid dose to an individual at the site boundary during the Design Basis Accident (DBA) will be a small fraction of the allowed thyroid dose. The limit on gross specific activity ensures the 2 hour whole body dose to an individual at the site boundary during the DBA will be a small fraction of the allowed whole body dose. The SGTR accident analysis (Ref. 2) shows that the 2 hour site boundary dose levels are within acceptable limits. Violation of the LCO may result in reactor coolant radioactivity levels that could, in the event of an SGTR, lead to site boundary doses that exceed the 10 CFR 100 dose guideline limits.
APPLICABILITY	In MODES 1 and 2, and in MODE 3 with RCS average temperature ≥ 500°F, operation within the LCO limits for DOSE EQUIVALENT I-131 and gross specific activity are necessary to contain the potential consequences of an SGTR to within the acceptable site boundary dose values. For operation in MODE 3 with RCS average temperature < 500°F, and in MODES 4 and 5, the release of radioactivity in the event of a SGTR is unlikely since the saturation pressure of the reactor coolant is below the lift pressure settings of the main steam safety valves.
ACTIONS	<u>A.1 and A.2</u> With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to ~~demonstrate~~ verify that the limits of Figure 3.4.16-1 are not exceeded. INSERT 1B The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is done to continue to provide a trend. (2) (1) The DOSE EQUIVALENT I-131 must be restored to within limits within 48 hours. The Completion Time of 48 hours is required, if the limit violation resulted from normal iodine spiking. INSERT 1C ~~A Note to the Required Action of Condition A excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE(S) while relying on the ACTIONS even though the ACTIONS may eventually require plant shutdown.~~ This ~~exception~~ allowance is acceptable due to TSTF-359

(1) **INSERT 1B**

An isotopic analysis of a reactor coolant sample must be performed for at least I-131, I-133, and I-135.

(TSTF-359) **INSERT 1C**

A Note permits the use of the provisions of LCO 3.0.4.c. This allowance permits entry into the applicable MODE(S) while relying on the ACTIONS.

BASES

ACTIONS (continued)

the significant conservatism incorporated into the specific activity limit, the low probability of an event which is limiting due to exceeding this limit, and the ability to restore transient specific activity excursions while the plant remains at, or proceeds to power operation. (1)

unit

B.1

With the gross specific activity in excess of the allowed limit, the unit must be placed in a MODE in which the requirement does not apply.

The change within 6 hours to MODE 3 and RCS average temperature < 500°F lowers the saturation pressure of the reactor coolant below the setpoints of the main steam safety valves and prevents venting the SG to the environment in an SGTR event. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems. (3)

B C.1 (2)

If a Required Action and the associated Completion Time of Condition A is not met or if the DOSE EQUIVALENT I-131 is in the unacceptable region of Figure 3.4.16-1, the reactor must be brought to MODE 3 with RCS average temperature < 500°F within 6 hours. The Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 below 500°F from full power conditions in an orderly manner and without challenging plant systems. (3) (3) (1)

INSERT 2

unit

SURVEILLANCE REQUIREMENTS

SR 3.4.16.1

SR 3.4.16.1 requires performing a gamma isotopic analysis as a measure of the gross specific activity of the reactor coolant at least once every 7 days. While basically a quantitative measure of radionuclides with half lives longer than 15 minutes, excluding iodines, this measurement is the sum of the degassed gamma activities and the gaseous gamma activities in the sample taken. This Surveillance provides an indication of any increase in gross specific activity.

Trending the results of this Surveillance allows proper remedial action to be taken before reaching the LCO limit under normal operating conditions. The Surveillance is applicable in MODES 1 and 2, and in MODE 3 with T_{avg} at least 500°F. The 7 day Frequency considers the unlikelihood of a gross fuel failure during the time. (2)

(3) **INSERT 2**

or if gross specific activity of the reactor coolant is not within limit,

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.16.2 INSERT 3 (2)

This Surveillance is performed in MODE 1 only to ensure iodine remains within limit during normal operation and following fast power changes when fuel failure is more apt to occur. The 14 day Frequency is adequate to trend changes in the iodine activity level, considering gross activity is monitored every 7 days. The Frequency, between 2 and 6 hours after a power change ≥ 15% RTP within a 1 hour period, is established because the iodine levels peak during this time following fuel failure; samples at other times would provide inaccurate results.

SR 3.4.16.3

A radiochemical analysis (unit) for Ē determination is required every 184 days (6 months) with the plant (unit) operating in MODE 1 equilibrium conditions. (2) (1) The Ē determination directly relates to the LCO and is required to verify plant (unit) operation within the specified gross activity LCO limit. The analysis for Ē is a measurement of the average energies per disintegration for isotopes with half lives longer than 15 minutes, excluding iodines. The Frequency of 184 days recognizes Ē does not change rapidly. (1)

This SR has been modified by a Note that indicates sampling is (not) required to be performed within (until) 31 days after a minimum of 2 effective full power days and 20 days of MODE 1 operation have elapsed since the reactor was last subcritical for at least 48 hours. This ensures that the radioactive materials are at equilibrium so the analysis for Ē is representative and not skewed by a crud burst or other similar abnormal event. (2)

REFERENCES

1. 10 CFR 100.11 (1973). (4)

2. (U)FSAR, Section (15.6.3) (14.2.4). (1) (5)

(2) **INSERT 3**

This Surveillance requires the verification that the reactor coolant DOSE EQUIVALENT I-131 specific activity is within limit. This Surveillance is accomplished by performing an isotopic analysis of a reactor coolant sample.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.4.16 BASES, RCS SPECIFIC ACTIVITY

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. Changes are made to be consistent with the ISTS.

3. Changes are made to be consistent with changes made to the ISTS.

4. The Reference to 10 CFR 100.11 is revised to eliminate the referenced year. The most recent version of the Code of Federal Regulations is applicable and referencing a year is unnecessary.

5. The brackets have been removed and the proper plant specific information/value has been provided.

6. This statement is redundant and has been deleted. Any time the unit is modified, appropriate safety analyses must be reviewed.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.4.16, RCS SPECIFIC ACTIVITY

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 17

Relocated/Deleted Current Technical Specifications (CTS)

CTS 3/4.4.7, Chemistry

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CTS 3/4.4.7

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

CHEMISTRY

LIMITING CONDITION FOR OPERATION

3.4.7 The Reactor Coolant System chemistry shall be maintained within the limits specified in Table 3.4-1.

APPLICABILITY: At all times.

ACTION:

MODES 1, 2, 3 and 4

a. With any one or more chemistry parameter in excess of its Steady State Limit but within its Transient Limit, restore the Parameter to within its Steady State Limit within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any one or more chemistry parameter in excess of its Transient Limit, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

At all other times

With the concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Steady State Limit for more than 24 hours or in excess of its Transient Limit, reduce the pressurizer pressure to ≤ 500 psig, if applicable, and perform an analysis to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operations prior to increasing the pressurizer pressure above 500 psig or prior to proceeding to MODE 4.

SURVEILLANCE REQUIREMENTS

4.4.7 The Reactor Coolant System chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in Table 4.4-3. Performance of this surveillance is not required when the reactor is defueled with no forced circulation.

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R.1

TABLE 3.4-1

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS

PARAMETER	STEADY STATE LIMIT	TRANSIENT LIMIT
DISSOLVED OXYGEN*	≤ 0.10 ppm	≤ 1.00 ppm
CHLORIDE	≤ 0.15 ppm	≤ 1.50 ppm
FLUORIDE	≤ 0.15 ppm	≤ 1.50 ppm

*Limits not applicable with T_{avg} ≤ 250°F.

CTS 3/4.4.7

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

TABLE 4.4-3

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

PARAMETER	SAMPLE AND ANALYSIS FREQUENCY
DISSOLVED OXYGEN*	At least once per 72 hours
CHLORIDE	At least once per 72 hours
FLUORIDE	At lease once per 72 hours

*Not required with $T_{avg} \leq 250°F$.

COOK NUCLEAR PLANT-UNIT 1 | Page 3/4 4-20 | AMENDMENT 231

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

CHEMISTRY

LIMITING CONDITION FOR OPERATION

3.4.7 The Reactor Coolant System chemistry shall be maintained within the limits specified in Table 3.41.

APPLICABILITY: At all times.

ACTION:

MODES 1, 2, 3 and 4

a. With any one or more chemistry parameter in excess of its Steady State Limit but within its Transient Limit, restore the Parameter to within its Steady State Limit within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any one or more chemistry parameter in excess of its Transient Limit, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

At all other times

With the concentration of either chloride or fluoride in the Reactor Coolant System in excess of its Steady State Limit for more than 24 hours or in excess of its Transient Limit, reduce the pressurizer pressure to ≤ 500 psig, if applicable, and perform an engineering evaluation to determine the effects of the out-of-limit condition on the structural integrity of the Reactor Coolant System; determine that the Reactor Coolant System remains acceptable for continued operation prior to increasing the pressurizer pressure above 500 psig or prior to proceeding to MODE 4.

SURVEILLANCE REQUIREMENTS

4.4.7 The Reactor Coolant System chemistry shall be determined to be within the limits by analysis of those parameters at the frequencies specified in Table 4.4-3. Performance of this surveillance is not required when the reactor is defueled with no forced circulation.

CTS 3/4.4.7

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

TABLE 3.4-1

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS

PARAMETER	STEADY STATE LIMIT	TRANSIENT LIMIT
DISSOLVED OXYGEN*	≤ 0.10 ppm	≤ 1.00 ppm
CHLORIDE	≤ 0.15 ppm	≤ 1.50 ppm
FLUORIDE	≤ 0.15 ppm	≤ 1.50 ppm

*Limits not applicable with $T_{avg} \leq 250°F$.

COOK NUCLEAR PLANT - UNIT 2 Page 3/4 4-18 AMENDMENT 214

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R.1

TABLE 4.4-3

REACTOR COOLANT SYSTEM

CHEMISTRY LIMITS SURVEILLANCE REQUIREMENTS

PARAMETER	SAMPLE AND ANALYSIS FREQUENCY
DISSOLVED OXYGEN*	At least once per 72 hours
CHLORIDE	At least once per 72 hours
FLUORIDE	At least once per 72 hours

*Not required with $T_{avg} \leq 250°F$.

DISCUSSION OF CHANGES
CTS 3/4.4.7, CHEMISTRY

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.4.7 provides limits on the oxygen, chloride and fluoride content in the RCS. Poor coolant water chemistry contributes to the long term degradation of system materials of construction, and thus is not of immediate importance to the unit operator. Reactor coolant water chemistry is monitored for a variety of reasons. One reason is to reduce the possibility of failures in the Reactor Coolant System pressure boundary caused by corrosion. However, the chemistry monitoring activity is of a long term preventative purpose rather than mitigative. This Specification does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.4.7 does not meet the 10 CFR 50.92(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The RCS chemistry limits are not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary prior to a DBA. The RCS Chemistry Specification does not satisfy criterion 1.

2. The RCS chemistry limits are not a process variable that is an initial condition of a DBA or Transient Analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The RCS Chemistry Specification does not satisfy criterion 2.

3. The RCS chemistry limits are not a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The RCS Chemistry Specification does not satisfy criterion 3.

4. The RCS chemistry limits are not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in Section 4.0, (Appendix A, page A-40) and summarized in Table 1 of WCAP-11618, the RCS chemistry limits were found to be a non-significant risk contributor to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2,

DISCUSSION OF CHANGES
CTS 3/4.4.7, CHEMISTRY

and concurs with this assessment. The RCS Chemistry Specification does not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the RCS Chemistry LCO and associated Surveillances may be relocated out of the Technical Specifications. The RCS Chemistry Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as relocation because the LCO did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.4.7, CHEMISTRY

There are no specific NSHC discussions for this Specification.

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CTS 3/4.4.9.2, Pressurizer

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

R.1

REACTOR COOLANT SYSTEM

PRESSURIZER

LIMITING CONDITION FOR OPERATION

3.4.9.2 The pressurizer temperature shall be limited to:

a. A maximum heatup of 100°F in any one hour period,

b. A maximum cooldown of 200°F in any one hour period, and

c. A maximum spray water temperature differential of 320°F.

APPLICABILITY: At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an analysis to determine the effects of the out-of-limit condition on the fracture toughness properties of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.2 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown. The spray water temperature differential shall be determined to be within the limit at least once per 12 hours during auxiliary spray operation.

D.C. COOK - UNIT 1 3/4 4-30 Amendment No. 23

CTS 3/4.4.9.2

R.1

REACTOR COOLANT SYSTEM

PRESSURIZER

LIMITING CONDITION FOR OPERATION

3.4.9.2 The pressurizer temperature shall be limited to:

a. A maximum heatup of 100°F in any one hour period,

b. A maximum cooldown of 200°F in any one hour period, and

c. A maximum spray water temperature differential of 320°F.

APPLICABILITY: At all times.

ACTION:

With the pressurizer temperature limits in excess of any of the above limits, restore the temperature to within the limits within 30 minutes; perform an engineering evaluation to determine the effects of the out-of-limit condition on the fracture integrity of the pressurizer; determine that the pressurizer remains acceptable for continued operation or be in at least HOT STANDBY within the next 6 hours and reduce the pressurizer pressure to less than 500 psig within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.9.2 The pressurizer temperatures shall be determined to be within the limits at least once per 30 minutes during system heatup or cooldown. The spray water temperature differential shall be determined to be within the limit at least once per 12 hours during auxiliary spray operation.

DISCUSSION OF CHANGES
CTS 3/4.4.9.2, PRESSURIZER

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.4.9.2 states that the pressurizer temperature shall be limited to a maximum heatup of 100°F or cooldown of 200°F in any one hour period and a maximum spray water temperature differential of 320°F. The limits meet the requirements given in the ASME Boiler and Pressure Vessel Code, Section III, Appendix G. These limitations are consistent with structural analysis results. However, these limits are not initial condition assumptions of a DBA or transient. These limits represent operating restrictions and Criterion 2 includes operating restrictions. However, it should be noted that in the Final Policy Statement the Criterion 2 discussion specified only those operating restrictions required to preclude unanalyzed accidents and transients be included in Technical Specifications. This Specification does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.4.9.2 does not meet the 10 CFR 50.92(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The pressurizer temperature limits are not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Pressurizer Specification does not satisfy criterion 1.

2. The pressurizer temperature limits are not a process variable that is an initial condition of a DBA or Transient Analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Pressurizer Specification does not satisfy criterion 2.

3. The pressurizer temperature limits are not a structure, system or component that is part of the primary success path and which functions or actuates to mitigate a DBA or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Pressurizer Specification does not satisfy criterion 3.

4. The pressurizer temperature limits are not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in Section 4.0, (Appendix A, page A-41) and summarized in Table 1 of

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DISCUSSION OF CHANGES
CTS 3/4.4.9.2, PRESSURIZER

WCAP-11618, the pressurizer temperature limits were found to be a non-significant risk contributor to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2, and concurs with this assessment. The Pressurizer Specification does not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Pressurizer LCO and associated Surveillances may be relocated out of the Technical Specifications. The Pressurizer Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.4.9.2, PRESSURIZER

There are no specific NSHC discussions for this Specification.

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CTS 3/4.4.10.1, ASME Code Class 1, 2 and Components

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CTS 3/4.4.10.1

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

3/4.4.10 STRUCTURAL INTEGRITY

ASME CODE CLASS 1, 2 and 3 COMPONENTS

LIMITING CONDITION FOR OPERATION

3.4.10.1 The structural integrity of the ASME Code Class 1, 2 and 3 components shall be maintained in accordance with Specification 4.4.10.1.

APPLICABILITY: ALL MODES

ACTION:

a. With the structural integrity of any ASME Code Class 1 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature more than 50°F above the minimum temperature required by NDT considerations.

b. With the structural integrity of any ASME Code Class 2 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature above 200°F.

c. With the structural integrity of any ASME Code Class 3 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) from service.

SURVEILLANCE REQUIREMENTS

4.4.10.1 In addition to the requirements of Specification 4.0.5, each reactor coolant pump flywheel shall be inspected by either qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or a surface examination (magnetic particle testing and/or penetrant testing) of exposed surfaces defined by the volume of the disassembled flywheels once every 10 years.

See ITS 5.5

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R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

3/4.4.10 STRUCTURAL INTEGRITY

ASME CODE CLASS 1, 2 and 3 COMPONENTS

LIMITING CONDITION FOR OPERATION

3.4.10.1 The structural integrity of ASME Code Class 1, 2 and 3 components shall be maintained in accordance with Specification 4.4.10.1.

APPLICABILITY: ALL MODES

ACTION:

a. With the structural integrity of any ASME Code Class 1 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature more than 50°F above the minimum temperature required by NDT considerations.

b. With the structural integrity of any ASME Code Class 2 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) prior to increasing the Reactor Coolant System temperature above 200°F.

c. With the structural integrity of any ASME Code Class 3 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) from service.

SURVEILLANCE REQUIREMENTS

4.4.10.1 In addition to the requirements of Specification 4.0.5, each reactor coolant pump flywheel shall be inspected by either qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle of one-half the outer radius or a surface examination (magnetic particle testing and/or penetrant testing) of exposed surfaces defined by the volume of the disassembled flywheels once every 10 years.

See ITS 5.5

DISCUSSION OF CHANGES
CTS 3/4.4.10.1, ASME CODE CLASS 1, 2 AND 3 COMPONENTS

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.4.10.1 provides requirements for the ASME Code Class 1, 2 and 3 components to ensure their structural integrity. The inspection programs for ASME Code Class 1, 2 and 3 components ensure that the structural integrity of these components will be maintained throughout the life of the components. ASME Code Class 1, 2, and 3 components are monitored so that the possibility of component structural failure does not degrade the safety function of the system. The monitoring activity is of a preventive nature rather than a mitigative action. Other Technical Specifications require important systems to be OPERABLE (for example, Emergency Core Cooling Systems) and in a ready state for mitigative action. This Technical Specification is more directed toward prevention of component degradation and continued long term maintenance of acceptable structural conditions. Hence, it is not necessary to retain this Specification to ensure immediate OPERABILITY of safety systems. Further, this Technical Specification prescribes inspection requirements that are performed during plant shutdown. It is, therefore, not directly important for responding to design basis accidents. This LCO does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.4.10.1 does not meet the 10 CFR 50.92(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The inspections stipulated by this Specification are not installed instrumentation used for detecting, and indicating in the control room, a significant abnormal degradation of the reactor coolant pressure boundary during operations prior to a DBA. The ASME Code Class 1, 2 and 3 Components Specification does not satisfy criterion 1.

2. The inspections stipulated by this Specification are not a process variable, design feature, or operating restriction that is an initial assumption in a DBA or transient. The ASME Code Class 1, 2 and 3 Components Specification does not satisfy criterion 2.

3. The ASME Code Class 1, 2 and 3 Components inspected per this Specification are assumed to function to mitigate a DBA. Their capability to perform this function is addressed by other Technical Specifications. This Technical Specification only specifies inspection requirements for

DISCUSSION OF CHANGES
CTS 3/4.4.10.1, ASME CODE CLASS 1, 2 AND 3 COMPONENTS

these components, and these inspections can only be performed when the plant is shutdown. Therefore, criterion 3 is not satisfied.

4. The ASME Code Class 1, 2 and 3 Components are not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in Section 4.0, (Appendix A, page A-43) and summarized in Table 1 of WCAP-11618, the assurance of OPERABILITY of the entire system as verified in the system OPERABILITY Specification dominates the risk contribution of the system. The lack of a long term assurance of structural integrity as stipulated by this Specification was found to be a non-significant risk contributor to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2, and concurs with this assessment. The ASME Code Class 1, 2 and 3 Components Specification does not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the ASME Code Class 1, 2 and 3 Components LCO and associated Surveillances may be relocated out of the Technical Specifications. The ASME Code Class 1, 2 and 3 Components Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. In addition, Surveillances, except for the reactor coolant pump (RCP) flywheel inspection, are already required by regulations in 10 CFR 50.55a to be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda. The RCP flywheel inspection requirement is not covered by other regulatory requirements and is needed for safe operation of the plant; therefore, this requirement will be maintained in the CNP Units 1 and 2 Improved Technical Specifications. Chapter 5.0 of the CNP Units 1 and 2 Improved Technical Specifications will contain a section which provides a programmatic approach to the requirements relating to the structural integrity of ASME Code Class 1, 2, and 3 components. This change is designated as relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.4.10.1, ASME CODE CLASS 1, 2 AND 3 COMPONENTS

There are no specific NSHC discussions for this Specification.

CTS 3/4.4.12.1, Reactor Vessel Head Vents

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

R.1

REACTOR COOLANT VENT SYSTEM

REACTOR VESSEL HEAD VENTS

LIMITING CONDITION FOR OPERATION

3.4.12.1 At least one of the Reactor Vessel head vent paths, consisting of two remotely operated valves in series, powered from Class 1E DC busses, shall be OPERABLE and closed.

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

ACTION:

a. With both of the Reactor Vessel head vent paths inoperable, and at least one of the Pressurizer steam space vent paths OPERABLE (see Specification 3.4.12.2), operation in MODES 1, 2, 3 or 4 may continue, provided the inoperable vent paths are maintained closed with power removed from the valve actuators of all the remotely operated valves in all of the inoperable vent paths; restore at least one of the Reactor Vessel head vent paths within 30 days or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both of the Reactor Vessel head vent paths and both of the Pressurizer steam space vent paths inoperable; maintain the inoperable vent paths closed with power removed from the valve actuators of all of the remotely operated valves in all of the inoperable vent paths; restore one of the inoperable vent paths from either the Reactor Vessel head vent or the Pressurizer steam space within 72 hours or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

CTS 3/4.4.12.1

R.1

REACTOR COOLANT VENT SYSTEM

REACTOR VESSEL HEAD VENTS

SURVEILLANCE REQUIREMENTS

4.4.12.1 Both Reactor Vessel head vent paths shall be demonstrated OPERABLE at least once per 18 months by:

1. Verifying the common manual isolation valve in the Reactor vessel head vent is sealed in the open position.

2. Cycling each of the remotely operated valves in each path through at least one complete cycle of full travel from the Control Room while in Modes 5 or 6.

3. Verifying flow through both of the Reactor Vessel head vent paths during venting operation, while in Modes 5 or 6.

R.1

REACTOR COOLANT VENT SYSTEM

REACTOR VESSEL HEAD VENTS

LIMITING CONDITIONS FOR OPERATION

3.4.12.1 At least one of the Reactor Vessel head vent paths, consisting of two remotely operated valves in series, powered from Class 1E DC busses, shall be OPERABLE and closed.

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

ACTION:

a. With both of the Reactor Vessel head vent paths inoperable, and at least one of the Pressurizer steam space vent paths OPERABLE (see Specification 3.4.12.2), operation in MODES 1, 2, 3 or 4 may continue, provided the inoperable vent paths are maintained closed with power removed from the valve actuators of all the remotely operated valves in all of the inoperable vent paths; restore at least one of the Reactor Vessel head vent paths within 30 days or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With both of the Reactor Vessel head vent paths and both of the Pressurizer steam space vent paths inoperable; maintain the inoperable vent paths closed with power removed from the valve actuators of all of the remotely operated valves in all of the inoperable vent paths; restore one of the inoperable vent paths from either the Reactor Vessel head vent or the Pressurizer steam space within 72 hours or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

CTS 3/4.4.12.1

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

REACTOR COOLANT VENT SYSTEM

REACTOR VESSEL HEAD VENTS

SURVEILLANCE REQUIREMENTS

4.4.12.1 Both Reactor Vessel head vent paths shall be demonstrated OPERABLE at least once per 18 months by:

1. Verifying the common manual isolation valve in the Reactor vessel head vent is sealed in the open position.

2. Cycling each of the remotely operated valves in each path through at least one complete cycle of full travel from the Control Room while in Modes 5 or 6.

3. Verifying flow through both of the Reactor Vessel head vent paths during venting operation, while in Modes 5 or 6.

DISCUSSION OF CHANGES
CTS 3/4.4.12.1, REACTOR VESSEL HEAD VENTS

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.4.12.1 provides requirements for the reactor vessel head vents. The reactor vessel head vents are provided to exhaust noncondensible gases and/or steam from the RCS which could inhibit natural circulation core cooling following any event involving a loss of offsite power and requiring long term cooling, such as a loss-of-coolant accident (LOCA). Their function, capabilities, and testing requirements are consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements," however, the operation of reactor vessel head vents is not part of the primary success path. The operation of these vents is an operator action after the event has occurred, and is only required when there is indication that natural circulation is not occurring. This Specification does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.4.12.1 does not meet the 10 CFR 50.92(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The reactor vessel head vents are not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Reactor Vessel Head Vents Specification does not satisfy criterion 1.

2. The reactor vessel head vents are not a process variable that is an initial condition of a DBA or Transient Analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Reactor Vessel Head Vents Specification does not satisfy criterion 2.

3. The reactor vessel head vents are not a structure, system or component that is part of the primary success path and which functions or actuates to mitigate a DBA or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Reactor Vessel Head Vents Specification does not satisfy criterion 3.

4. The reactor vessel head vents are not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in Section 4.0, (Appendix A, page A-44) and summarized in Table 1 of WCAP-11618, the reactor vessel head vents were found to be a non-significant risk

DISCUSSION OF CHANGES
CTS 3/4.4.12.1, REACTOR VESSEL HEAD VENTS

contributor to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2, and concurs with this assessment. The Reactor Vessel Head Vents Specification does not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Reactor Vessel Head Vents LCO and associated Surveillances may be relocated out of the Technical Specifications. The Reactor Vessel Head Vents Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.4.12.1, REACTOR VESSEL HEAD VENTS

There are no specific NSHC discussions for this Specification.

CTS 3/4.4.12.2, Pressurizer Steam Space Vents

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

R.1

REACTOR COOLANT VENT SYSTEM

PRESSURIZER STEAM SPACE VENTS

LIMITING CONDITION FOR OPERATION

3.4.12.2 At least one of the Pressurizer steam space vent paths, each consisting of two remotely operated valves in series, powered from Class 1E DC busses, shall be OPERABLE and closed.

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

ACTION:

a. With both of the Pressurizer steam space vent paths inoperable, and at least one of the Reactor Vessel head vent paths OPERABLE (see Specification 3.4.12.1), operation in MODES 1, 2, 3 or 4 may continue, provided the inoperable vent paths are maintained closed with the power removed from the valve actuators of all the remotely operated valves in all of the inoperable vent paths; restore at least one of the Pressurizer steam space vent paths within 30 days or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN in the following 30 hours.

b. With both of the Pressurizer steam space vent paths and both of the Reactor Vessel head vent paths inoperable; maintain the inoperable vent paths closed with power removed from the valve actuators of all of the remotely operated valves in all of the inoperable vent paths; restore one of the inoperable vent paths from either the Reactor Vessel head vent or the Pressurizer steam space within 72 hours or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

R.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

REACTOR COOLANT VENT SYSTEM

PRESSURIZER STEAM SPACE VENTS

SURVEILLANCE REQUIREMENTS

4.4.12.2 Both Pressurizer steam space vent paths shall be demonstrated OPERABLE at least once per 18 months by:

1. Verifying the common manual isolation valve in the Pressurizer steam space vent is sealed in the open position.

2. Cycling each of the remotely operated valves in each path through at least one complete cycle of full travel from the Control Room while in Modes 5 or 6.

3. Verifying flow through both of the Pressurizer steam space vent paths during venting operation, while in Modes 5 or 6.

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CTS 3/4.4.12.2

R.1

REACTOR COOLANT VENT SYSTEM

PRESSURIZER STEAM SPACE VENTS

LIMITING CONDITION FOR OPERATION

3.4.12.2 At least one of the Pressurizer steam space vent paths, each consisting of two remotely operated valves in series, powered from Class 1E DC busses, shall be OPERABLE and closed.

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

ACTION:

a. With both of the Pressurizer steam space vent paths inoperable, and at least one of the Reactor Vessel head vent paths OPERABLE (see Specification 3.4.12.1), operation in MODES 1, 2, 3 or 4 may continue, provided the inoperable vent paths are maintained closed with the power removed from the valve actuators of all the remotely operated valves in all of the inoperable vent paths; restore at least one of the Pressurizer steam space vent paths within 30 days or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN in the following 30 hours.

b. With both of the Pressurizer steam space vent paths and both of the Reactor Vessel head vent paths inoperable; maintain the inoperable vent paths closed with power removed from the valve actuators of all of the remotely operated valves in all of the inoperable vent paths; restore one of the inoperable vent paths from either the Reactor Vessel head vent or the Pressurizer steam space within 72 hours or be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

CTS 3/4.4.12.2

R.1

REACTOR COOLANT VENT SYSTEM

PRESSURIZER STEAM SPACE VENTS

SURVEILLANCE REQUIREMENTS

4.4.12.2 Both Pressurizer steam space vent paths shall be demonstrated OPERABLE at least once per 18 months by:

1. Verifying the common manual isolation valve in the Pressurizer steam space vent is sealed in the open position.

2. Cycling each of the remotely operated valves in each path through at least one complete cycle of full travel from the Control Room while in Modes 5 or 6.

3. Verifying flow through both of the Pressurizer steam space vent paths during venting operation, while in Modes 5 or 6.

DISCUSSION OF CHANGES
CTS 3/4.4.12.2, PRESSURIZER STEAM SPACE VENTS

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.4.12.2 provides requirements for the pressurizer steam space vents. The pressurizer steam space vents are provided to exhaust noncondensible gases and/or steam from the RCS which could inhibit natural circulation core cooling following any event involving a loss of offsite power and requiring long term cooling, such as a loss-of-coolant accident (LOCA). Their function, capabilities, and testing requirements are consistent with the requirements of Item II.B.1 of NUREG-0737, "Clarification of TMI Action Plan Requirements," however, the operation of pressurizer steam space vents is not part of the primary success path. The operation of these vents is an operator action after the event has occurred, and is only required when there is indication that natural circulation is not occurring. This Specification does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.4.12.2 does not meet the 10 CFR 50.92(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The pressurizer steam space vents are not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Pressurizer Steam Space Vents Specification does not satisfy criterion 1.

2. The pressurizer steam space vents are not a process variable that is an initial condition of a DBA or Transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Pressurizer Steam Space Vents Specification does not satisfy criterion 2.

3. The pressurizer steam space vents are not a structure, system, or component that is part of a primary success path and which functions or actuates to mitigate a DBA or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Pressurizer Steam Space Vents Specification does not satisfy criterion 3.

4. The pressurizer steam space vents are not a structure, system, or component which operating experience or probabilistic risk assessment

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has shown to be significant to public health and safety. As discussed in Section 4.0 (Appendix A, page A-44) and summarized in Table 1 of WCAP-11618, the pressurizer steam space vents were found to be a non-significant risk contributor to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2, and concurs with the assessment. The Pressurizer Steam Space Vents Specification does not satisfy criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Pressurizer Steam Space Vents LCO and associated Surveillances may be relocated out of the Technical Specifications. The Pressurizer Steam Space Vents Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.4.12.2, PRESSURIZER STEAM SPACE VENTS

There are no specific NSHC discussions for this Specification.

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CTS 3/4.10.5 (Unit 1) and 3/4.10.4 (Unit 2), Natural Circulation Tests

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

M.1

SPECIAL TEST EXCEPTION

NATURAL CIRCULATION TESTS

LIMITING CONDITION FOR OPERATION

3.10.5 The limitations of Specification 3.4.1.1 may be suspended during the performance of PHYSICS TESTS and Thermal-Hydraulic Tests, provided:

a. The THERMAL POWER does not exceed the P-7 Interlock Setpoint, and

b. The Reactor Trip Setpoints for the OPERABLE Intermediate Range, Neutron Flux and the Power Range, Neutron Flux, Low Setpoint are set at less than or equal to 25% of RATED THERMAL POWER.

APPLICABILITY: During operation below the P-7 Interlock Setpoint.

ACTION:

With the THERMAL POWER greater than the P-7 Interlock Setpoint, immediately open the reactor trip breakers.

SURVEILLANCE REQUIREMENTS

4.10.5.1 The THERMAL POWER shall be determined to be less than the P-7 Interlock Setpoint at least once per hour during PHYSICS TESTS.

4.10.5.2 Each Intermediate, Power Range Channel and P-7 Interlock shall be subjected to a CHANNEL FUNCTIONAL TEST within 12 hours prior to initiating PHYSICS TESTS.

CTS 3/4.10.4

M.1

EST EXCEPTION.

COOLANT LOOPS

CONDITION FOR OPERATION

The limitations of Specification 3.4.1.1 may be suspended during the
nce of start up and PHYSICS TESTS provided:

The THERMAL POWER does not exceed the P-7 Interlock Setpoint, and

The Reactor Trip Setpoints for the OPERABLE Intermediate Range, Neutron Flux and the Power Range, Neutron Flux, Low Setpoint are set at less than or equal to 25% of RATED THERMAL POWER.

LITY: During operation below the P-7 Interlock Setpoint.

THERMAL POWER greater than the P-7 Interlock Setpoint, immediately reactor trip breakers.

ANCE REQUIREMENTS

The THERMAL POWER shall be determined to be less than the P-7 Setpoint at least once per hour during startup and PHYSICS TESTS.

Each Intermediate, Power Range Channel and P-7 Interlock shall be to a CHANNEL FUNCTIONAL TEST within 12 hours prior to initiating or PHYSICS TESTS.

OK - UNIT 2 3/4 10-4 AMENDMENT NO. 107

DISCUSSION OF CHANGES
CTS 3/4.10.5 (Unit 1) and CTS 3/4.10.4 (Unit 2), NATURAL CIRCULATION TESTS

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

M.1 CTS 3/4.10.5 (Unit 1) and CTS 3/4.10.4 (Unit 2) provide an exception to the Reactor Coolant Loops and Coolant Circulation requirements in CTS 3/4.4.1.1 for the purpose of performance of PHYSICS TESTS and Thermal-Hydraulic Tests, provided the THERMAL POWER does not exceed the P-7 Interlock Setpoint, and the Reactor Trip Setpoints for the OPERABLE Intermediate Range, Neutron Flux and the Power Range, Neutron Flux, Low Setpoint are set at less than or equal to 25% of RATED THERMAL POWER. The ITS does not contain this special test exception. This changes the CTS by eliminating a special test exception.

This change is acceptable because this exception is not needed any longer for the performance of these tests. As a result, the CTS test exception is not needed. This change is designated as more restrictive because an exception to the CTS is being deleted.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.10.5 (Unit 1) and CTS 3/4.10.4 (Unit 2), NATURAL CIRCULATION TESTS

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 18

Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ISTS 3.4.17, RCS Loop Isolation Valves

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

(1)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.17 RCS Loop Isolation Valves

LCO 3.4.17 Each RCS hot and cold leg loop isolation valve shall be open with power removed from each isolation valve operator.

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

ACTIONS

- NOTE -
Separate Condition entry is allowed for each RCS loop isolation valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Power available to one or more loop isolation valve operators.	A.1 Remove power from loop isolation valve operators.	30 minutes
B. - NOTE - All Required Actions shall be completed whenever this Condition is entered. One or more RCS loop isolation valves closed.	B.1 Maintain valve(s) closed. AND B.2 Be in MODE 3. AND B.3 Be in MODE 5.	Immediately 6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.17.1	Verify each RCS loop isolation valve is open and power is removed from each loop isolation valve operator.	31 days

JUSTIFICATION FOR DEVIATIONS
ISTS 3.4.17, REACTOR COOLANT SYSTEM LOOP ISOLATION VALVES

1. This Reactor Coolant System Loop Isolation Valves Specification is not included in the CNP Units 1 and 2 ITS because the Reactor Coolant System hot and cold leg loops do not include isolation valves.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

1

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.17 RCS Loop Isolation Valves

BASES

BACKGROUND

The reactor coolant loops are equipped with loop isolation valves that permit any loop to be isolated from the reactor vessel. One valve is installed on each hot leg and one on each cold leg. The loop isolation valves are used to perform maintenance on an isolated loop. Power operation with a loop isolated is not permitted.

To ensure that inadvertent closure of a loop isolation valve does not occur, the valves must be open with power to the valve operators removed in MODES 1, 2, 3 and 4. If the valves are closed, a set of administrative controls and equipment interlocks must be satisfied prior to opening the isolation valves as described in LCO 3.4.18, "RCS Isolated Loop Startup."

APPLICABLE SAFETY ANALYSES

The safety analyses performed for the reactor at power assume that all reactor coolant loops are initially in operation and the loop isolation valves are open. This LCO places controls on the loop isolation valves to ensure that the valves are not inadvertently closed in MODES 1, 2, 3 and 4. The inadvertent closure of a loop isolation valve when the Reactor Coolant Pumps (RCPs) are operating will result in a partial loss of forced reactor coolant flow (Ref. 1). If the reactor is at power at the time of the event, the effect of the partial loss of forced coolant flow is a rapid increase in the coolant temperature which could result in DNB with subsequent fuel damage if the reactor is not tripped by the Low Flow reactor trip. If the reactor is shutdown and an RCS loop is in operation removing decay heat, closure of the loop isolation valve associated with the operating loop could also result in increasing coolant temperature and the possibility of fuel damage.

RCS Loop Isolation Valves satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO ensures that the loop isolation valves are open and power to the valve operators is removed. Loop isolation valves are used for performing maintenance in MODES 5 and 6. The safety analyses assume that the loop isolation valves are open in any RCS loops required to be OPERABLE by LCO 3.4.4, "RCS Loops - MODES 1 and 2," LCO 3.4.5, "RCS Loops - MODE 3," or LCO 3.4.6, "RCS Loops - MODE 4."

(1)

BASES

APPLICABILITY

In MODES 1 through 4, this LCO ensures that the loop isolation valves are open and power to the valve operators is removed. The safety analyses assume that the loop isolation valves are open in any RCS loops required to be OPERABLE.

In MODES 5 and 6, the loop isolation valves may be closed. Controlled startup of an isolated loop is governed by the requirements of LCO 3.4.18, "RCS Isolated Loop Startup."

ACTIONS

The Actions have been provided with a Note to clarify that all RCS loop isolation valves for this LCO are treated as separate entities, each with separate Completion Times, i.e., the Completion Time is on a component basis.

A.1

If power is inadvertently restored to one or more loop isolation valve operators, the potential exists for accidental isolation of a loop. The loop isolation valves have motor operators. Therefore, these valves will maintain their last position when power is removed from the valve operator. With power applied to the valve operators, only the interlocks prevent the valve from being operated. Although operating procedures and interlocks make the occurrence of this event unlikely, the prudent action is to remove power from the loop isolation valve operators. The Completion Time of 30 minutes to remove power from the loop isolation valve operators is sufficient considering the complexity of the task.

B.1, B.2, and B.3

Should a loop isolation valve be closed in MODES 1 through 4, the affected loop must be fully isolated immediately and the plant placed in MODE 5. Once in MODE 5, the isolated loop may be started in a controlled manner in accordance with LCO 3.4.18, "RCS Isolated Loop Startup." Opening the closed isolation valve in MODES 1 through 4 could result in colder water or water at a lower boron concentration being mixed with the operating RCS loops resulting in positive reactivity insertion. The Completion Time of Required Action B.1 allows time for borating the operating loops to a shutdown boration level such that the plant can be brought to MODE 3 within 6 hours and MODE 5 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.

1

BASES

SURVEILLANCE REQUIREMENTS	SR 3.4.17.1 The Surveillance is performed at least once per 31 days to ensure that the RCS loop isolation valves are open, with power removed from the loop isolation valve operators. The primary function of this Surveillance is to ensure that power is removed from the valve operators, since SR 3.4.4.1 of LCO 3.4.4, "RCS Loops - MODES 1 and 2," ensures that the loop isolation valves are open by verifying every 12 hours that all loops are operating and circulating reactor coolant. The Frequency of 31 days ensures that the required flow can be made available, is based on engineering judgment, and has proven to be acceptable. Operating experience has shown that the failure rate is so low that the 31 day Frequency is justified.
REFERENCES	1. FSAR, Section [15.2.6].

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.4.17 BASES, REACTOR COOLANT SYSTEM LOOP ISOLATION VALVES

1. Changes are made to be consistent with changes made to the ISTS.

Attachment 1, Volume 9, Rev. 1, Page 613 of 632

ISTS 3.4.18, RCS Isolated Loop Startup

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

(1)

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.18 RCS Isolated Loop Startup

LCO 3.4.18 Each RCS isolated loop shall remain isolated with:

a. The hot and cold leg isolation valves closed if boron concentration of the isolated loop is less than boron concentration required to meet the SDM of LCO 3.1.1 or boron concentration of LCO 3.9.1 and

b. The cold leg isolation valve closed if the cold leg temperature of the isolated loop is > [20]°F below the highest cold leg temperature of the operating loops.

APPLICABILITY: MODES 5 and 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Isolated loop hot or cold leg isolation valve open with LCO requirements not met.	A.1 - NOTE - Only required if boron concentration requirement not met.	
	Close hot and cold leg isolation valves.	Immediately
	OR	
	A.2 - NOTE - Only required if temperature requirement not met.	
	Close cold leg isolation valve.	Immediately

1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.4.18.1	Verify cold leg temperature of isolated loop is ≤ [20]°F below the highest cold leg temperature of the operating loops.	Within 30 minutes prior to opening the cold leg isolation valve in isolated loop
SR 3.4.18.2	Verify boron concentration of isolated loop is greater than or equal to the boron concentration required to meet the SDM of LCO 3.1.1 or boron concentration of LCO 3.9.1.	Within 2 hours prior to opening the hot or cold leg isolation valve in isolated loop

JUSTIFICATION FOR DEVIATIONS
ISTS 3.4.18, REACTOR COOLANT SYSTEM ISOLATED LOOP STARTUP

1. This Reactor Coolant System Isolated Loop Startup Specification is not included in the CNP Units 1 and 2 ITS because the Reactor Coolant System hot and cold leg loops do not include isolation valves.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

(1)

B 3.4 REACTOR COOLANT SYSTEM

B 3.4.18 RCS Isolated Loop Startup

BASES

BACKGROUND

The RCS may be operated with loops isolated in MODES 5 and 6 in order to perform maintenance. While operating with a loop isolated, there is potential for inadvertently opening the isolation valves in the isolated loop. In this event, the coolant in the isolated loop would suddenly begin to mix with the coolant in the operating loops. This situation has the potential of causing a positive reactivity addition with a corresponding reduction of SDM if either:

a. The temperature in the isolated loop is lower than the temperature in the operating loops (cold water incident) or

b. The boron concentration in the isolated loop is lower than the boron concentration required to meet the SDM of LCO 3.1.1 or boron concentration of LCO 3.9.1 (boron dilution incident).

As discussed in the FSAR (Ref. 1), the startup of an isolated loop is done in a controlled manner that virtually eliminates any sudden reactivity addition from cold water or boron dilution because:

a. This LCO and plant operating procedures require that the boron concentration in the isolated loop be maintained higher than the boron concentration of the operating loops, thus eliminating the potential for introducing coolant from the isolated loop that could dilute the boron concentration in the operating loops,

b. The cold leg loop isolation valve cannot be opened unless the temperatures of both the hot leg and cold leg of the isolated loop are within 20°F of the operating loops. Compliance with the temperature requirement is ensured by operating procedures and automatic interlocks, and

c. Other automatic interlocks prevent opening the hot leg loop isolation valve unless the cold leg loop isolation valve is fully closed. All of the interlocks are part of the Reactor Protection System.

(1)

BASES

APPLICABLE SAFETY ANALYSES	During startup of an isolated loop, the cold leg loop isolation valve interlocks and operating procedures prevent opening the valve until the isolated loop and operating loop boron concentrations and temperatures are equalized. This ensures that any undesirable reactivity effect from the isolated loop does not occur. The safety analyses assume a minimum SDM as an initial condition for Design Basis Accidents. Violation of this LCO could result in the SDM being reduced in the operating loops to less than that assumed in the safety analyses. The boron concentration of an isolated loop may affect SDM and therefore RCS isolated loop startup satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).
LCO	Loop isolation valves are used for performing maintenance when the plant is in MODE 5 or 6. This LCO ensures that the loop isolation valves remain closed until the differentials of temperature and boron concentration between the operating loops and the isolated loops are within acceptable limits.
APPLICABILITY	In MODES 5 and 6, the SDM of the operating loops is large enough to permit operation with isolated loops. Controlled startup of isolated loops is possible without significant risk of inadvertent criticality. This LCO is applicable under these conditions.
ACTIONS	<u>A.1 and A.2</u> Required Action A.1 and Required Action A.2 assume that the prerequisites of the LCO are not met and a loop isolation valve has been inadvertently opened. Therefore, the Actions require immediate closure of isolation valves to preclude a boron dilution event or a cold water event. However, each Required Action is preceded by a Note that states that Action is required only when a specific concentration or temperature requirement is not met.
SURVEILLANCE REQUIREMENTS	<u>SR 3.4.18.1</u> This Surveillance is performed to ensure that the temperature differential between the isolated loop and the operating loops is ≤ [20]°F. Performing the Surveillance 30 minutes prior to opening the cold leg isolation valve in the isolated loop provides reasonable assurance, based on engineering judgment, that the temperature differential will stay within

(1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

limits until the cold leg isolation valve is opened. This Frequency has been shown to be acceptable through operating experience.

SR 3.4.18.2

To ensure that the boron concentration of the isolated loop is greater than or equal to the boron concentration required to meet the SDM of LCO 3.1.1 or boron concentration of LCO 3.9.1, a Surveillance is performed 2 hours prior to opening either the hot or cold leg isolation valve. Performing the Surveillance 2 hours prior to opening either the hot or cold leg isolation valve provides reasonable assurance the boron concentration difference will stay within acceptable limits until the loop is unisolated. This Frequency has been shown to be acceptable through operating experience.

REFERENCES

1. FSAR, Section [15.2.6].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.4.18 BASES, REACTOR COOLANT SYSTEM ISOLATED LOOP STARTUP

1. Changes are made to be consistent with changes made to the ISTS.

ISTS 3.4.19, RCS Loops - Test Exceptions

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

①

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.19 RCS Loops - Test Exceptions

LCO 3.4.19 The requirements of LCO 3.4.4, "RCS Loops - MODES 1 and 2," may be suspended with THERMAL POWER < P-7.

APPLICABILITY: MODES 1 and 2 during startup and PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. THERMAL POWER ≥ P-7.	A.1 Open reactor trip breakers.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.4.19.1	Verify THERMAL POWER is < P-7.	1 hour
SR 3.4.19.2	Perform a COT for each power range neutron flux - low and intermediate range neutron flux channel and P-7.	Prior to initiation of startup and PHYSICS TESTS

TSTF-347 not shown

JUSTIFICATION FOR DEVIATIONS
ISTS 3.4.19, REACTOR COOLANT SYSTEM LOOPS - TEST EXCEPTIONS

1. This Reactor Coolant System Loops - Test Exceptions Specification is not included in the CNP Units 1 and 2 ITS because the exception is not needed to perform any required startup or PHYSICS TESTS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

(1)

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.19 RCS Loops - Test Exceptions

BASES

BACKGROUND

The primary purpose of this test exception is to provide an exception to LCO 3.4.4, "RCS Loops - MODES 1 and 2," to permit reactor criticality under no flow conditions during certain PHYSICS TESTS (natural circulation demonstration, station blackout, and loss of offsite power) to be performed while at low THERMAL POWER levels. Section XI of 10 CFR 50, Appendix B (Ref. 1), requires that a test program be established to ensure that structures, systems, and components will perform satisfactorily in service. All functions necessary to ensure that the specified design conditions are not exceeded during normal operation and anticipated operational occurrences must be tested. This testing is an integral part of the design, construction, and operation of the power plant as specified in GDC 1, "Quality Standards and Records" (Ref. 2).

The key objectives of a test program are to provide assurance that the facility has been adequately designed to validate the analytical models used in the design and analysis, to verify the assumptions used to predict plant response, to provide assurance that installation of equipment at the unit has been accomplished in accordance with the design, and to verify that the operating and emergency procedures are adequate. Testing is performed prior to initial criticality, during startup, and following low power operations.

The tests will include verifying the ability to establish and maintain natural circulation following a plant trip between 10% and 20% RTP, performing natural circulation cooldown on emergency power, and during the cooldown, showing that adequate boron mixture occurs and that pressure can be controlled using auxiliary spray and pressurizer heaters powered from the emergency power sources.

APPLICABLE SAFETY ANALYSES

The tests described above require operating the plant without forced convection flow and as such are not bounded by any safety analyses. However, operating experience has demonstrated this exception to be safe under the present applicability.

As describe in LCO 3.0.7, compliance with Test Exception LCOs is optional, and therefore no criteria of 10 CFR 50.36(c)(2)(ii) apply. Test Exception LCOs provide flexibility to perform certain operations by appropriately modifying requirements of other LCOs. A discussion of the criteria satisfied for the other LCOs is provided in their respective Bases.

(1.)

BASES

LCO	This LCO provides an exemption to the requirements of LCO 3.4.4. The LCO is provided to allow for the performance of PHYSICS TESTS in MODE 2 (after a refueling), where the core cooling requirements are significantly different than after the core has been operating. Without the LCO, plant operations would be held bound to the normal operating LCOs for reactor coolant loops and circulation (MODES 1 and 2), and the appropriate tests could not be performed. In MODE 2, where core power level is considerably lower and the associated PHYSICS TESTS must be performed, operation is allowed under no flow conditions provided THERMAL POWER is ≤ P-7 and the reactor trip setpoints of the OPERABLE power level channels are set ≤ 25% RTP. This ensures, if some problem caused the plant to enter MODE 1 and start increasing plant power, the Reactor Trip System (RTS) would automatically shut it down before power became too high, and thereby prevent violation of fuel design limits. The exemption is allowed even though there are no bounding safety analyses. However, these tests are performed under close supervision during the test program and provide valuable information on the plant's capability to cool down without offsite power available to the reactor coolant pumps.
APPLICABILITY	This LCO is applicable when performing low power PHYSICS TESTS without any forced convection flow. This testing is performed to establish that heat input from nuclear heat does not exceed the natural circulation heat removal capabilities. Therefore, no safety or fuel design limits will be violated as a result of the associated tests.
ACTIONS	A.1 When THERMAL POWER is ≥ the P-7 interlock setpoint 10%, the only acceptable action is to ensure the reactor trip breakers (RTBs) are opened immediately in accordance with Required Action A.1 to prevent operation of the fuel beyond its design limits. Opening the RTBs will shut down the reactor and prevent operation of the fuel outside of its design limits.

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1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.19.1

Verification that the power level is < the P-7 interlock setpoint (10%) will ensure that the fuel design criteria are not violated during the performance of the PHYSICS TESTS. The Frequency of once per hour is adequate to ensure that the power level does not exceed the limit. Plant operations are conducted slowly during the performance of PHYSICS TESTS and monitoring the power level once per hour is sufficient to ensure that the power level does not exceed the limit.

SR 3.4.19.2

The power range and intermediate range neutron detectors and the P-7 interlock setpoint must be verified to be OPERABLE and adjusted to the proper value. A COT is performed prior to initiation of the PHYSICS TESTS. This will ensure that the RTS is properly aligned to provide the required degree of core protection during the performance of the PHYSICS TESTS. A successful test of the required contact(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL OPERATIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

TSTF-347 not shown

REFERENCES

1. 10 CFR 50, Appendix B, Section XI.

2. 10 CFR 50, Appendix A, GDC 1, 1988.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.4.19 BASES, REACTOR COOLANT SYSTEM LOOPS - TEST EXCEPTIONS

1. Changes have been made to be consistent with changes made to the ISTS.

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SUMMARY OF CHANGES
ITS SECTION 3.5

Change Description	Affected Pages
The change described in the response to Question 200405061017 for ITS 3.5.1 Bases has been made. This change revises the ITS SR 3.5.1.4 Bases to be consistent with ITS SR 3.5.1.4 by deleting the reference to a 1% volume increase and only including the actual value used in ITS SR 3.5.1.4 ($13ft^3$).	Page 25 of 169.
The change described in the response to Question 200404290801 for ITS 3.5.2 has been made. This change adds a new Unit 2 ITS 3.5.2 Discussion of Change (DOC) A.4 to discuss the change from "a safety injection cross-tie valve" in Unit 2 CTS 3.5.2 Action b to "one or more safety injection cross tie valves" in Unit 2 ITS 3.5.2 Condition D.	Pages 37 and 41 of 169.
A self-identified change for ITS 3.5.2 and 3.5.3 has been made. CTS Amendments 281 (Unit 1) and 265 (Unit 2) have been incorporated into the ITS submittal. This CTS change adopted the allowances of TSTF-359 and affects CTS 3.5.2 Action b (Unit 2 only) and CTS 3.5.3 ACTIONS (new Action e). ITS 3.5.3 is modified by this change (a new ACTIONS Note is added).	Pages 37, 41, 82, 84, 90, 91, 98, and 99 of 169.
The change described in the response to Question 200404290748 for ITS 3.5.2 has been made. This change revises ITS 3.5.2 DOC LA.4 and ITS 3.5.2 DOC L.6 to provide additional justification for changes in wording from "Safety Injection test" and "Safety Injection" in CTS 4.5.2.e.1 and CTS 4.5.2.e.2 to "actual or simulated actuation" in ITS SR 3.5.2.4 and ITS SR 3.5.2.5, with only the "Safety Injection" words being relocated to the ITS Bases.	Pages 43 and 48 of 169.
The change described in the response to Question 200404290723 for ITS 3.5.2 has been made. This change revises ITS 3.5.2 DOC L.5 to provide additional justification for deleting CTS 4.5.2.h which describes the flow balance test to be performed during shutdown following modifications to the Emergency Core Cooling System (ECCS) subsystem.	Page 48 of 169.
A self-identified change for ITS 3.5.2 Bases has been made. This change revises ITS SR 3.5.2.1 Bases to state "removal of control power" to clarify the meaning of "power."	Page 68 of 169.
The change described in the response to Question 200405071125 for ITS 3.5.2 Bases has been made. This change adds a new ITS 3.5.2 Bases Justification for Deviations (JFD) 12 for ITS SR 3.5.2.3 Bases to provide additional justification for changing the Improved Standard Technical Specification (ISTS) reference from ASME, Boiler and Pressure Vessel Code, Section XI to the ASME Operation and Maintenance Standards and Guides (OM Codes).	Pages 70, 71, and 77 of 169.

Change Description	Affected Pages
The change described in the response to Question 200404290733 for ITS 3.5.3 has been made. This change revises ITS 3.5.3 DOC A.2 to provide additional justification for addition of the NOTE modifying the acceptance criteria of ITS SR 3.5.2.2.	Page 86 of 169.
The change described in the response to Question 200405071215 for ITS 3.5.3 Bases has been made. This change revises the ITS 3.5.3 ACTION A.1 Bases to replace the phrase "with both RHR pumps and heat exchangers inoperable" to "with both RHR subsystems inoperable" to be consistent with ITS 3.5.3 ACTION A.1 intent and the other changes made to the ISTS Bases.	Pages 98 and 103 of 169.
The change described in the response to Question 200405071204 for ITS 3.5.3 Bases has been made. This change revises ITS 3.5.3 Bases JFD 5 to provide additional justification for deleting the phrase "due to the inoperability of the centrifugal charging pump or flow path from the [refueling water storage tank] RWST" from the ITS 3.5.3 Action B.1 Bases.	Page 102 of 169.
The change described in the response to Question 200405071355 for ITS 3.5.4 Bases has been made. This change adds a new ITS 3.5.4 Bases JFD 9 to provide additional justification for the deletion of information in the ISTS that is only applicable to plants that have a boron injection tank (BIT) with a high boron concentration (i.e., much greater than normal Reactor Coolant System (RCS) and RWST boron concentrations).	Pages 119, 120, and 127 of 169.
The change described in the response to Question 200406150952 for ITS 3.5.5 (Beyond Scope Issue 10) has been made. This change revises ITS SR 3.5.5.1 Note to require a ± 20 psig (versus the originally proposed ± 10 psig) pressurizer pressure band consistent with the current evaluation of the seal injection flow resistance limits.	Pages 132, 133, 134, 135, 136, 137, 138, 144, 152, and 153 of 169.
The change described in the response to Question 200405060750 for ITS 3.5.5 (Beyond Scope Issue 35) has been made. This change revises ITS 3.5.5 JFD 4 to provide additional justification for changes to ITS 3.5.5 Required Action A.1 and ITS SR 3.5.5.1 to delete the specific actions necessary to restore acceptable seal injection flow resistance (i.e., to delete requirements to adjust manual seal injection throttle valves as the only method allowed to restore compliance with ITS 3.5.5 LCO requirements).	Pages 145 and 146 of 169.

VOLUME 10

CNP UNITS 1 AND 2 IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

Revision 1

LIST OF ATTACHMENTS

1. ITS 3.5.1
2. ITS 3.5.2
3. ITS 3.5.3
4. ITS 3.5.4
5. ITS 3.5.5
6. Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ATTACHMENT 1

ITS 3.5.1, Accumulators

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ACCUMULATORS

LIMITING CONDITION FOR OPERATION

(A.2)

Four

LCO 3.5.1 — 3.5.1 ~~Each~~ reactor coolant system accumulator shall be OPERABLE with:

SR 3.5.1.1 — a. The isolation valve open,

SR 3.5.1.2 — b. A contained borated water volume of between 921 and 971 cubic feet,

SR 3.5.1.4 — c. A boron concentration between 2400 ppm and 2600 ppm, and

SR 3.5.1.3 — d. A nitrogen cover-pressure of between 585 and 658 psig.

APPLICABILITY: MODES 1, 2 and 3.*

ACTION:

ACTION A / ACTION C — a. With one accumulator inoperable, due to boron concentration not within limits, restore boron concentration to within limits within 72 hours or be in at least Mode 3 within the next 6 hours and reduce reactor coolant system pressure to less than or equal to 1000 psig within the following 6 hours.

24 hours — (L.1)

ACTION B / ACTION C — b. With one accumulator inoperable for reasons other than boron concentration not within limits, restore the accumulator to OPERABLE status within ~~1 hour~~, or be in at least Mode 3 within the next 6 hours and reduce reactor coolant system pressure to less than or equal to 1000 psig within the following 6 hours.

Add proposed ACTION D — (A.3)

SURVEILLANCE REQUIREMENTS

4.5.1 Each accumulator shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

SR 3.5.1.2, SR 3.5.1.3 — 1. Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and

SR 3.5.1.1 — 2. Verifying that each accumulator isolation valve is open.

Applicability — *Reactor Coolant System Pressure above 1000 psig.

jen 1-21-00

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ITS 3.5.1

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.5.1.4 b. At least once per 31 days and, for the affected accumulator(s), within 6 hours after each solution volume increase of greater than or equal to ~~1% of tank volume~~ [13 ft³] (that is not the result of addition from the refueling water storage tank) by verifying the boron concentration of the accumulator solution. (A.4)

SR 3.5.1.5 c. At least once per 31 days when the RCS pressure is above 2000 psig, by verifying that power is removed from each accumulator isolation valve operator.

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A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ACCUMULATORS

LIMITING CONDITION FOR OPERATION

A.2

LCO 3.5.1 3.5.1 ~~Each~~ [Four] reactor coolant system accumulator shall be OPERABLE with:

SR 3.5.1.1 a. The isolation valve open,

SR 3.5.1.2 b. A contained borated water volume of between 921 and 971 cubic feet,

SR 3.5.1.4 c. A boron concentration between 2400 ppm and 2600 ppm, and

SR 3.5.1.3 d. A nitrogen cover-pressure of between 585 and 658 psig.

APPLICABILITY: MODES 1, 2 and 3.*

ACTION:

ACTION A / ACTION C a. With one accumulator inoperable due to boron concentration not within limits, restore boron concentration to within limits within 72 hours or be in at least Mode 3 within the next 6 hours and reduce reactor coolant system pressure to less than or equal to 1000 psig within the following 6 hours.

L.1

ACTION B / ACTION C b. With one accumulator inoperable for reasons other than boron concentration not within limits, restore the accumulator to OPERABLE status within ~~1 hour~~ [24 hours], or be in at least Mode 3 within the next 6 hours and reduce reactor coolant system pressure to less than or equal to 1000 psig within the following 6 hours.

[Add proposed ACTION D] A.3

SURVEILLANCE REQUIREMENTS

4.5.1 Each accumulator shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

SR 3.5.1.2 SR 3.5.1.3 1. Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and

SR 3.5.1.1 2. Verifying that each accumulator isolation valve is open.

Applicability *Reactor Coolant System Pressure above 1000 psig.

ITS 3.5.1

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.5.1.4 b. At least once per 31 days and, for the affected accumulator(s), within 6 hours after each solution volume increase greater than or equal to 1% of tank volume [13 ft³] (A.4) that is not the result of addition from the refueling water storage tank) by verifying the boron concentration of the accumulator solution.

SR 3.5.1.5 c. At least once per 31 days when the RCS pressure is above 2000 psig by verifying that power is removed from each accumulator isolation valve operator.

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DISCUSSION OF CHANGES
ITS 3.5.1, ACCUMULATORS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.5.1 requires "each" reactor coolant system accumulator to be OPERABLE. ITS LCO 3.5.1 requires "four" ECCS accumulators to be OPERABLE. This changes the CTS by specifying the exact number of ECCS accumulators required to be OPERABLE.

This change is acceptable because the total number of ECCS accumulators installed in each unit at CNP is four. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.3 CTS 3.5.1 does not contain a specific ACTION for two or more accumulators inoperable. With two or more accumulators inoperable, CTS 3.0.3 would be entered. ITS 3.5.1 ACTION D directs entry into LCO 3.0.3 when two or more accumulators are inoperable. This changes the CTS by specifically stating to enter LCO 3.0.3 in this System Specification.

This change is acceptable because the actions taken when two or more accumulators are inoperable are unchanged. Adding this ACTION is consistent with the ITS convention of directing entry into LCO 3.0.3 when multiple ACTIONS are presented in the ITS, and entry into these multiple ACTIONS could result in a loss of safety function. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.4 CTS 4.5.1.b requires each affected accumulator be demonstrated OPERABLE within 6 hours after each solution volume increase that is not the result of addition from the refueling water storage tank (RWST) of $\geq$ 1% of tank volume by verifying the boron concentration of the accumulator solution. ITS SR 3.5.1.4 requires verifying boron concentration once within 6 hours after each solution volume increase that is not the result of addition from the RWST of $\geq$ 13 ft^3. This changes CTS by changing the parameter value of solution volume increase of $\geq$ 1% of tank volume to solution volume increase of $\geq$ 13 ft^3.

This change is acceptable because a solution volume increase of $\geq$ 1% of tank volume correlates to a solution volume increase of $\geq$ 13 ft^3. This change is designated as administrative because it does not result in any technical changes to the CTS.

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DISCUSSION OF CHANGES
ITS 3.5.1, ACCUMULATORS

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L.1 *(Category 3 – Relaxation of Completion Time)* CTS 3.5.1 Action b requires an accumulator inoperable for reasons other than boron concentration not within limits be restored to OPERABLE status within 1 hour. ITS 3.5.1 ACTION B specifies a Completion Time of 24 hours under the same condition. This changes the CTS by relaxing the Completion Time from 1 hour to 24 hours.

The purpose of CTS 3.5.1 Action b is to provide the appropriate compensatory actions for one accumulator inoperable for reasons other than boron concentration not within limits. The current Completion Time of 1 hour is an insufficient amount of time to correct accumulator mechanical problems or restore parameters to within limits. This change is acceptable because an evaluation was performed to assess the risk of the proposed accumulator Completion Time extension. The risk evaluation was performed in accordance with RG 1.174 and RG 1.177 and approved by the staff and documented in WCAP-15049-A, Rev. 1, April 1999. I&M has reviewed WCAP-15049, Rev. 1 and the CNP PRA, and has determined that the WCAP-15049 analysis is applicable to CNP and is consistent and bounding with respect to the CNP PRA model. In addition, the extended allowed outage time has no impact on the safety analyses. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits in the ITS than was allowed in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Accumulators

LCO 3.5.1 | LCO 3.5.1 [Four] ECCS accumulators shall be OPERABLE. (1)

APPLICABILITY: MODES 1 and 2,
MODE 3 with RCS pressure > [1000] psig. (1)

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action a	A. One accumulator inoperable due to boron concentration not within limits.	A.1	Restore boron concentration to within limits.	72 hours	
Action b	B. One accumulator inoperable for reasons other than Condition A.	B.1	Restore accumulator to OPERABLE status.	[1] hour(s) 24	TSTF-370
Action a, Action b	C. Required Action and associated Completion Time of Condition A or B not met.	C.1 AND C.2	Be in MODE 3. Reduce RCS pressure to ≤ [1000] psig.	6 hours 12 hours	(1)
DOC A.3	D. Two or more accumulators inoperable.	D.1	Enter LCO 3.0.3.	Immediately	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
LCO 3.5.1.a, 4.5.1.a.2	SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
LCO 3.5.1.b, 4.5.1.a.1	SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ [7853 gallons ( )% and ≤ 8171 gallons ( )%] → 921 ft³ and ≤ 971 ft³	12 hours	1
LCO 3.5.1.d, 4.5.1.a.1	SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ [385] 585 psig and ≤ [481] 658 psig.	12 hours	1
LCO 3.5.1.c, 4.5.1.b	SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ [1900] 2400 ppm and ≤ [2100] 2600 ppm.	31 days AND - NOTE - Only required to be performed for affected accumulators Once within 6 hours after each solution volume increase of ≥ [[ ] % of indicated level ([ ] gallons)] 13 ft³ that is not the result of addition from the refueling water storage tank	1
4.5.1.c	SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when RCS pressure is ≥ [2000] psig.	31 days	1

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.1, ACCUMULATORS

1. The brackets are removed and the proper plant specific information/value is provided.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.1 Accumulators

BASES

BACKGROUND

The functions of the ECCS accumulators are to supply water to the reactor vessel during the blowdown phase of a loss of coolant accident (LOCA), to provide inventory to help accomplish the refill phase that follows thereafter, and to provide Reactor Coolant System (RCS) makeup for a small break LOCA.

The blowdown phase of a large break LOCA is the initial period of the transient during which the RCS departs from equilibrium conditions, and heat from fission product decay, hot internals, and the vessel continues to be transferred to the reactor coolant. The blowdown phase of the transient ends when the RCS pressure falls to a value approaching that of the containment atmosphere.

In the refill phase of a LOCA, which immediately follows the blowdown phase, reactor coolant inventory has vacated the core through steam flashing and ejection out through the break. The core is essentially in adiabatic heatup. The balance of accumulator inventory is then available to help fill voids in the lower plenum and reactor vessel downcomer so as to establish a recovery level at the bottom of the core and ongoing reflood of the core with the addition of safety injection (SI) water.

The accumulators are pressure vessels partially filled with borated water and pressurized with nitrogen gas. The accumulators are passive components, since no operator or control actions are required in order for them to perform their function. Internal accumulator tank pressure is sufficient to discharge the accumulator contents to the RCS, if RCS pressure decreases below the accumulator pressure.

Each accumulator is piped into an RCS cold leg via an accumulator line and is isolated from the RCS by a motor operated isolation valve and two check valves in series.

The accumulator size, water volume, and nitrogen cover pressure are selected so that three of the four accumulators are sufficient to partially cover the core before significant clad melting or zirconium water reaction can occur following a LOCA. The need to ensure that three accumulators are adequate for this function is consistent with the LOCA assumption that the entire contents of one accumulator will be lost via the RCS pipe break during the blowdown phase of the LOCA.

(1) **INSERT 1**

Reactor Coolant System (RCS), contributing to the filling of the

(1) **INSERT 1A**

through the beginning of the reflood phase during a large break

BASES

APPLICABLE SAFETY ANALYSES

The accumulators are assumed OPERABLE in both the large and small break LOCA analyses at full power (Ref. 1). These are the Design Basis Accidents (DBAs) that establish the acceptance limits for the accumulators. Reference to the analyses for these DBAs is used to assess changes in the accumulators as they relate to the acceptance limits.

large break (1)

In performing the LOCA calculations, conservative assumptions are made concerning the availability of ECCS flow. In the early stages of a LOCA, with or without a loss of offsite power, the accumulators provide the sole source of makeup water to the RCS. The assumption of loss of offsite power is required by regulations and conservatively imposes a delay wherein the ECCS pumps cannot deliver flow until the emergency diesel generators start, come to rated speed, and go through their timed loading sequence. In cold leg break scenarios, the entire contents of one accumulator are assumed to be lost through the break. large (1)

The limiting large break LOCA is a double ended guillotine break at the discharge of the reactor coolant pump. During this event, the accumulators discharge to the RCS as soon as RCS pressure decreases to below accumulator pressure.

As a conservative estimate, no credit is taken for ECCS pump flow until an effective delay has elapsed. This delay accounts for the diesels starting and the pumps being loaded and delivering full flow. The delay time is conservatively set with an additional 2 seconds to account for SI signal generation. During this time, the accumulators are analyzed as providing the sole source of emergency core cooling. No operator action is assumed during the blowdown stage of a large break LOCA. (1)

The worst case small break LOCA analyses also assume a time delay before pumped flow reaches the core. For the larger range of small breaks, the rate of blowdown is such that the increase in fuel clad temperature is terminated solely by the accumulators, with pumped flow then providing continued cooling. As break size decreases, the accumulators and centrifugal charging pumps both play a part in terminating the rise in clad temperature. As break size continues to decrease, the role of the accumulators continues to decrease until they are not required and the centrifugal charging pumps become solely responsible for terminating the temperature increase.

INSERT 1B (1)
INSERT 2 (1)
all

This LCO helps to ensure that the following acceptance criteria established for the ECCS by 10 CFR 50.46 (Ref. 2) will be met following a LOCA:

(1) **INSERT 1B**

, safety injection pumps,

(1) **INSERT 2**

safety injection and

BASES

APPLICABLE SAFETY ANALYSES *(continued)*

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 cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react, and

d. Core is maintained in a coolable geometry.

Since the accumulators discharge during the blowdown phase of a LOCA, they do not contribute to the long term cooling requirements of 10 CFR 50.46.

For both the large and small break LOCA analyses, a nominal contained accumulator water volume is used. The contained water volume is the same as the deliverable volume for the accumulators, since the accumulators are emptied, once discharged. For small breaks, an increase in water volume is a peak clad temperature penalty. For large breaks, an increase in water volume can be either a peak clad temperature penalty or benefit, depending on downcomer filling and subsequent spill through the break during the core reflooding portion of the transient. The analysis makes a conservative assumption with respect to ignoring or taking credit for line water volume from the accumulator to the check valve. The safety analysis assumes values of [6468] gallons and [6879] gallons. To allow for instrument inaccuracy, values of [6520] gallons and [6820] gallons are specified.

The minimum boron concentration setpoint is used in the post LOCA boron concentration calculation. The calculation is performed to assure reactor subcriticality in a post LOCA environment. Of particular interest is the large break LOCA, since no credit is taken for control rod assembly insertion. A reduction in the accumulator minimum boron concentration would produce a subsequent reduction in the available containment sump concentration for post LOCA shutdown and an increase in the maximum sump pH. The maximum boron concentration is used in determining the cold leg to hot leg recirculation injection switchover time and minimum sump pH.

The large and small break LOCA analyses are performed at the minimum nitrogen cover pressure, since sensitivity analyses have demonstrated

1 **INSERT 2A**

a nominal value of 946 ft^3. The nominal value is used since competing effects related to ECCS bypass, the impact of gas volume changes on the injection rate, and spilled ECCS water modeled as spray (which reduces the containment pressure) result in the nominal value being the most limiting.

1 **INSERT 3**

(or a more conservative value)

1 **INSERT 4**

(except during hot leg switchover for large cold leg breaks)

1 **INSERT 5**

peak clad temperature

1 **INSERT 5A**

it has been determined

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BASES

APPLICABLE SAFETY ANALYSES (continued)

that higher nitrogen cover pressure results in a computed peak clad temperature benefit. The maximum nitrogen cover pressure limit prevents accumulator relief valve actuation, and ultimately preserves accumulator integrity.

The effects on containment mass and energy releases from the accumulators are accounted for in the appropriate analyses (Refs. 1 and 3). (1)

The accumulators satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). (1)

LCO

The LCO establishes the minimum conditions required to ensure that the accumulators are available to accomplish their core cooling safety function following a LOCA. Four accumulators are required to ensure that 100% of the contents of three of the accumulators will reach the core during a LOCA. This is consistent with the assumption that the contents of one accumulator spill through the break. If less than three accumulators are injected during the blowdown phase of a LOCA, the ECCS acceptance criteria of 10 CFR 50.46 (Ref. 2) could be violated. (1) large break

For an accumulator to be considered OPERABLE, the isolation valve must be fully open, power removed above [2000] psig, and the limits established in the SRs for contained volume, boron concentration, and nitrogen cover pressure must be met. (2)

APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS pressure > 1000 psig, the accumulator OPERABILITY requirements are based on full power operation. Although cooling requirements decrease as power decreases, the accumulators are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

This LCO is only applicable at pressures > 1000 psig. At pressures ≤ 1000 psig, the rate of RCS blowdown is such that the ECCS pumps can provide adequate injection to ensure that peak clad temperature remains below the 10 CFR 50.46 (Ref. 2) limit of 2200°F.

In MODE 3, with RCS pressure ≤ 1000 psig, and in MODES 4, 5, and 6, the accumulator motor operated isolation valves are closed to isolate the accumulators from the RCS. This allows RCS cooldown and depressurization without discharging the accumulators into the RCS or requiring depressurization of the accumulators.

BASES

ACTIONS

A.1

If the boron concentration of one accumulator is not within limits, it must be returned to within the limits within 72 hours. In this Condition, ability to maintain subcriticality or minimum boron precipitation time may be reduced. The boron in the accumulators contributes to the assumption that the combined ECCS water in the partially recovered core during the early reflooding phase of a large break LOCA is sufficient to keep that portion of the core subcritical. One accumulator below the minimum boron concentration limit, however, will have no effect on available ECCS water and an insignificant effect on core subcriticality during reflood. Boiling of ECCS water in the core during reflood concentrates boron in the saturated liquid that remains in the core. In addition, current analysis techniques demonstrate that the accumulators do not discharge following a large main steam line break for the majority of plants. Even if they do discharge, their impact is minor and not a design limiting event. Thus, 72 hours is allowed to return the boron concentration to within limits.

B.1

If one accumulator is inoperable for a reason other than boron concentration, the accumulator must be returned to OPERABLE status within 1 hour. In this Condition, the required contents of three accumulators cannot be assumed to reach the core during a LOCA. Due to the severity of the consequences should a LOCA occur in these conditions, the 1 hour Completion Time to open the valve, remove power to the valve, or restore the proper water volume or nitrogen cover pressure ensures that prompt action will be taken to return the inoperable accumulator to OPERABLE status. The Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions.

C.1 and C.2

If the accumulator cannot be returned 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 MODE 3 within 6 hours and RCS pressure reduced to ≤ 1000 psig within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

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4 **INSERT 6**

time the unit is exposed

TSTF-370 **INSERT 7**

The 24 hours allowed to restore an inoperable accumulator to OPERABLE status is justified in WCAP-15049-A, Rev. 1 (Ref. 5). 1

3

5 **INSERT 8**

or other specified condition

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BASES

ACTIONS (continued)

D.1

unit ①

If more than one accumulator is inoperable, the plant is in a condition outside the accident analyses; therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

isolation ⑤

Each accumulator valve should be verified to be fully open every 12 hours. This verification ensures that the accumulators are available for injection and ensures timely discovery if a valve should be less than fully open. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve position should not change with power removed, a closed valve could result in not meeting accident analyses assumptions. This Frequency is considered reasonable in view of other administrative controls that ensure a mispositioned isolation valve is unlikely.

SR 3.5.1.2 and SR 3.5.1.3

Every 12 hours, borated water volume and nitrogen cover pressure are verified for each accumulator. This Frequency is sufficient to ensure adequate injection during a LOCA. Because of the static design of the accumulator, a 12 hour Frequency usually allows the operator to identify changes before limits are reached. Operating experience has shown this Frequency to be appropriate for early detection and correction of off normal trends.

SR 3.5.1.4

The boron concentration should be verified to be within required limits for each accumulator every 31 days since the static design of the accumulators limits the ways in which the concentration can be changed. The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as stratification or inleakage. Sampling the affected accumulator within 6 hours after a 1% volume increase will identify whether inleakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water inventory is from the refueling water storage tank (RWST), because the water contained in the RWST is within the accumulator boron concentration requirements. This is consistent with the recommendation of NUREG-1366 (Ref. 4).

① of $13 ft^3$

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.5

Verification every 31 days that power is removed from each accumulator isolation valve operator when the RCS pressure is ≥ [2000] psig ensures that an active failure could not result in the undetected closure of an accumulator motor operated isolation valve. If this were to occur, only two accumulators would be available for injection given a single failure coincident with a LOCA. Since power is removed under administrative control, the 31 day Frequency will provide adequate assurance that power is removed. (2) (6)

This SR allows power to be supplied to the motor operated isolation valves when RCS pressure is < 2000 psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during plant startups or shutdowns.

REFERENCES

1. (U)FSAR, Chapter [6]. Section 14.3 (1) (2)

2. 10 CFR 50.46.

3. FSAR, Chapter [15]. (1)

4. NUREG-1366, February 1990. (1)

INSERT 9

TSTF-370

TSTF-370

INSERT 9

3. WCAP-15049-A, Rev. 1, April 1999.

"Risk-Informed Evaluation of an Extension to Accumulator Completion Times," 1

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.1 BASES, ACCUMULATORS

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Typographical/grammatical error corrected.

4. The ISTS ACTION B.1 Bases state that the Completion Time minimizes the potential for exposure of the plant to a LOCA under these conditions. In actuality, the Completion Time minimizes the time the unit is exposed to a LOCA under these conditions, not the potential for exposure. Therefore, the ISTS is revised to more accurately reflect the role of the Completion Time.

5. Changes are made to be consistent with the Specification.

6. ISTS SR 3.5.1.5 Bases state that verifying that power is removed from each accumulator isolation valve operator ensures that an active failure could not result in the "undetected" closure of an accumulator motor operated isolation valve. The word "undetected" was not included in the ITS because verification that power is removed only ensures that the valve does not have power. The requirements of ITS SR 3.5.1.1 and other administrative controls help to ensure that a valve closure does not remain undetected.

7. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI-03, Section 5.1.3.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.1, ACCUMULATORS

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.5.2, ECCS - Operating

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.5.2

A.1

ITS

EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

LCO 3.5.2

3.5.2 Two independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE safety injection pump,

c. One OPERABLE residual heat removal heat exchanger,

d. One OPERABLE residual heat removal pump, and

e. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

LA.1

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

L.1 — or more

ACTION A
ACTION B

a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.

M.1 — Add proposed Required Action B.1

b. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date.

L.2

L.1 — Add proposed ACTION C

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A.1

ITS

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1 4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the following valves are in the indicated positions with the control power locked out.

Valve Number	Valve Function	Valve Position
a. IMO-390	a. RWST to RHR	a. Open
b. IMO-315	b. Low head SI to Hot Leg	b. Closed
c. IMO-325	c. Low head SI to Hot Leg	c. Closed
d. IMO-262*	d. Mini flow line	d. Open
e. IMO-263*	e. Mini flow line	e. Open
f. IMO-261*	f. SI Suction	f. Open
g. ICM-305*	g. Sump line	g. Closed
h. ICM-306*	h. Sump line	h. Closed

LA.2

SR 3.5.2.2 b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2. Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

LA.3

*These valves must change position during the switchover from injection to recirculation flow following LOCA.

LA.2

ITS 3.5.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per ~~18~~ 24 months by: L.3

1. Verifying the automatic interlock action to prevent opening of the suction of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig. See ITS 3.4.14

SR 3.5.2.7 2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or abnormal corrosion.

e. At least once per ~~18~~ 24 months by: L.3

SR 3.5.2.4 1. Verifying that each automatic valve in the flow path that is not locked, sealed, or otherwise secured in position (L.4) actuates to its correct position on a actual or (L.6) ~~Safety Injection~~ actuation (LA.4) test signal.

SR 3.5.2.5 2. Verifying that each of the ~~following~~ ECCS (LA.1) pumps start automatically upon receipt of a actual or test (L.6) ~~Safety Injection~~ actuation (LA.4) signal:

~~a) Centrifugal charging pump~~
~~b) Safety injection pump~~
~~c) Residual heat removal pump~~
LA.1

SR 3.5.2.3 f. By verifying that each of the ~~following~~ ECCS (LA.1) pumps' developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to specification 4.0.5.

~~1. Centrifugal charging pumps~~
~~2. Safety injection pumps~~
~~3. Residual heat removal pumps~~
LA.1

SR 3.5.2.6 g. By verifying the correct position of each mechanical stop for the following Emergency Core Cooling System throttle valves:

~~1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.~~ L.5

ITS 3.5.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.5.2.6 2. At least once per [18] months. 24 L.3

LA.5

Boron Injection Throttle Valves	Safety Injection Throttle Valves
Valve Number	Valve Number
1. 1-SI-141 L1	1. 1-SI-121 N
2. 1-SI-141 L2	2. 1-SI-121 S
3. 1-SI-141 L3	
4. 1-SI-141 L4	

L.5

h. By performing a flow balance test during shutdown following completion of modifications to the ECCS subsystem that alter the subsystem flow characteristics and verifying the following flow rates:

Boron Injection System Single Pump*	Safety Injection System Single Pump**
Loop 1 Boron Injection Flow 117.5 gpm	Loop 1 and 4 Cold Leg Flow ≥ 300 gpm
Loop 2 Boron Injection Flow 117.5 gpm	Loop 2 and 3 Cold Leg Flow ≥ 300 gpm
Loop 3 Boron Injection Flow 117.5 gpm	**Combined Loop 1, 2, 3 and 4 Cold Leg Flow (single pump) less than or equal to 640 gpm. Total SIS (single pump) flow, including miniflow, shall not exceed 675 gpm unless the pump is specifically qualified to a higher flow up to a maximum of 700 gpm.
Loop 4 Boron Injection Flow 117.5 gpm	

*The flow rate in each Boron Injection (BI) line should be adjusted to provide 117.5 gpm (nominal) flow in each loop. Under these conditions there is zero miniflow and 80 gpm plus or minus 5 gpm simulated RCP seal injection line flow.

The actual flow in each BI line may deviate from the nominal so long as:

a) the difference between the highest and lowest flow is 25 gpm or less.

b) the total flow to the four branch lines does not exceed 470 gpm.

c) the minimum flow (total flow) through the three most conservative (lowest flow) branch lines must not be less than 300 gpm.

d) the charging pump discharge resistance (2.31 x Pd/Qd^2) must not be less than 4.73E-3 ft/gpm^2 and must not be greater than 9.27E-3 ft/gpm^2. (Pd is the pump discharge pressure at runout; Qd is the total pump flow rate.)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ECCS SUBSYSTEMS - $T_{avg} \geq 350°F$

LIMITING CONDITION FOR OPERATION

LCO 3.5.2 3.5.2 Two independent ECCS subsystems shall be OPERABLE with each subsystem comprised of:

a. One OPERABLE centrifugal charging pump,

b. One OPERABLE safety injection pump,

c. One OPERABLE residual heat removal heat exchanger,

d. One OPERABLE residual heat removal pump,

e. An OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the containment sump during the recirculation phase of operation.

f. All safety injection cross-tie valves open.

LA.1

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

L.1 — or more

M.1

ACTION A a. With one ECCS subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours. Add proposed Required Action B.1

ACTION B

ACTION D b. With a safety injection cross-tie valve closed, restore the cross-tie valve to the open position or reduce the core power level to less than or equal to 3304 MW within one hour. — s — A.2

one or more

(SI) System

A.4

c. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. — L.2

Add proposed ACTION C — L.1

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ITS 3.5.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1 4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the following valves are in the indicated positions with power to the valve operators removed:

Valve Number	Valve Function	Valve Position
a. IMO-390	a. RWST to RHR	a. Open
b. IMO-315	b. Low head SI to Hot Leg	b. Closed
c. IMO-325	c. Low head SI to Hot Leg	c. Closed
d. IMO-262*	d. Mini flow line	d. Open
e. IMO-263*	e. Mini flow line	e. Open
f. IMO-261*	f. SI Suction	f. Open
g. ICM-305*	g. Sump Line	g. Closed
h. ICM-306*	h. Sump Line	h. Closed

LA.2

SR 3.5.2.2 b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. By a visual inspection which verifies that no loose debris (rags, trash, clothing, etc.) is present in the containment which could be transported to the containment sump and cause restriction of the pump suctions during LOCA conditions. This visual inspection shall be performed:

1. For all accessible areas of the containment prior to establishing CONTAINMENT INTEGRITY, and

2. Of the areas affected within containment at the completion of each containment entry when CONTAINMENT INTEGRITY is established.

LA.3

* These valves must change position during the switchover from injection to recirculation flow following LOCA.

LA.2

ITS 3.5.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

d. At least once per ~~18~~ 24 months by: (L.3)

1. ~~Verifying the automatic interlock action to prevent opening of the suction of the RHR system from the Reactor Coolant System when the Reactor Coolant System pressure is above 600 psig.~~ (See ITS 3.4.14)

SR 3.5.2.7 2. A visual inspection of the containment sump and verifying that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion. (L.3)

e. At least once per ~~18~~ 24 months by:

SR 3.5.2.4 1. Verifying that each automatic valve in the flow path [that is not locked, sealed, or otherwise secured in position] (L.4) actuates to its correct position on a [actual or] (L.6) ~~Safety Injection~~ [actuation] (LA.4) test signal.

SR 3.5.2.5 2. Verifying that each of the ~~following~~ [ECCS] pumps start automatically upon receipt of a [actual or test] (L.6) ~~Safety Injection~~ [actuation] (LA.4) signal: (LA.1)

~~a) Centrifugal charging pump~~

~~b) Safety injection pump~~

~~c) Residual heat removal pump~~ (LA.1)

SR 3.5.2.3 f. By verifying that each of the ~~following~~ [ECCS] pumps' developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. (LA.1)

~~1. Centrifugal charging pumps~~

~~2. Safety injection pumps~~

~~3. Residual heat removal pumps~~ (LA.1)

SR 3.5.2.6 g. By verifying the correct position of each mechanical stop for the following Emergency Core Cooling System throttle valves:

~~1. Within 4 hours following completion of each valve stroking operation or maintenance on the valve when the ECCS subsystems are required to be OPERABLE.~~ (L.5)

ITS 3.5.2

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.5.2.6 2. At least once per ~~18~~ 24 months. L.3

LA.5

Boron Injection Throttle Valves Valve Number	Safety Injection Throttle Valves Valve Number
1. 2-SI-141 L1	1. 2-SI-121 N
2. 2-SI-141 L2	2. 2-SI-121 S
3. 2-SI-141 L3	
4. 2-SI-141 L4	

L.5

h. By performing a flow balance test during shutdown following completion of modifications to the ECCS subsystem that alter the subsystem flow characteristics and verifying the following flow rates:

Boron Injection System Single Pump*	Safety Injection System Single Pump**
Loop 1 Boron Injection Flow 117.5 gpm	Loop 1 and 4 Cold Leg Flow greater than or equal to 300 gpm
Loop 2 Boron Injection Flow 117.5 gpm	Loop 2 and 3 Cold Leg Flow greater than or equal to 300 gpm
Loop 3 Boron Injection Flow 117.5 gpm	**Combined Loop 1,2,3 and 4 Cold Leg Flow (single pump) less than or equal to 640 gpm. Total SIS (single pump) flow, including miniflow, shall not exceed 675 gpm unless the pump is specifically qualified to a higher flow up to a maximum of 700 gpm.
Loop 4 Boron Injection Flow 117.5 gpm	

* The flow rate in each boron injection (BI) line should be adjusted to provide 117.5 gpm (nominal) flow into each loop. Under these conditions there is zero mini-flow and 80 gpm plus or minus 5 gpm simulated RCP seal injection line flow. The actual flow in each BI line may deviate from the nominal so long as:

a) the difference between the highest and lowest flow is 25 gpm or less.

b) the total flow to the four branch lines does not exceed 470 gpm.

c) the minimum flow through the three most conservative (lowest flow) branch lines must not be less than 300 gpm.

d) the charging pump discharge resistance (2.31*Pd/Qd^2) must not be less than 4.73E-3 ft/gpm^2 and must not be greater than 9.27E-3 ft/gpm^2. (Pd is the pump discharge pressure at runout; Qd is the total pump flow rate).

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 (Unit 2 only) CTS 3.5.2 Action b requires, with a safety injection cross tie valve closed, either restoring the cross tie valve to the open position or reducing core power to ≤ 3304 MWt within 1 hour. Unit 2 ITS 3.5.2 ACTION D does not state the requirement to restore a closed safety injection cross tie valve to the open position, but includes the other compensatory Required Action to reduce power within 1 hour. This changes the Unit 2 CTS by not explicitly stating the requirement to restore a closed safety injection cross tie valve to the open position.

This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action, and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 Not used.

A.4 (Unit 2 only) CTS 3.5.2 Action b is applicable whenever "a safety injection cross-tie valve" is closed. Unit 2 ITS ACTION D is applicable whenever "One or more Safety Injection (SI) System cross tie valves" are closed. This changes the Unit 2 CTS by clarifying that action is required whenever either or both of the safety injection cross-tie valves are closed.

This change is acceptable because the technical requirements have not changed. In the CNP Unit 2 design, there are two safety injection cross-tie valves in series, and closing either or both valves has the same result of isolating the cross-tie flow path. Therefore, these statements are technically equivalent. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.5.2 Action a requires that when one inoperable ECCS subsystem is not restored to OPERABLE status within 72 hours, the unit must be in HOT SHUTDOWN within the next 12 hours. In addition to requiring the unit to be in MODE 4 within 12 hours (ITS 3.5.2 Required Action B.2) if the ECCS is not restored within the allowed Completion Time, ITS 3.5.2 Required Action B.1 also requires the unit to be in MODE 3 within 6 hours. This changes the CTS by requiring entry into MODE 3 within 6 hours when a shutdown is required.

This change is acceptable because the requirement to place the unit in MODE 3 in 6 hours is based on operating experience and the need to reach the required conditions from full power in an orderly manner and without challenging unit systems. This change is designated as more restrictive because it imposes a time requirement on when the unit must be in MODE 3.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.5.2 states that two independent ECCS subsystems shall be OPERABLE and contains a description of what constitutes an OPERABLE subsystem. CTS 4.5.2.e.2 and 4.5.2.f also list the pumps that are included in an OPERABLE subsystem and are required to be tested. ITS 3.5.2 requires two ECCS trains to be OPERABLE, but the details of what constitutes an OPERABLE train are moved to the Bases. ITS SR 3.5.2.3 and SR 3.5.2.5 also do not list the pumps that comprise an ECCS train since this information has been moved to the Bases, but require only that each ECCS pump be tested. This changes the CTS by moving the details of what constitutes an OPERABLE subsystem to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for two ECCS trains to be OPERABLE, to verify each ECCS pump starts on an actual or simulated actuation signal, and to verify each ECCS pump develops acceptable head. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5 of the ITS. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 2 – Removing Descriptions of System Operation)* CTS 4.5.2.a, which requires verification of the position of certain ECCS valves, includes a footnote (footnote *) that states that positions of certain ECCS valves must be changed during the switchover from injection to recirculation flow following a LOCA. ITS SR 3.5.2.1, which requires the same valve position verification, does not include this extra information. This changes the CTS by removing the description that certain valves must change position to the UFSAR.

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the valves are secured in the listed position. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. Changes to the UFSAR are controlled by 10 CFR 50.59 or 10 CFR 50.71(e), which ensures that any changes to the UFSAR are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements and Related Reporting Problems)* CTS 4.5.2.c requires a visual inspection for loose debris in containment prior to establishing containment integrity and within affected areas of the containment at the completion of each containment entry when containment integrity is established. The ITS does not include this requirement. This changes the CTS by moving this requirement to the Technical Requirements Manual (TRM).

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.5.2.7 still retains the requirement for an inspection of the containment sump for debris every 24 months. The purpose of CTS 4.5.2.c is to ensure that following a containment entry for maintenance or inspection, any debris is removed that could clog the containment sump following a LOCA. This is a good housekeeping practice that should be part of any containment entry and is a detail not necessary to be included in the ITS to provide adequate protection of the public health and safety. Also, this change is acceptable because the removed information will be adequately controlled in the Technical Requirements Manual (TRM). Any changes to the TRM are made under 10 CFR 50.59, which ensures changes to the TRM are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to meeting a TS requirement is being removed from the Technical Specifications.

LA.4 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.5.2.e.1 and 4.5.2.e.2 require verification of the automatic actuation of ECCS components on a "Safety Injection" test signal and "Safety Injection" signal, respectively. ITS SR 3.5.2.4 and SR 3.5.2.5 do not state the specific type of signal, but only specify an "actual or simulated actuation" signal. This changes CTS by moving the type of actuation signal (i.e., Safety Injection) to the Bases. The change to replace "test" with "simulated" and allow both "actual or simulated actuation" signals to be used for these SRs is discussed in DOC L.6.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

verify that appropriate equipment actuates upon receipt of an actuation signal. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5 of the ITS. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications. The change to replace "test" with "simulated" and allow both "actual or simulated actuation" signals to be used for these SRs is discussed in DOC L.6.

LA.5 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.5.2.g.2, which requires verification of the position of certain ECCS throttle valves, includes information concerning the flow path they throttle (i.e., boron injection or safety injection). ITS SR 3.5.2.6, which requires the same valve position verification, does not include this extra information. This changes the CTS by moving the flow path description to the UFSAR.

The removal of these details, which are related to system design and system description, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the valves are secured in the listed position, and the specific valve number is still listed in the ITS. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. Changes to the UFSAR are controlled by 10 CFR 50.59 or 10 CFR 50.71(e), which ensure that any changes to the UFSAR are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design and system description is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.5.2 Action a states that when one ECCS train is inoperable, it must be returned to OPERABLE status within 72 hours. ITS 3.5.2 ACTION A states that when one or more trains are inoperable (for reasons other than Condition D - Unit 2 only), restore the trains to OPERABLE status within 72 hours. ITS 3.5.2 ACTION C states that with less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available (for reasons other than Condition D - Unit 2 only), enter LCO 3.0.3 immediately. This changes the CTS by allowing combinations of equipment from both trains to be credited as meeting the ECCS safety function provided 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available. For example, under the CTS, an inoperable safety injection pump in one train and an inoperable charging pump in the other train would require a CTS 3.0.3 entry. Under the ITS, the same condition would allow 72 hours before requiring a shutdown because the remaining OPERABLE safety injection pump and charging pump are capable of producing the flow equivalent to a single OPERABLE train.

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

The purpose of CTS 3.5.2 Action a is to limit the period of time the plant can operate without redundant ECCS trains. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABILITY status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. ITS 3.5.2 ACTIONS A and C continue to require ECCS components equivalent to a complete ECCS train, and limit the time only one equivalent train is OPERABLE to 72 hours. The ECCS can still perform its safety function, assuming no single failure occurs. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 8 – Deletion of Reporting Requirements)* CTS 3.5.2 Action b (Unit 1) and CTS 3.5.2 Action c (Unit 2) require that a Special Report be prepared and submitted to the NRC within 90 days following an ECCS actuation that results in water being injected into the Reactor Coolant System. The report is to include the description of the circumstances of the event and the total accumulated actuation cycles to date. ITS 3.5.2 does not include this requirement.

The purpose of CTS 3.5.2 Action b (Unit 1) and CTS 3.5.2 Action c (Unit 2) is to provide information about the event to the NRC. This change is acceptable because the regulations provide adequate reporting requirements, and the reports do not affect continued plant operation. A Licensee Event Report is required to be submitted by 10 CFR 50.73(a)(2)(iv) describing any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF). Therefore, a report to the NRC is still required. However, 10 CFR 50.73 does not require that the report include the total accumulated actuation cycles to date. ITS 5.5.4, "Component Cyclic or Transient Limits," requires that controls are in place to track the cyclic and transient occurrences to ensure that components are maintained within the design limits. This change is designated as less restrictive because reports that would be submitted under the CTS will not be required under the ITS.

L.3 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.5.2.d.2 requires a visual inspection of the containment sump and verifying subsystem suction inlets are not restricted by debris and the sump components show no evidence of structural distress or abnormal corrosion every 18 months. CTS 4.5.2.e.1 requires a verification that each ECCS automatic valve in the flow path actuates to its correct position on a Safety Injection signal every 18 months. CTS 4.5.2.e.2 requires a verification that each ECCS pump starts on a Safety Injection signal every 18 months. CTS 4.5.2.g.2 requires a verification that the mechanical stops for certain boron injection and safety injection throttle valves are in the correct position every 18 months. ITS SR 3.5.2.7, SR 3.5.2.4, SR 3.5.2.5, and SR 3.5.2.6, respectively, require performance of similar tests every 24 months. This changes the CTS by extending the Frequency of the Surveillances from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.5.2.d.2 is to ensure the containment sump condition does not prevent the ECCS pumps from performing their required function. The purpose of CTS 4.5.2.e.1 and 4.5.2.e.2 is to ensure that the ECCS automatic valves in the flow path and pumps function properly on receipt of an automatic actuation signal. The purpose of CTS 4.5.2.g.2 is to ensure the throttle valves are in their correct position to ensure proper flow during an accident. These changes were evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal.

For CTS 4.5.2.d.2, while several buckets of dirt and debris were removed from the sump locations during the 1995, 1996, and 1997 sump inspections performed to meet the CTS 4.5.2.d.2 requirement, there did not appear to be any substantial loss of capability and these discoveries do not appear to be the result of time elapsed between inspections. Subsequent to these inspections, a new plant procedure was issued to provide containment cleanliness requirements with respect to loose debris. Also, CTS 4.5.2.c, which requires a visual inspection for loose debris in containment prior to establishing containment integrity and within affected areas of the containment at the completion of each containment entry when containment integrity is required, is being maintained in the Technical Requirements Manual. This requirement, as well as ITS SR 3.6.14.1 and SR 3.6.14.2, which require visual inspections for debris of the refueling canal drains, will assist in ensuring the containment sumps remain free of debris that could affect ECCS OPERABILITY.

For CTS 4.5.2.e.1 and 4.5.2.e.2, extending the Surveillance Frequency for the ECCS automatic valves and pump tests is acceptable because the automatic valves are cycled and the pumps operated, during the operating cycle, in accordance with the Inservice Testing (IST) Program, or justifications exist to document less frequent testing. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion.

For CTS 4.5.2.g.2, extending the Surveillance Frequency to verify that mechanical stops for certain boron injection and safety injection throttle valves are in the correct position is acceptable because the stops are mechanical devices and simple devices that require direct operator action to move. The stops are only adjusted by procedure after testing to confirm proper operation. There are no time-based events that would result in the change of the mechanical stops. Based on the device simplicity and component reliability, the impact, if any, from this change on system availability is minimal. The review of

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

historical surveillance data also demonstrates that there are no failures that would invalidate this conclusion.

For each of these Surveillances, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.5.2.e.1 requires verification that each ECCS automatic valve actuates to its correct position. ITS SR 3.5.2.4 requires verification that each ECCS automatic valve in the flow path "that is not locked, sealed, or otherwise secured in position" actuates to the correct position. This changes the CTS by excluding those ECCS automatic valves that are locked, sealed, or otherwise secured in position from the verification.

The purpose of CTS 4.5.2.e.1 is to provide assurance that if an event occurred requiring the ECCS valves to be in their correct position, those requiring automatic actuation would actuate to their correct position. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Those automatic valves that are locked, sealed, or otherwise secured in position are not required to actuate on an ECCS actuation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves that are required to actuate will continue to be tested. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.5 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.5.2.g.1 and 4.5.2.h describe tests that must be performed following repositioning of valves, maintenance, or modification to the ECCS. The ITS does not include these testing requirements. This changes the CTS by deleting a conditional Surveillance Requirement.

The purpose of 4.5.2.g.1 and 4.5.2.h is to verify OPERABILITY of ECCS subsystems following repositioning or maintenance on a valve and following completion of modifications to the ECCS subsystems that alter subsystem flow characteristics. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a frequency necessary to give confidence that the equipment can perform its assumed safety function. Any time the OPERABILITY of a system or component has been affected by repair, maintenance, modification, or replacement of a component, post maintenance testing is required to demonstrate the OPERABILITY of the system or component. This is described in the Bases for ITS SR 3.0.1 and required under ITS SR 3.0.1. The OPERABILITY requirements for the ECCS trains are described in the Bases for ITS 3.5.2. In addition, the requirements of 10 CFR 50, Appendix B, Section XI

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

(Test Control) provide adequate controls for test programs to ensure that testing incorporates applicable acceptance criteria. Compliance with 10 CFR 50, Appendix B is required under the unit operating license. CNP plant procedures currently require and would continue to require testing in the same manner (i.e., methodology and acceptance criteria) and frequency (i.e., after maintenance or modification activities that alter the ECCS subsystem flow characteristics) as currently stated in the CTS. As a result, post-maintenance testing will continue to be performed and an explicit requirement in the Technical Specifications is not necessary. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.6 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.5.2.e.1 and 4.5.2.e.2 require verification of the automatic actuation of ECCS components on a "Safety Injection test" signal and "Safety Injection" signal, respectively. ITS SR 3.5.2.4 and SR 3.5.2.5 specify that the signal may be from either an actual or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test. The change to remove the specific type of actuation signal (i.e., Safety Injection) to be used for these SRs is discussed in DOC LA.4.

The purpose of CTS 4.5.2.e.1 and 4.5.2.e.2 is to ensure that the ECCS components operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment can not discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

<UNIT 1>

CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 — LCO 3.5.2 Two ECCS trains shall be OPERABLE.

- NOTES -

[1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds [375°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR plus [25]°F], whichever comes first.] (1)

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CTS	CONDITION	REQUIRED ACTION		COMPLETION TIME
Action a	A. One or more trains inoperable.	A.1	Restore train(s) to OPERABLE status.	72 hours
Action a	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 4.	12 hours
DOC L.1	C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1	Enter LCO 3.0.3.	Immediately

<UNIT 2>

CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

- NOTES -

[1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds [375°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR plus [25]°F], whichever comes first.] ①

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action c	A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status.	72 hours
Action a	B. Required Action and associated Completion Time not met. INSERT 1	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours
DOC L.1	C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1 Enter LCO 3.0.3.	Immediately

②

Action b INSERT 2 ②

UNIT 2

(2) **INSERT 1**

for reasons other than Condition D

(2) **INSERT 2**

D. One or more Safety Injection (SI) System cross tie valves closed.	D.1 Reduce THERMAL POWER to $\leq$ 3304 MWt.	1 hour

CTS

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.5.2.a	SR 3.5.2.1	Verify the following valves are in the listed position with power to the valve operator removed. Number / Position / Function [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] INSERT 3	12 hours	3
4.5.2.b	SR 3.5.2.2	Verify each ECCS 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 3.5.2.3	[Verify ECCS piping is full of water.	31 days]	4
4.5.2.f	SR 3.5.2.4 3	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program	4
4.5.2.e.1	SR 3.5.2.5 4	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	18 24 months	4 3
4.5.2.e.2	SR 3.5.2.6 5	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 24 months	4 3
4.5.2.g.2	SR 3.5.2.7 6	Verify, for each ECCS throttle valve listed below, each position stop is in the correct position. Valve Number [ ] [ ] [ ] INSERT 4	18 24 months	4 3
4.5.2.d.2	SR 3.5.2.8 7	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	18 24 months	4 3

3.5.2

(3) INSERT 3

1-IMO-261 (Unit 1)	2-IMO-261 (Unit 2)	Open	SI suction line
1-IMO-262 (Unit 1)	2-IMO-262 (Unit 2)	Open	Mini flow line
1-IMO-263 (Unit 1)	2-IMO-263 (Unit 2)	Open	Mini flow line
1-IMO-315 (Unit 1)	2-IMO-315 (Unit 2)	Closed	Low head SI to hot leg
1-IMO-325 (Unit 1)	2-IMO-325 (Unit 2)	Closed	Low head SI to hot leg
1-IMO-390 (Unit 1)	2-IMO-390 (Unit 2)	Open	RWST to RHR
1-ICM-305 (Unit 1)	2-ICM-305 (Unit 2)	Closed	Sump line
1-ICM-306 (Unit 1)	2-ICM-306 (Unit 2)	Closed	Sump line

(3) INSERT 4

1-SI-121 N (Unit 1)	2-SI-121 N (Unit 2)
1-SI-121 S (Unit 1)	2-SI-121 S (Unit 2)
1-SI-141 L1 (Unit 1)	2-SI-141 L1 (Unit 2)
1-SI-141 L2 (Unit 1)	2-SI-141 L2 (Unit 2)
1-SI-141 L3 (Unit 1)	2-SI-141 L3 (Unit 2)
1-SI-141 L4 (Unit 1)	2-SI-141 L4 (Unit 2)

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2, ECCS - OPERATING

1. ISTS SR 3.4.14.1 is not normally performed in MODE 3 at CNP, and it cannot currently be performed in ≤ 2 hours. Therefore, the Note 1 allowance is not needed and has been deleted. The CNP LTOP system enable temperatures are 266°F for Unit 1 and 299°F for Unit 2. These temperatures are outside of the ECCS Applicability of MODES 1 through 3. Note 2 provides an exception for ECCS pumps inoperable pursuant to LTOP controls. Therefore, Note 2 is not needed and has been removed.

2. A new ACTION (ACTION D) has been added, for Unit 2 only, to be consistent with the current licensing basis. The Unit 2 small break LOCA analysis assumes the Safety Injection System cross tie valves are open, and if not, power must be restricted to ≤ 3304 MWt. In addition, Unit 2 Conditions A and C have been modified to reflect the addition of ACTION D.

3. The brackets are removed and the proper plant specific information/value is provided.

4. ISTS SR 3.5.2.3, a bracketed Surveillance Requirement, has not been included in the CNP ITS. This is consistent with current licensing basis. In addition, a review of plant records indicate that water hammers in the ECCS trains are not a concern at CNP. The remaining SRs have been renumbered due to this deletion.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.2 ECCS - Operating

BASES

BACKGROUND

The function of the ECCS is to provide core cooling and negative reactivity to ensure that the reactor core is protected after any of the following accidents:

a. Loss of coolant accident (LOCA), coolant leakage greater than the capability of the normal charging system, (1)

b. Rod ejection accident, INSERT 1 (2)

c. Loss of secondary coolant accident, including uncontrolled steam release or loss of feedwater, and (2)(1)

d. Steam generator tube rupture (SGTR).

The addition of negative reactivity is designed primarily for the loss of secondary coolant accident where primary cooldown could add enough positive reactivity to achieve criticality and return to significant power. INSERT 2 (2)

There are three phases of ECCS operation: injection, cold leg recirculation, and hot leg recirculation. In the injection phase, water is taken from the refueling water storage tank (RWST) and injected into the Reactor Coolant System (RCS) through the cold legs. When sufficient water is removed from the RWST to ensure that enough boron has been added to maintain the reactor subcritical and the containment sumps have enough water to supply the required net positive suction head to the ECCS pumps, suction is switched to the containment sump for cold leg recirculation. After [Within] approximately 24 [7.5] hours, the ECCS flow is shifted to the hot leg recirculation phase to provide a backflush, which would reduce the boiling in the top of the core and any resulting boron precipitation. INSERT 3 (2)

The ECCS consists of three separate subsystems: centrifugal charging (high head), safety injection (SI) (intermediate head), and residual heat removal (RHR) (low head). Each subsystem consists of two redundant, 100% capacity trains. The ECCS accumulators and the RWST are also part of the ECCS, but are not considered part of an ECCS flow path as described by this LCO.

The ECCS flow paths consist of piping, valves, heat exchangers, and pumps such that water from the RWST can be injected into the RCS

(2) **INSERT 1**

Rupture of a control rod drive mechanism housing (rod cluster control assembly ejection)

(2) **INSERT 2**

rupture of a steam pipe

(2) **INSERT 3**

in order to minimize the potential for

BASES

BACKGROUND (continued)

following the accidents described in this LCO. The major components of each subsystem are the centrifugal charging pumps, the RHR pumps, heat exchangers, and the SI pumps. Each of the three subsystems consists of two 100% capacity trains that are interconnected and redundant such that either train is capable of supplying 100% of the flow required to mitigate the accident consequences. This interconnecting and redundant subsystem design provides the operators with the ability to utilize components from opposite trains to achieve the required 100% flow to the core.

During the injection phase of LOCA recovery, a suction header supplies water from the RWST to the ECCS pumps. Separate piping supplies each subsystem and each train within the subsystem. The discharge from the centrifugal charging pumps combines prior to entering the boron injection tank (BIT) (if the plant utilizes a BIT) and then divides again into four supply lines, each of which feeds the injection line to one RCS cold leg. The discharge from the SI and RHR pumps divides and feeds an injection line to each of the RCS cold legs. Control valves are set to balance the flow to the RCS. This balance ensures sufficient flow to the core to meet the analysis assumptions following a LOCA in one of the RCS cold legs.

For LOCAs that are too small to depressurize the RCS below the shutoff head of the SI pumps, the centrifugal charging pumps supply water until the RCS pressure decreases below the SI pump shutoff head. During this period, the steam generators are used to provide part of the core cooling function.

During the recirculation phase of LOCA recovery, RHR pump suction is transferred to the containment sump. The RHR pumps then supply the other ECCS pumps. Initially, recirculation is through the same paths as the injection phase. Subsequently, recirculation alternates injection between the hot and cold legs.

The centrifugal charging subsystem of the ECCS also functions to supply borated water to the reactor core following increased heat removal events, such as a main steam line break (MSLB). The limiting design conditions occur when the negative moderator temperature coefficient is highly negative, such as at the end of each cycle.

During low temperature conditions in the RCS, limitations are placed on the maximum number of ECCS pumps that may be OPERABLE. Refer

(2) **INSERT 3A**

The ECCS pumps are provided with recirculation lines that ensure each pump can maintain minimum flow requirements when operating at or near shutoff head conditions.

(2) **INSERT 4**

combines via two normally open cross tie valves

(2) **INSERT 5**

The discharges from the RHR pumps are not normally crosstied and each RHR pump feeds an injection line (common to the SI injection line) to two of the four RCS cold legs (one RHR pump feeds two cold legs, the other RHR pump feeds the other two cold legs).

(2) **INSERT 6**

and precludes pump runout

(2) **INSERT 6A**

for SI and RHR pumps,

BASES

BACKGROUND (continued)

to the Bases for LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for the basis of these requirements. (3)

The ECCS subsystems are actuated upon receipt of an SI signal. The actuation of safeguard loads is accomplished in a programmed time sequence. If offsite power is available, the safeguard loads start immediately in the programmed sequence. If offsite power is not available, the Engineered Safety Feature (ESF) buses shed normal operating loads and are connected to the emergency diesel generators (EDGs). Safeguard loads are then actuated in the programmed time sequence. The time delay associated with diesel starting, sequenced loading, and pump starting determines the time required before pumped flow is available to the core following a LOCA. (2)

The active ECCS components, along with the passive accumulators and the RWST covered in LCO 3.5.1, "Accumulators," and LCO 3.5.4, "Refueling Water Storage Tank (RWST)," provide the cooling water necessary to meet GDC 35 (Ref. 1). INSERT 7 (4)

APPLICABLE SAFETY ANALYSES

The LCO helps to ensure that the following acceptance criteria for the ECCS, established by 10 CFR 50.46 (Ref. 2), will be met following a LOCA:

a. Maximum fuel element cladding temperature is ≤ 2200°F, (1)

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 generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react, (1)

d. Core is maintained in a coolable geometry, and

e. Adequate long term core cooling capability is maintained. (2)

The LCO also limits the potential for a magnitude of the post trip return to power following an MSLB event and ensures that containment temperature limits are met.

Each ECCS subsystem is taken credit for in a large break LOCA event at full power (Refs. 3 and 4). This event establishes the requirement for runout flow for the ECCS pumps, as well as the maximum response time (2)

(4) **INSERT 7**

Plant Specific Design Criteria 37, 41, and 44

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BASES

APPLICABLE SAFETY ANALYSES (continued)

for their actuation. The centrifugal charging pumps and SI pumps are credited in a small break LOCA event. This event establishes the flow and discharge head at the design point for the centrifugal charging pumps. The SGTR and MSLB events also credit the centrifugal charging pumps. The OPERABILITY requirements for the ECCS are based on the following LOCA analysis assumptions:

a. A large break LOCA event, with loss of offsite power and a single failure disabling one RHR pump (both EDG trains are assumed to operate due to requirements for modeling full active containment heat removal system operation) and

b. A small break LOCA event, with a loss of offsite power and a single failure disabling one ECCS train.

During the blowdown stage of a LOCA, the RCS depressurizes as primary coolant is ejected through the break into the containment. The nuclear reaction is terminated either by moderator voiding during large breaks or control rod insertion for small breaks. Following depressurization, emergency cooling water is injected into the cold legs, flows into the downcomer, fills the lower plenum, and refloods the core.

The effects on containment mass and energy releases are accounted for in appropriate analyses (Refs. 3 and 4). The LCO ensures that an ECCS train will deliver sufficient water to match boiloff rates soon enough to minimize the consequences of the core being uncovered following a large LOCA. It also ensures that the centrifugal charging and SI pumps will deliver sufficient water and boron during a small LOCA to maintain core subcriticality. For smaller LOCAs, the centrifugal charging pump delivers sufficient fluid to maintain RCS inventory. For a small break LOCA, the steam generators continue to serve as the heat sink, providing part of the required core cooling.

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

LCO

In MODES 1, 2, and 3, two independent (and redundant) ECCS trains are required to ensure that sufficient ECCS flow is available, assuming a single failure affecting either train. Additionally, individual components within the ECCS trains may be called upon to mitigate the consequences of other transients and accidents.

In MODES 1, 2, and 3, an ECCS train consists of a centrifugal charging subsystem, an SI subsystem, and an RHR subsystem. Each train

BASES

LCO (continued)

includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an SI signal and automatically transferring suction to the containment sump. Manually (2)

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via the ECCS pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to supply its flow to the RCS hot and cold legs. (5)

The flow path for each ECCS train must maintain its designed independence to ensure that no single failure can disable both ECCS trains. INSERT 8 (Unit 2 only) (3)

As indicated in Note 1, the SI flow paths may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room.

As indicated in Note 2, operation in MODE 3 with ECCS trains made incapable of injecting in order to facilitate entry into or exit from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," is necessary for plants with an LTOP arming temperature at or near the MODE 3 boundary temperature of 350°F. LCO 3.4.12 requires that certain pumps be rendered incapable of injecting at and below the LTOP arming temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to make pumps incapable of injecting prior to entering the LTOP Applicability, and provide time to restore the inoperable pumps to OPERABLE status on exiting the LTOP Applicability. (3)

APPLICABILITY

In MODES 1, 2, and 3, the ECCS OPERABILITY requirements for the limiting Design Basis Accident, a large break LOCA, are based on full power operation. Although reduced power would not require the same level of performance, the accident analysis does not provide for reduced cooling requirements in the lower MODES. The centrifugal charging pump performance is based on a small break LOCA, which establishes the pump performance curve and has less dependence on power. The SI pump performance requirements are based on a small break LOCA. (6) MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis.

(UNIT 2 only)

(3) **INSERT 8**

However, for the SI System flow path, the two SI pumps are required to have their discharges cross-connected when THERMAL POWER exceeds 3304 MWt. This ensures the peak clad temperature limit is not exceeded during a small break LOCA.

BASES

APPLICABILITY (continued)

This LCO is only applicable in MODE 3 and above. Below MODE 3, the SI signal setpoint is manually bypassed by operator control, and system functional requirements are relaxed as described in LCO 3.5.3, "ECCS - Shutdown."

In MODES 5 and 6, plant conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

ACTIONS

A.1

With one or more trains inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on an NRC reliability evaluation (Ref. 5) and is a reasonable time for repair of many ECCS components.

An ECCS train is inoperable if it is not capable of delivering design flow to the RCS. Individual components are inoperable if they are not capable of performing their design function or supporting systems are not available.

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the ECCS incapable of performing its function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the ECCS. This allows increased flexibility in plant operations under circumstances when components in opposite trains are inoperable.

An event accompanied by a loss of offsite power and the failure of an EDG can disable one ECCS train until power is restored. A reliability analysis (Ref. 5) has shown that the impact of having one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours.

Reference 6 describes situations in which one component, such as an RHR crossover valve, can disable both ECCS trains. With one or more component(s) inoperable such that 100% of the flow equivalent to a

(Unit 2 only)

3 **INSERT 9**

for reasons other than Condition D

BASES

ACTIONS (continued)

single OPERABLE ECCS train is not available, the facility is in a condition outside the accident analysis. Therefore, LCO 3.0.3 must be immediately entered. (8)

B.1 and B.2 (9)

ECCS (5) (S)

If the inoperable trains cannot be returned 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 MODE 3 within 6 hours and MODE 4 within 12 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. unit (2)

C.1

INSERT 11 ECCS (5) INSERT 10 (unit 2 only) (3)

Condition A is applicable with one or more trains inoperable. The allowed Completion Time is based on the assumption that at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available. With less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the facility is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately. (3) (3) INSERT 12 (unit 2 only)

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

Verification of proper valve position ensures that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removal of power or by key locking the control in the correct position ensures that they cannot change position as a result of an active failure or be inadvertently misaligned. These valves are of the type, described in Reference 6, that can disable the function of both ECCS trains and invalidate the accident analyses. A 12 hour Frequency is considered reasonable in view of other administrative controls that will ensure a mispositioned valve is unlikely. out (2) power (2) (9) (2)

SR 3.5.2.2

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,

(Unit 2 only)

(3) **INSERT 10**

for reasons other than Condition D

(3) **INSERT 11**

of Required Action A.1

(Unit 2 only)

(3) **INSERT 12**

D.1

With both trains of the SI System inoperable due to one or more cross tie valves closed, the small break LOCA analysis assumptions are not met. Therefore, THERMAL POWER must be reduced to ≤ 3304 MWt within 1 hour. This will place the unit back within the assumptions of the small break LOCA analysis. The 1 hour Completion Time minimizes the amount of time the unit is not within the accident analysis assumptions, yet provides a sufficient amount of time to reduce power to within the required limit.

(11)

BASES

SURVEILLANCE REQUIREMENTS (continued)

INSERT 12A

or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve will automatically reposition within the proper stroke time. This Surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. The 31 day Frequency is appropriate because the valves are operated under administrative control, and an improper valve position would only affect a single train. This Frequency has been shown to be acceptable through operating experience.

SR 3.5.2.3

With the exception of the operating centrifugal charging pump, the ECCS pumps are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the piping from the ECCS pumps to the RCS full of water ensures that the system will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent water hammer, pump cavitation, and pumping of noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following an SI signal or during shutdown cooling. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the procedural controls governing system operation. (3)

SR 3.5.2.4 (3) (3)

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by Section XI of the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the plant safety analysis. SRs are specified in the Inservice Testing Program, which encompasses Section XI of the ASME Code. Section XI of the ASME Code provides the activities and Frequencies necessary to satisfy the requirements. (12) INSERT 12B

SR 3.5.2.5 (4) and SR 3.5.2.6 (5) (3)

These Surveillances demonstrate that each automatic ECCS valve actuates to the required position on an actual or simulated SI signal and

(11) **INSERT 12A**

This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves.

(12) **INSERT 12B**

Verifying that each ECCS pump's developed head at the flow test point is greater than or equal to the required developed head ensures that ECCS pump performance has not degraded to an unacceptable level during the cycle. Flow and differential head are normal tests of ECCS pump performance required by the ASME OM Code (Ref. 10). Since the ECCS pumps cannot be tested with flow through the normal ECCS flow paths, they are tested on recirculation flow (RHR and SI pumps) or normal charging flow path (centrifugal charging pumps). This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

that each ECCS pump starts on receipt of an actual or simulated SI signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for unplanned plant transients if the Surveillances were performed with the reactor at power. The [18] month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of ESF Actuation System testing, and equipment performance is monitored as part of the Inservice Testing Program.

SR 3.5.2.7

Realignment of valves in the flow path on an SI signal is necessary for proper ECCS performance. These valves have stops to allow proper positioning for restricted flow to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. This Surveillance is not required for plants with flow limiting orifices. The [18] month Frequency is based on the same reasons as those stated in SR 3.5.2.5 and SR 3.5.2.6.

SR 3.5.2.8

Periodic inspections of the containment sump suction inlet ensure that it is unrestricted and stays in proper operating condition. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, on the need to have access to the location, and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This Frequency has been found to be sufficient to detect abnormal degradation and is confirmed by operating experience.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 35.
2. 10 CFR 50.46.
3. [U]FSAR, Section [ ].
4. [U]FSAR, Chapter [15], "Accident Analysis."

(9) **INSERT 13**

Proper throttle valve position

(9) **INSERT 14**

This Surveillance verifies the mechanical stop of each listed ECCS throttle valve is in the correct position.

(2) **INSERT 15**

UFSAR, Section 1.4.7.

(2) **INSERT 16**

Section 14.3.2.

(2) **INSERT 17**

5. UFSAR, Section 14.2.4.
6. UFSAR, Section 14.2.5.
7. UFSAR, Section 14.3.4.

BASES

REFERENCES (continued)

(8) ~~9~~. NRC Memorandum to V. Stello, Jr., from R.L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975. (2)

(9) ~~10~~. IE Information Notice No. 87-01. (2)

INSERT 18 (5)

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(5) **INSERT 18**

10. ASME, Operations and Maintenance Standards and Guides (OM Codes).

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JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2 BASES, ECCS - OPERATING

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Changes are made to reflect those changes made to the Specification. The following requirements are renumbered or revised, where applicable, to reflect the changes.

4. CNP Units 1 and 2 were designed and under construction prior to the promulgation of 10 CFR 50, Appendix A. CNP Units 1 and 2 were designed and constructed to meet the intent of the proposed General Design Criteria, published in 1967. However, the CNP UFSAR contains discussions of the Plant Specific Design Criteria (PSDCs) used in the design of CNP Units 1 and 2. Bases references to the 10 CFR 50, Appendix A criteria have been replaced with references to the appropriate section of the UFSAR.

5. Editorial change made for consistency with similar phrases in other ITS Bases.

6. Statements regarding specific accidents representing the design basis of ECCS pumps have been corrected. The ECCS pumps design characteristics are inputs to the accident analysis, not outputs.

7. The listed LCOs concern the shutdown cooling function of the RHR System, not the ECCS function. The Applicability Section has adequately described why ECCS is not needed in MODES 5 and 6, and it is not necessary to describe why normal shutdown cooling is required. Therefore, this inappropriate information has been deleted.

8. The first sentence of this Bases paragraph describes how a single component can result in the inoperability of both ECCS trains. This description is adequately covered in the LCO Section (in the description that each flow path must maintain its designed independence) and is not appropriate for the Bases of this ACTION (one or more ECCS trains inoperable but 100% capability maintained). In addition, the second and third sentences are covered by the Bases of ACTION C.1, and, consistent with the content of the ISTS Bases for many other ACTIONS, is not necessary to be included in the Bases for this ACTION.

9. Change made to be consistent with the actual Specification.

10. The statement that the instrumentation is tested as part of the ESF Actuation System Testing and that equipment performance is monitored as part of the Inservice Testing Program is not necessary. This cross reference type information is included in the appropriate Specifications and is not needed to be referenced in this SR Bases.

11. Changes are made to be consistent with similar statements in the Bases (e.g., B 3.7.5, B 3.7.6, and B 3.7.8).

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2 BASES, ECCS - OPERATING

12. CTS 4.0.5 requires pump and valve testing per the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. ISTS 5.5.8, "Inservice Testing Program," also references the requirements of Section XI of the ASME Boiler and Pressure Vessel Code. However, ITS 5.5.6, "Inservice Testing Program," references the ASME Operation and Maintenance Standards and Guides (OM Codes) as described in detail in ITS 5.5 JFD 10. ITS Bases SR 3.5.2.3 references the ASME OM Codes for testing of the ECCS pumps consistent with the justification provided in ITS 5.5 JFD 10. This changes the ISTS Bases to reference the ASME OM Codes instead of Section XI of the ASME Boiler and Pressure Vessel Code. This is acceptable based on the justification provided in ITS 5.5 DOC A.15. Additional changes to the ISTS Bases have been made to be consistent with similar phrases in other ITS Bases concerning testing of pumps using the ASME OM Codes (e.g., ITS Bases SR 3.6.6.2 for containment spray pumps, and ITS Bases SR 3.7.5.2 for auxiliary feedwater pumps).

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.2, ECCS - OPERATING

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 3

ITS 3.5.3, ECCS - Shutdown

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.5.3

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

LCO 3.5.3 — 3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump # (See ITS 3.4.12)

b. One OPERABLE residual heat removal heat exchanger,

c. One OPERABLE residual heat removal pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation. (LA.1)

APPLICABILITY: MODE 4.

ACTION:

ACTION B / ACTION C — a. With no ECCS [centrifugal charging] subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 [24] hours. (LA.1) (L.1)

ACTION A — b. With no ECCS [RHR] subsystem OPERABLE because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods. (LA.1) (M.1)

c. With more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE when the temperature of any RCS cold leg is less than or equal to 152°F, remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit within 1 hour. (See ITS 3.4.12)

d. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. (L.2)

ACTIONS Note — e. Specification 3.0.4.b is not applicable to the centrifugal charging pump.

A maximum of one centrifugal charging pump shall be OPERABLE and both safety injection pumps shall be inoperable whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F. (See ITS 3.4.12)

ITS 3.5.3

A.1

ITS

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

SR 3.5.3.1 4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2.

SR 3.5.2.2 (as modified by the Note), SR 3.5.2.3, SR 3.5.2.6, and SR 3.5.2.7

A.2

4.5.3.2 All charging pumps and safety injection pumps, except the above required OPERABLE charging pump, shall be demonstrated inoperable, by verifying that the motor circuit breakers have been removed from their electrical power supply circuits, at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F as determined at least once per hour when any RCS cold leg temperature is between 152°F and 200°F.

See ITS 3.4.12

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ECCS SUBSYSTEMS - T_{avg} < 350°F

LIMITING CONDITION FOR OPERATION

LCO 3.5.3 — 3.5.3 As a minimum, one ECCS subsystem comprised of the following shall be OPERABLE:

a. One OPERABLE centrifugal charging pump, — See ITS 3.4.12

b. One OPERABLE residual heat removal heat exchanger,

c. One OPERABLE residual heat removal pump, and

d. An OPERABLE flow path capable of taking suction from the refueling water storage tank upon being manually realigned and transferring suction to the containment sump during the recirculation phase of operation. — LA.1

APPLICABILITY: MODE 4.

ACTION:

ACTION B — a. With no ECCS [centrifugal charging] subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank, restore at least one ECCS subsystem to OPERABLE status within 1 hour or be in COLD SHUTDOWN within the next 20 [24] hours. — LA.1, L.1

ACTION C

ACTION A — b. With no ECCS [RHR] subsystem OPERABLE because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump, restore at least one ECCS subsystem to OPERABLE status or maintain the Reactor Coolant System T_{avg} less than 350°F by use of alternate heat removal methods. — LA.1, M.1

c. With more than one charging pump OPERABLE or with a safety injection pump(s) OPERABLE when the temperature of any RCS cold leg is less than or equal to 152°F, remove the additional charging pump(s) and the safety injection pump(s) motor circuit breakers from the electrical power circuit within 1 hour. — See ITS 3.4.12

d. In the event the ECCS is actuated and injects water into the Reactor Coolant System, a Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days describing the circumstances of the actuation and the total accumulated actuation cycles to date. — L.2

ACTIONS Note — e. Specification 3.0.4.b is not applicable to the centrifugal charging pump.

A maximum of one centrifugal charging pump shall be OPERABLE and both safety injection pumps shall be inoperable whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F. — See ITS 3.4.12

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS

SR 3.5.3.1 — 4.5.3.1 The ECCS subsystem shall be demonstrated OPERABLE per ~~the applicable~~ Surveillance Requirements of 4.5.2. [SR 3.5.2.2 (as modified by the Note), SR 3.5.2.3, SR 3.5.2.6, and SR 3.5.2.7] (A.2)

4.5.3.2 All charging pumps and safety injection pumps, except the above required OPERABLE charging pump, shall be demonstrated inoperable, by verifying that the motor circuit breakers have been removed from their electrical power supply circuits, at least once per 12 hours whenever the temperature of one or more of the RCS cold legs is less than or equal to 152°F as determined at least once per hour when any RCS cold leg temperature is between 152°F and 200°F. [See ITS 3.4.12]

DISCUSSION OF CHANGES
ITS 3.5.3, ECCS - SHUTDOWN

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 4.5.3.1 states that the ECCS subsystem shall be demonstrated OPERABLE per the applicable Surveillance Requirements of 4.5.2. ITS SR 3.5.3.1 states the specific Surveillances of ITS 3.5.2 that must be performed, and adds a NOTE modifying the acceptance criteria of ITS 3.5.2.2.

This change is acceptable because the change is editorial. The Surveillances listed in ITS SR 3.5.3.1 are those that are considered "applicable" under the CTS. All ITS 3.5.2 Surveillances are included in SR 3.5.3.1 except those that are not applicable in MODE 4. ITS SR 3.5.2.1 verifies certain ECCS valves, whose alignment could render both ECCS trains inoperable, are secured in the correct position. It is excluded since only one ECCS train is required in MODE 4. SRs 3.5.2.4 and 3.5.2.5 are excluded since the automatic starting of ECCS is not required in MODE 4. A NOTE stating that "For SR 3.5.2.2, the SR is modified to allow the valves to not be in the correct position, provided they can be aligned to the correct position" modifies SR 3.5.2.2. In the ITS, "correct position" for automatic valves is defined as the valves being in the accident position or capable of automatically aligning to the accident position within the assumed time. Since the automatic feature of the ECCS valves is not required in MODE 4, the NOTE is added to allow ITS SR 3.5.2.2 to be met as long as the valves can be manually realigned to their accident position, which is consistent with the CTS requirements. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.5.3 Action b requires that when the required RHR subsystem is inoperable, the RHR subsystem must be restored to OPERABLE status or the RCS T_{avg} must be maintained < 350°F by use of alternate heat removal methods. The CTS does not provide any finite start time or completion time to perform the Action. ITS 3.5.3 ACTION A requires the immediate initiation of action to restore the required RHR train to OPERABLE status. This changes the CTS by specifically stating that action to restore the RHR train to OPERABLE status must be initiated immediately, and does not allow alternate decay heat methods to be used.

The purpose of CTS Action b is to provide compensatory measures for when the required RHR train is inoperable. While the CTS Action compensates for the decay heat removal aspect of the inoperable RHR train, it does not address the ECCS function of the RHR train. Therefore, this new ACTION is acceptable because it ensures that action is immediately initiated to restore the RHR train to OPERABLE status, which compensates for both functions that the RHR train performs. This change is designated as more restrictive because it provides a finite start time for the action and it ensures that action is taken to restore the ECCS function of the RHR train to OPERABLE status.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.5.3 states that an ECCS subsystem shall be OPERABLE and contains a description of what constitutes an OPERABLE subsystem. ITS 3.5.3 requires an ECCS train be OPERABLE, but the details of what constitutes an OPERABLE train are moved to the Bases. CTS 3.5.3 Action a provides an action for when a ECCS subsystem is inoperable "because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank" and CTS 3.5.3 Action b provides an action for when an ECCS subsystem is inoperable "because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump." ITS 3.5.3 ACTION A uses the term "residual heat removal (RHR) subsystem" and ITS 3.5.3 ACTION B uses the term "centrifugal charging subsystem" instead of stating the reasons the subsystem is inoperable, and the reasons listed in the CTS are moved to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for one ECCS train to be OPERABLE and provides proper Conditions to identify the various allowed inoperabilities. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5 of the ITS. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 3 – Relaxation of Completion Time)* CTS 3.5.3 Action a allows 20 hours to reach MODE 5 when a centrifugal charging pump or its flow path from the refueling water storage tank is inoperable and is not restored to OPERABLE status within 1 hour of discovery. ITS 3.5.3 ACTION C allows 24 hours to reach MODE 5. This changes the CTS by extending the Completion Time from 20 to

DISCUSSION OF CHANGES
ITS 3.5.3, ECCS - SHUTDOWN

24 hours if the centrifugal charging subsystem is not restored to OPERABLE status within 1 hour of discovery.

The purpose of CTS 3.5.3 is to ensure the unit is capable of being cooled down by whatever means available when no high head ECCS subsystem is OPERABLE. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. The 24 hour Completion Time is reasonable based on operating experience to reach MODE 5 in an orderly manner and without challenging plant systems or operators. This is consistent with LCO 3.0.3, which allows 24 hours to transition from MODE 4 to MODE 5. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L.2 *(Category 8 – Deletion of Reporting Requirements)* CTS 3.5.3 Action d requires that a Special Report be prepared and submitted to the NRC within 90 days following an ECCS actuation that results in water being injected into the Reactor Coolant System. The report is to include the description of the circumstances of the actuation and the total accumulated actuation cycles to date. ITS 3.5.3 does not include this requirement.

The purpose of CTS 3.5.3 Action d is to provide information about the event to the NRC. This change is acceptable because the regulations provide adequate reporting requirements, and the reports do not affect continued plant operation. A Licensee Event Report is required to be submitted by 10 CFR 50.73(a)(2)(iv) describing any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF). Therefore, a report to the NRC is still required. However, 10 CFR 50.73 does not require that the report include the total accumulated actuation cycles to date. ITS 5.5.4, "Component Cyclic or Transient Limits," requires that controls are in place to track the cyclic and transient occurrences to ensure that components are maintained within the design limits. This change is designated as less restrictive because reports that would be submitted under the CTS will not be required under the ITS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS - Shutdown

LCO 3.5.3 — LCO 3.5.3 One ECCS train shall be OPERABLE.

- NOTE -
An RHR train may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned to the ECCS mode of operation. (3)

APPLICABILITY: MODE 4.

ACTIONS — INSERT 1A — TSTF-359

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b	A. Required ECCS residual heat removal (RHR) subsystem inoperable.	A.1 Initiate action to restore required ECCS RHR subsystem to OPERABLE status.	Immediately.	(1)
Action a	B. Required ECCS high head subsystem inoperable. [centrifugal charging]	B.1 Restore required ECCS high head subsystem to OPERABLE status. [centrifugal charging]	1 hour	(1)
Action a	C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 5.	24 hours	(1)

3.5.3

CTS (TSTF-359) **INSERT 1A**

-NOTE-

Action f LCO 3.0.4.b is not applicable to ECCS ~~high head~~ centrifugal charging (TSTF-359) subsystem.

Insert Page 3.5.3-1

ITS

INSERT 1 (3)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.5.3.1 SR 3.5.3.1	The following SRs are applicable for all equipment required to be OPERABLE: ~~SR 3.5.2.1~~ SR 3.5.2.1 ~~SR 3.5.2.3~~ SR 3.5.2.4 (1) (3) SR 3.5.2.8 (6) (1) and SR 3.5.2.9 (7)	In accordance with applicable SRs (2) (3)

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3 **INSERT 1**

-NOTE-

For SR 3.5.2.2, the SR is modified to allow the valves to not be in the correct position, provided they can be aligned to the correct position.

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.3, ECCS - SHUTDOWN

1. The brackets are removed and the proper plant specific information/value is provided.

2. Changes have been made to SR 3.5.3.1 due to changes made to the SRs of ITS 3.5.2.

3. ISTS SR 3.5.3.1 has been modified to include a requirement for ITS SR 3.5.2.2 to be met. ITS SR 3.5.2.2, which verifies proper valve position, is required for the associated ECCS train to be OPERABLE. In conjunction with this addition, a Note to ISTS SR 3.5.3.1 has been added to allow ITS SR 3.5.2.2 to be met provided the valves "can be aligned to the correct position." The words in ITS SR 3.5.2.2 states that the valves must be "in the correct position." In the ITS, this means that the valves are in the accident position or can be automatically aligned to the accident position within the assumed time. Since the automatic feature of the valves is not required in MODE 4, the Note allows ITS SR 3.5.2.2 to be met as long as the valves can be manually realigned to their accident position. In addition, since the valves are not required to reposition automatically, the Note to the LCO is not necessary and has been deleted.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.3 ECCS - Shutdown

BASES

BACKGROUND

The Background section for Bases 3.5.2, "ECCS - Operating," is applicable to these Bases, with the following modifications. INSERT 1 (2)

In MODE 4, the required ECCS train consists of two separate subsystems: centrifugal charging (high head) and residual heat removal (RHR) (low head).

The ECCS flow paths consist of piping, valves, heat exchangers, and pumps such that water from the refueling water storage tank (RWST) can be injected into the Reactor Coolant System (RCS) following the accidents described in Bases 3.5.2.

APPLICABLE SAFETY ANALYSES

~~The Applicable Safety Analyses section of Bases 3.5.2 also applies to this Bases section.~~ INSERT 1A (2)

Due to the stable conditions associated with operation in MODE 4 and the reduced probability of occurrence of a Design Basis Accident (DBA), the ECCS operational requirements are reduced. It is understood in these reductions that certain automatic safety injection (SI) actuation is not available. In this MODE, sufficient time exists for manual actuation of the required ECCS to mitigate the consequences of a DBA. (2)

Only one train of ECCS is required for MODE 4. This requirement dictates that single failures are not considered during this MODE of operation. The ECCS trains satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). (1)

LCO

In MODE 4, one of the two independent (and redundant) ECCS trains is required to be OPERABLE to ensure that sufficient ECCS flow is available to the core following a DBA.

In MODE 4, an ECCS train consists of a centrifugal charging subsystem and an RHR subsystem. Each train includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST and transferring suction to the containment sump.

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via the ECCS pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to

(2) **INSERT 1**

, as it describes the design of the ECCS,

(2) **INSERT 1A**

The Cook Nuclear Plant Licensing Basis does not require performance of an analysis to determine the effects of a Loss of Coolant Accident (LOCA) occurring in MODE 4, nor does it require an analysis to prove ECCS equipment capability to mitigate a MODE 4 LOCA. However, these Technical Specifications require certain ECCS subsystems to be OPERABLE in MODE 4 to ensure sufficient ECCS flow is available to the core and adequate core cooling is maintained following a MODE 4 LOCA.

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BASES

LCO (continued)

take its supply from the containment sump and to deliver its flow to the RCS hot and cold legs.

This LCO is modified by a Note that allows an RHR train to be considered OPERABLE during alignment and operation for decay heat removal, if capable of being manually realigned (remote or local) to the ECCS mode of operation and not otherwise inoperable. This allows operation in the RHR mode during MODE 4. (10)

APPLICABILITY

In MODES 1, 2, and 3, the OPERABILITY requirements for ECCS are covered by LCO 3.5.2.

In MODE 4 with RCS temperature below 350°F, one OPERABLE ECCS train is acceptable without single failure consideration, on the basis of the stable reactivity of the reactor and the limited core cooling requirements.

In MODES 5 and 6, plant unit conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level." (2) (3)

ACTIONS

INSERT 1B (TSTF-359)

A.1

With no ECCS RHR subsystem OPERABLE, the plant unit is not prepared to respond to a loss of coolant accident or to continue a cooldown using the RHR pumps and heat exchangers. The Completion Time of Immediately to initiate actions that would restore at least one ECCS RHR subsystem to OPERABLE status ensures that prompt action is taken to restore the required cooling capacity. Normally, in MODE 4, reactor decay heat is removed from the RCS by an RHR loop. If no RHR loop is OPERABLE for this function, reactor decay heat must be removed by some alternate method, such as use of the steam generators. The alternate means of heat removal must continue until the inoperable RHR loop components can be restored to operation so that decay heat removal is continuous. (2) (4)

With both RHR pumps and heat exchangers subsystems inoperable, it would be unwise to require the plant to go to MODE 5, where the only available heat removal system is the RHR. Therefore, the appropriate action is to (11)

TSTF-359

INSERT 1B

centrifugal charging

2

A Note prohibits the application of LCO 3.0.4.b to an inoperable ECCS ~~high head~~ subsystem when entering MODE 4. There is an increased risk associated with entering MODE 4 from MODE 5 with an inoperable ECCS ~~high head~~ subsystem and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

BASES

ACTIONS (continued)

initiate measures to restore one ECCS RHR subsystem and to continue the actions until the subsystem is restored to OPERABLE status.

B.1

With no ECCS high head subsystem OPERABLE, due to the inoperability of the centrifugal charging pump or flow path from the RWST, the plant is not prepared to provide high pressure response to Design Basis Events requiring SI. The 1 hour Completion Time to restore at least one ECCS high head subsystem to OPERABLE status ensures that prompt action is taken to provide the required cooling capacity or to initiate actions to place the plant in MODE 5, where an ECCS train is not required.

C.1

When the Required Actions of Condition B cannot be completed within the required Completion Time, a controlled shutdown should be initiated. Twenty-four hours is a reasonable time, based on operating experience, to reach MODE 5 in an orderly manner and without challenging plant systems or operators.

SURVEILLANCE REQUIREMENTS

SR 3.5.3.1

The applicable Surveillance descriptions from Bases 3.5.2 apply.

REFERENCES

The applicable references from Bases 3.5.2 apply.

(8) INSERT 2

the unit should be placed in MODE 5.

(10) INSERT 3

However, a Note has been added that allows the acceptance criteria of SR 3.5.2.2 to be modified. The Note allows valves to not be in the correct position (i.e., in the nonaccident position and not capable of being automatically repositioned within the assumed time), provided the valves can be aligned to the correct position (e.g., using the valve control switches). This is acceptable since automatic actuation of the ECCS train is not required in MODE 4.

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.3 BASES, ECCS - SHUTDOWN

1. Editorial change made for consistency with similar phrases in other ITS Bases.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The listed LCOs concern the shutdown cooling function of the RHR System, not the ECCS function. The Applicability Section has adequately described why ECCS is not needed in MODES 5 and 6, and it is not necessary to describe why normal shutdown cooling is required. Therefore, this inappropriate information has been deleted.

4. The statement in ACTION A.1 Bases concerning how decay heat is removed is not appropriate for this Specification. ITS 3.5.3 concerns ECCS, not normal decay heat removal. Normal decay heat removal in MODE 4 is covered by ITS LCO 3.4.6. In addition, the actual ITS Required Action A.1 does not discuss normal decay heat removal requirements; it only requires the ECCS train to be restored. Therefore, the statement has been deleted.

5. CTS 3.5.3, Action a, states "With no ECCS subsystem OPERABLE because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank..." The phrase "because of the inoperability of either the centrifugal charging pump or the flow path from the refueling water storage tank..." is relocated from the CTS to the ITS Bases as described in ITS 3.5.3 DOC LA.1. ISTS 3.5.3 ACTION B.1 Bases states "With no ECCS high head subsystem OPERABLE, due to the inoperability of the centrifugal charging pump or flow path from the RWST..." ITS 3.5.3 ACTION B.1 Bases states "With no ECCS centrifugal charging subsystem OPERABLE..." This changes the ISTS 3.5.3 ACTION B.1 Bases by deleting the statement concerning how a centrifugal charging subsystem is determined to be inoperable. This is acceptable, since there may be other reasons the centrifugal charging subsystem is inoperable, and the statement that the centrifugal charging subsystem is inoperable is sufficient and is consistent with the actual wording of ITS Required Action B.1. In addition, the required components of an OPERABLE centrifugal charging subsystem, including pumps and suction source, are defined in other sections of the ITS 3.5.3 Bases, including the second and third paragraphs of the Background section, and the second paragraph of the LCO section.

6. The statement in ACTION B.1 Bases concerning initiation of actions to place the plant in MODE 5 has been deleted, since it is not consistent with the actual wording of ITS Required Action B.1. ITS Required Action B.1 does not address a plant cooldown to MODE 5; it only address restoring the subsystem to OPERABLE status. ITS Required Action C.1 provides the requirements to place the unit in MODE 5.

7. Typographical/grammatical error corrected.

8. The Bases of the action to take when Required Action B.1 cannot be completed is changed to state that the unit must be brought to MODE 5. This is a more accurate description than the ISTS Bases statement that a controlled shutdown should be initiated since the LCO only applies during shutdown.

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.3 BASES, ECCS - SHUTDOWN

9. There are no References in the ITS 3.5.3 Bases, therefore, the statement referring to the ITS 3.5.2 Bases has been deleted and the word "none" has been added.

10. Changes are made to be consistent with changes made to the ISTS.

11. CTS 3.5.3, Action b, states "With no ECCS subsystem OPERABLE because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump..." The phrase "because of the inoperability of either the residual heat removal heat exchanger or residual heat removal pump..." is relocated from the CTS to the ITS Bases as described in ITS 3.5.3 DOC LA.1. ISTS 3.5.3 ACTION A.1 Bases states "With both RHR pumps and heat exchangers inoperable..." ITS 3.5.3 ACTION A.1 Bases states "With both RHR subsystems inoperable..." This changes the ISTS 3.5.3 ACTION A.1 Bases by expanding the reasons that a RHR subsystem may be inoperable beyond a pump and/or heat exchanger being inoperable. This is acceptable, since there may be other reasons that both RHR subsystems are inoperable, and the statement that both RHR subsystems are inoperable is sufficient and is consistent with the actual wording of ITS Required Action A.1. In addition, the required components of an OPERABLE RHR subsystem, including pumps and heat exchangers, are defined in other sections of the ITS 3.5.3 Bases, including the second and third paragraphs of the Background section, and the second paragraph of the LCO section.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.3, ECCS - SHUTDOWN

There are no specific NSHC discussions for this Specification.

ATTACHMENT 4

ITS 3.5.4, Refueling Water Storage Tank (RWST)

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3/4.5.5 REFUELING WATER STORAGE TANK

LIMITING CONDITION FOR OPERATION

LCO 3.5.4 — 3.5.5 The refueling water storage tank (RWST) shall be OPERABLE with:

SR 3.5.4.2 — a. A minimum contained volume of 375,500 gallons of borated water.

SR 3.5.4.3 — b. Between 2400 and 2600 ppm of boron, and

SR 3.5.4.1 — c. A minimum water temperature of 70°F and a maximum water temperature of 100°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTION A (L.1)

ACTION:

for reasons other than concentration or temperature not within limits (L.1)

ACTION B — With the refueling water storage tank inoperable, restore the tank to OPERABLE status within 1 hour or be in at
ACTION C — least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.5.5 The RWST shall be demonstrated OPERABLE:

a. At least once per 7 days by:

SR 3.5.4.2 — 1. Verifying the contained borated water level in the tank, and

SR 3.5.4.3 — 2. Verifying the boron concentration of the water.

SR 3.5.4.1 — b. At least once per 24 hours by verifying the RWST temperature.

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3/4.5.5 REFUELING WATER STORAGE TANK

LIMITING CONDITION FOR OPERATION

LCO 3.5.4 — 3.5.5 The refueling water storage tank (RWST) shall be OPERABLE with:

SR 3.5.4.2 — a. A minimum contained volume of 375,500 gallons of borated water.

SR 3.5.4.3 — b. Between 2400 and 2600 ppm of boron, and

SR 3.5.4.1 — c. A minimum water temperature of 70°F and a maximum water temperature of 100°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: [Add proposed ACTION A] (L.1)

ACTION B — With the refueling water storage tank inoperable [for reasons other than concentration or temperature not within limits], restore the tank to OPERABLE status within 1 hour or be in at
ACTION C — least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.5.5 The RWST shall be demonstrated OPERABLE:

a. At least once per 7 days by:

SR 3.5.4.2 — 1. Verifying the contained borated water level in the tank, and

SR 3.5.4.3 — 2. Verifying the boron concentration of the water.

SR 3.5.4.1 — b. At least once per 24 hours by verifying the RWST temperature.

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L.1 *(Category 3 – Relaxation of Completion Time)* The CTS 3.5.5 Action allows 1 hour to restore an inoperable RWST. ITS 3.5.4 ACTION A allows 8 hours to restore the RWST to OPERABLE status if the inoperability is due to the RWST boron concentration or temperature not within limits. This changes the CTS by increasing the Completion Time for the specified Conditions from 1 hour to 8 hours.

The purpose of CTS 3.5.5 Action is to require rapid correction of conditions that affect both trains of ECCS. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABILITY status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. The primary function of the RWST is to provide large volumes of water to the RCS following a Loss of Coolant Accident. This large volume of water continues to be available while in this Condition. As a result, the most important safety function of the RWST can still be provided. Because of the volume of the RWST, changes to the boron concentration or temperature occur slowly, and consequently would not go far out of limit. If one of these parameters was out of limit, more than one hour would likely be required to restore the parameter. Given the remaining abilities of the RWST, requiring a plant shutdown after one hour is not warranted. This change is designated as

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK

less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

RWST
3.5.4

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.5 LCO 3.5.4 The RWST shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L.1	A. RWST boron concentration not within limits. OR RWST borated water temperature not within limits.	A.1 Restore RWST to OPERABLE status.	8 hours
Action	B. RWST inoperable for reasons other than Condition A.	B.1 Restore RWST to OPERABLE status.	1 hour
Action	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours

CTS

RWST
3.5.4

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.5.5.b 3.5.5.c SR 3.5.4.1	- NOTE - [Only required to be performed when ambient air temperature is < [35]°F or > [100]°F.]		1
	Verify RWST borated water temperature is ≥ [35] 70 °F and ≤ [100]°F.	24 hours	2
3.5.5.a 4.5.5.a.1 SR 3.5.4.2	Verify RWST borated water volume is ≥ [466,200] 375,500 gallons [%].	7 days	2
4.5.5.a.2 3.5.5.b SR 3.5.4.3	Verify RWST boron concentration is ≥ [2000] 2400 ppm and ≤ [2200] 2600 ppm.	7 days	2

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.4, REFUELING WATER STORAGE TANK

1. A bracketed Note for ISTS SR 3.5.4.1 associated with the effect of ambient air temperature on RWST temperature is not adopted. CNP RWST borated water is heated and not maintained at ambient temperature, and the current temperature band is not very large.

2. The brackets are removed and the proper plant specific information/value is provided.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.4 Refueling Water Storage Tank (RWST)

BASES

normal and

BACKGROUND The RWST supplies borated water to the Chemical and Volume Control System (CVCS) during abnormal operating conditions, to the refueling pool during refueling, and to the ECCS and the Containment Spray System during accident conditions. (1)

a common

The RWST supplies both trains of the ECCS and the Containment Spray System through separate, redundant supply headers during the injection phase of a loss of coolant accident (LOCA) recovery. A motor operated isolation valve is provided in each header to isolate the RWST from the ECCS once the system has been transferred to the recirculation mode. The recirculation mode is entered when pump suction is transferred to the containment sump following receipt of the RWST - Low Low (Level 1) signal. Use of a single RWST to supply both trains of the ECCS and Containment Spray System is acceptable since the RWST is a passive component, and passive failures are not required to be assumed to occur coincidentally with Design Basis Events.

INSERT 1 INSERT 2 are (5) manually INSERT 3 INSERT 3A (1)

The switchover from normal operation to the injection phase of ECCS operation requires changing centrifugal charging pump suction from the CVCS volume control tank (VCT) to the RWST through the use of isolation valves. Each set of isolation valves is interlocked so that the VCT isolation valves will begin to close once the RWST isolation valves are fully open. Since the VCT is under pressure, the preferred pump suction will be from the VCT until the tank is isolated. This will result in a delay in obtaining the RWST borated water. The effects of this delay are discussed in the Applicable Safety Analyses section of these Bases.

are The either of is (1)

During normal operation in MODES 1, 2, and 3, the safety injection (SI) and residual heat removal (RHR) pumps are aligned to take suction from the RWST.

The ECCS and Containment Spray System pumps are provided with recirculation lines that ensure each pump can maintain minimum flow requirements when operating at or near shutoff head conditions. (8)

When the suction for the ECCS and Containment Spray System pumps is transferred to the containment sump, the RWST flow paths must be isolated to prevent a release of the containment sump contents to the RWST, which could result in a release of contaminants to the atmosphere and the eventual loss of suction head for the ECCS pumps.

1 **INSERT 1**

Separate piping off the common supply header supplies each ECCS subsystem and each containment spray subsystem.

1 **INSERT 2**

(a common motor operated isolation valve for the safety injection pumps, an individual motor operated isolation valve for each residual heat removal pump, and two common motor operated isolation valves for the centrifugal charging pumps)

1 **INSERT 3**

after sufficient water has been transferred from the RWST to the containment recirculation sump.

1 **INSERT 3A**

during the injection phase of ECCS operation

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BASES

BACKGROUND (continued)

This LCO ensures that:

a. The RWST contains sufficient borated water to support the ECCS *during the injection phase*; (2)

b. Sufficient water volume exists in the containment sump to support continued operation of the ECCS and Containment Spray System pumps at the time of transfer to the recirculation mode of cooling; and (2)

c. The reactor remains subcritical following a LOCA.

Insufficient water in the RWST could result in insufficient cooling capacity when the transfer to the recirculation mode occurs. Improper boron concentrations could result in a reduction of SDM or excessive boric acid precipitation in the core following the LOCA, as well as excessive caustic stress corrosion of mechanical components and systems inside the containment.

APPLICABLE SAFETY ANALYSES

During accident conditions, the RWST provides a source of borated water to the ECCS and Containment Spray System pumps. As such, it provides containment cooling and depressurization, core cooling, and replacement inventory and is a source of negative reactivity for reactor shutdown (Ref. 1). The design basis transients and applicable safety analyses concerning each of these systems are discussed in the *Applicable Safety Analyses* section of B 3.5.2, "ECCS - Operating," B 3.5.3, "ECCS - Shutdown," and B 3.6.6, "Containment Spray and Cooling Systems." These analyses are used to assess changes to the RWST in order to evaluate their effects in relation to the acceptance limits in the analyses. (1) (3)

Refs. 1 and 2

The RWST must also meet volume, boron concentration, and temperature requirements for non-LOCA events. The volume is not an explicit assumption in non-LOCA events since the required volume is a small fraction of the available volume. The deliverable volume limit is set by the LOCA and containment analyses. For the RWST, the deliverable volume is different from the total volume contained since, due to the design of the tank, more water can be contained than can be delivered. The minimum boron concentration is an explicit assumption in the main steam line break (MSLB) analysis to ensure the required shutdown capability. The importance of its value is small for units with a boron injection tank (BIT) with a high boron concentration. For units with no BIT or reduced BIT boron requirements, the minimum boron concentration (9)

BASES

APPLICABLE SAFETY ANALYSES (continued)

limit is an important assumption in ensuring the required shutdown capability. The maximum boron concentration is an explicit assumption in the inadvertent ECCS actuation analysis, although it is typically a nonlimiting event and the results are very insensitive to boron concentrations. The maximum temperature ensures that the amount of cooling provided from the RWST during the heatup phase of a feedline break is consistent with safety analysis assumptions; the minimum is an assumption in both the MSLB and inadvertent ECCS actuation analyses, although the inadvertent ECCS actuation event is typically nonlimiting.

The MSLB analysis has considered a delay associated with the interlock between the VCT and RWST isolation valves, and the results show that the departure from nucleate boiling design basis is met. The delay has been established as [27] seconds, with offsite power available, or [37] seconds without offsite power. This response time includes [2] seconds for electronics delay, a [15] second stroke time for the RWST valves, and a [10] second stroke time for the VCT valves. Plants with a BIT need not be concerned with the delay since the BIT will supply highly borated water prior to RWST switchover, provided the BIT is between the pumps and the core.

For a large break LOCA analysis, the minimum water volume limit of [466,200] gallons and the lower boron concentration limit of [2000] ppm are used to compute the post LOCA sump boron concentration necessary to assure subcriticality. The large break LOCA is the limiting case since the safety analysis assumes that all control rods are out of the core.

The upper limit on boron concentration of [2200] ppm is used to determine the maximum allowable time to switch to hot leg recirculation following a LOCA. The purpose of switching from cold leg to hot leg injection is to avoid boron precipitation in the core following the accident.

In the ECCS analysis, the containment spray temperature is assumed to be equal to the RWST lower temperature limit of [35]°F. If the lower temperature limit is violated, the containment spray further reduces containment pressure, which decreases the rate at which steam can be vented out the break and increases peak clad temperature. The upper temperature limit of [100]°F is used in the small break LOCA analysis and containment OPERABILITY analysis. Exceeding this temperature will result in a higher peak clad temperature, because there is less heat transfer from the core to the injected water for the small break LOCA and higher containment pressures due to reduced containment spray cooling

(1) **INSERT 3B**

An RWST temperature more conservative (i.e., a lower RWST temperature) than the minimum RWST temperature is assumed in the MSLB analysis.

(1) **INSERT 4**

, except during hot leg switchover

(1) **INSERT 5**

minimize the potential for

(1) **INSERT 6**

Maintaining RWST water temperature ≤ 100°F ensures the Containment Spray System will provide sufficient pressure suppression capability to limit the containment peak pressure transient to less than the containment design internal pressure, and that containment cooling will be maintained following a LOCA or MSLB.

(1) **INSERT 7**

The lower temperature limit of 70°F is assumed in the ECCS analysis to determine the $F_Q(Z)$ limit. This temperature determines the Containment Spray System water temperature delivered to the containment following a LOCA. It is one of the factors that determines the containment backpressure in the ECCS analyses.

BASES

APPLICABLE SAFETY ANALYSES (continued)

INSERT 7A

capacity. For the containment response following an MSLB, the lower limit on boron concentration and the upper limit on RWST water temperature are used to maximize the total energy release to containment. (1)

The RWST satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The RWST ensures that an adequate supply of borated water is available to cool and depressurize the containment in the event of a Design Basis Accident (DBA), to cool and cover the core in the event of a LOCA, to maintain the reactor subcritical following a DBA, and to ensure adequate level in the containment sump to support ECCS and Containment Spray System pump operation in the recirculation mode.

To be considered OPERABLE, the RWST must meet the water volume, boron concentration, and temperature limits established in the SRs.

APPLICABILITY

In MODES 1, 2, 3, and 4, RWST OPERABILITY requirements are dictated by ECCS and Containment Spray System OPERABILITY requirements. Since both the ECCS and the Containment Spray System must be OPERABLE in MODES 1, 2, 3, and 4, the RWST must also be OPERABLE to support their operation. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level." INSERT 8 (5)

ACTIONS

A.1

With RWST boron concentration or borated water temperature not within limits, they must be returned to within limits within 8 hours. Under these conditions neither the ECCS nor the Containment Spray System can perform its design function. Therefore, prompt action must be taken to restore the tank RWST to OPERABLE condition. The 8 hour limit to restore the RWST temperature or boron concentration to within limits was developed considering the time required to change either the boron concentration or temperature and the fact that the contents of the tank are still available for injection. (6)

(1) **INSERT 7A**

a conservative value with respect to

(5) **INSERT 8**

In MODES 5 and 6, unit conditions are such that the probability of an event requiring ECCS injection is extremely low.

BASES

ACTIONS (continued)

B.1

With the RWST inoperable for reasons other than Condition A (e.g., water volume), it must be restored to OPERABLE status within 1 hour.

In this condition, neither the ECCS nor the Containment Spray System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE status or to place the plant in a MODE in which the RWST is not required. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting redundant trains. (7) (6)

C.1 and C.2 (1)

If the RWST cannot be returned 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 6 hours and to MODE 5 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. (1)

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

The RWST borated water temperature should be verified every 24 hours to be within the limits assumed in the accident analyses band. This Frequency is sufficient to identify a temperature change that would approach either limit and has been shown to be acceptable through operating experience.

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperatures are within the operating limits of the RWST. With ambient air temperatures within the band, the RWST temperature should not exceed the limits. (3)

SR 3.5.4.2

The RWST water volume should be verified every 7 days to be above the required minimum level in order to ensure that a sufficient initial supply is available for injection and to support continued ECCS and Containment Spray System pump operation on recirculation. Since the RWST volume is normally stable and is protected by an alarm, a 7 day Frequency is

BASES

SURVEILLANCE REQUIREMENTS (continued)

appropriate and has been shown to be acceptable through operating experience.

SR 3.5.4.3

The boron concentration of the RWST should be verified every 7 days to be within the required limits. This SR ensures that the reactor will remain subcritical following a LOCA. Further, it assures that the resulting sump pH will be maintained in an acceptable range so that boron precipitation in the core will not occur and the effect of chloride and caustic stress corrosion on mechanical systems and components will be minimized. Since the RWST volume is normally stable, a 7 day sampling Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.

REFERENCES

1. UFSAR, Chapter [6] and Chapter [15].

INSERT 10 INSERT 9 (1)

(1) **INSERT 9**

Section 6.2.2

(1) **INSERT 10**

2. UFSAR, Section 14.3.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.5.4 BASES, REFUELING WATER STORAGE TANK

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. Changes are made to reflect those changes made to the Specification. Subsequent requirements are renumbered or revised, where applicable, to reflect the changes.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. The listed LCOs concern the shutdown cooling function of the RHR System, not the ECCS function. The Applicability Section should describe why ECCS is not needed in MODES 5 and 6, similar to that in the ITS 3.5.2 Bases, and it is not necessary to describe why normal shutdown cooling is required. Therefore, this inappropriate information has been deleted and wording about MODES 5 and 6, consistent with the ITS 3.5.2 Bases, has been added.

6. Change made to be consistent with the actual Specification.

7. Typographical/grammatical error corrected.

8. The paragraph is not appropriate for this Specification. It is discussing how the ECCS and Containment Spray System pumps maintain minimum flow requirements. A description concerning ECCS pump minimum flow requirements has been added to the ITS 3.5.2 Bases, Background Section (this issue is already discussed in the ITS 3.6.6 Bases).

9. ISTS Bases 3.5.4 Applicable Safety Analyses section, second paragraph, includes the phrase "The importance of its value is small for units with a boron injection tank (BIT) with a high boron concentration. For units with no BIT or reduced BIT boron requirements..." ISTS Bases 3.5.4 Applicable Safety Analyses section, third paragraph, includes the sentence "Plants with a BIT need not be concerned with the delay since the BIT will supply highly borated water prior to RWST switchover, provided the BIT is between the pumps and the core." ITS Bases 3.5.4 does not include this phrase and sentence. This is acceptable, because the plant specific design includes a BIT, but there are no minimum boron concentration design and licensing basis requirements for the BIT. Therefore, deletion of this information is consistent with the current plant design and licensing basis.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.4, REFUELING WATER STORAGE TANK

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.5.5, Seal Injection Flow

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.5.5

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.4 REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 600 gallons per day total primary-to-secondary leakage through all steam generators and 150 gallons per day through any one steam generator,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

(See ITS 3.4.13)

e. Seal line resistance greater than or equal to 2.27E-1 ft/gpm² and,

f. The leakage from each Reactor Coolant System Pressure Isolation Valves specified in Table 3.4-0 shall be limited to 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm, at a Reactor Coolant System average pressure within 20 psi of the nominal full pressure value.

(See ITS 3.4.14)

APPLICABILITY: MODES 1, 2, 3 and 4.* — L.1

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

(See ITS 3.4.13)

ACTION A

ACTION B

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Seal line resistance not within — A.2

MODE 4 within 12 hours — L.1

c. With any reactor coolant system pressure isolation valve(s) leakage greater than the above limit, declare the leaking valve inoperable and isolate the high pressure portion of the affected system from the low pressure portion by the use of a combination of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. Verify the isolated condition of the closed de-energized motor operated valve at least once per 24 hours, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

(See ITS 3.4.14)

LA.1

SR 3.5.5.1 Note

* Specification 3.4.6.2.e is applicable with average pressure within 20 psi of the nominal full pressure value. — A.3

A.1

ITS

REACTOR COOLANT SYSTEM

LIMITING CONDITIONS FOR OPERATION (Continued)

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours. (See ITS 3.4.13)

b. Monitoring the containment sump inventory and discharge at least once per 12 hours. (LA.1)

SR 3.5.5.1 c. Determining the seal line resistance at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. The seal line resistance measured during the surveillance must be greater than or equal to 2.27 E-1 ft/gpm². The seal line resistance, R_{SL}, is determined from the following expression: (A.3) (LA.2)

$$R_{SL} = \frac{2.31 (P_{CHP} - P_{SI})}{Q^2}$$

where: P_{CHP} = charging pump header pressure, psig

P_{SI} = ~~2112~~ 2148 psig (low pressure operation)

~~2262~~ 2300 psig (high pressure operation) (M.1)

2.31 = conversion factor (12 in/ft)²/(62.3 lb/ft³)

Q = the total seal injection flow, gpm

Note to SR 3.5.5.1 The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4. (M.2)

d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation, and

e. Monitoring the reactor head flange leakoff system at least once per 24 hours. (See ITS 3.4.13)

4.4.6.2.2 Each reactor coolant system pressure isolation valve specified in Table 3.4-0 shall be demonstrated OPERABLE pursuant to Specification 4.0.5. (See ITS 3.4.14)

ITS 3.5.5

A.1

ITS

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 1 GPM total primary-to-secondary leakage through all steam generators and 500 gallons per day through any one steam generator,

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

See ITS 3.4.13

LCO 3.5.5 e. Seal line resistance greater than or equal to 2.27E-1 ft/gpm² and,

f. The leakage from each Reactor Coolant System Pressure Isolation Valve specified in Table 3.4-0 shall be limited to 0.5 gpm per nominal inch of valve size up to a maximum of 5 gpm, at a Reactor Coolant System average pressure within 20 psi of the nominal full pressure value.

See ITS 3.4.14

APPLICABILITY: MODES 1, 2, 3 and 4.* — L.1

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.4.13

ACTION A — b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY

Seal line resistance not within — A.2

ACTION B — within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

MODE 4 within 12 hours — L.1

c. With any reactor coolant system pressure isolation valve(s) leakage greater than the above limit, declare the leaking valve inoperable and isolate the high pressure portion of the affected system from the low pressure portion by the use of at least two closed valves, one of which may be the OPERABLE check valve and the other a closed de-energized motor operated valve. Verify the isolated condition of the closed de-energized motor operated valve at least once per 24 hours, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.4.14

LA.1

SR 3.5.5.1 Note — * Specification 3.4.6.2.e is applicable with average pressurizer pressure within 20 psi of the nominal full pressure value.

A.3

ITS 3.5.5

A.1

ITS

REACTOR COOLANT SYSTEM

LIMITING CONDITIONS FOR OPERATION (Continued)

SURVEILLANCE REQUIREMENTS

4.4.6.2.1 Reactor Coolant System leakages shall be demonstrated to be within each of the above limits by:

a. Monitoring the containment atmosphere particulate radioactivity monitor at least once per 12 hours. (See ITS 3.4.13)

b. Monitoring the containment sump inventory and discharge at least once per 12 hours. (LA.1)

SR 3.5.5.1 c. Determining the seal line resistance at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. The seal line resistance measured during the surveillance must be greater than or equal to 2.27 E-1 ft/gpm². The seal line resistance, R_{SL}, is determined from the following expression: (A.3)

$$R_{SL} = \frac{2.31\,(P_{CHP} - P_{SI})}{Q^2}$$

where: P_{CHP} = charging pump header pressure, psig (LA.2)

P_{SI} = 2262 psig (high pressure operation) [2262 replaced by 2300] (M.1)

2.31 = conversion factor $(12\ in/ft)^2/(62.3\ lb/ft^3)$

Q = the total seal injection flow, gpm

Note to SR 3.5.5.1: The provisions of Specification 4.0.4 are not applicable for entry into MODES 3 and 4. (M.2)

d. Performance of a Reactor Coolant System water inventory balance at least once per 72 hours during steady state operation, and (See ITS 3.4.13)

e. Monitoring the reactor head flange leakoff system at least once per 24 hours.

4.4.6.2.2. Each reactor coolant system pressure isolation valve specified in Table 3.4-0 shall be demonstrated OPERABLE pursuant to Specification 4.0.5. (See ITS 3.4.14)

DISCUSSION OF CHANGES
ITS 3.5.5, SEAL INJECTION FLOW

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.4.6.2 Action b provides the actions for when any Reactor Coolant System (RCS) leakage is greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE. The Condition for ITS 3.5.5 ACTION A is specific as to which of the RCS leakage limits is not met, specifically, the seal injection flow resistance not within limits. This changes the CTS by replacing "Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE" with "seal injection flow resistance not within limit."

The purpose of CTS 3.4.6.2 Action b is to provide a specific action to restore the RCS leakage to within the specified limits of CTS LCO 3.4.6.2. The RCS leakage limits for CTS LCO 3.4.6.2.a through CTS LCO 3.4.6.2.d are covered in ITS 3.4.13. The RCS leakage limit for CTS LCO 3.4.6.2.f is covered in ITS LCO 3.4.14. Changes to the CTS Actions are discussed in the Discussion of Changes for these Technical Specifications. ITS 3.5.5 only covers seal injection flow resistance (CTS LCO 3.4.6.2.e). Therefore, replacing the name "RCS leakage" with the explicit "seal injection flow resistance" limit does not change the action. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3.4.6.2.e Applicability Footnote * states that Specification 3.4.6.2.e is applicable with average pressure within 20 psi "of the nominal full pressure value." CTS 4.4.6.2.1.c states that the seal line resistance shall be determined when the average pressurizer pressure is within 20 psi "of its nominal full pressure value." The ITS SR 3.5.5.1 Note states that the Surveillance is not required to be performed until 4 hours after the pressurizer pressure stabilizes at ≥ 2065 psig and ≤ 2105 psig (Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2). This changes the CTS by including the explicit pressure limits. Changes to the detail that the pressurizer pressure must be an average pressure are discussed in DOC LA.1 and changes to the pressure band are discussed in DOC M.1.

The purpose of CTS 3.4.6.2.e Applicability Footnote * and CTS 4.4.6.2.1.c is to perform the test at the appropriate pressurizer pressure. The appropriate nominal range has been proposed. This change is acceptable because the proposed values are consistent with the current application of the requirements, as modified by DOC M.1. This change is designated as administrative because it does not result in technical changes to the CTS.

DISCUSSION OF CHANGES
ITS 3.5.5, SEAL INJECTION FLOW

MORE RESTRICTIVE CHANGES

M.1 CTS 4.4.6.2.1.c provides a value for P_{SI} of 2112 psig (low pressure operation) for Unit 1 and 2262 psig (high pressure operation) for Unit 1 and Unit 2 in the equation for determining seal line resistance. The ITS SR 3.5.5.1 Note states that the Surveillance is not required to be performed until 4 hours after the pressurizer pressure stabilizes at ≥ 2065 psig and ≤ 2105 psig (Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2). In addition, CTS 4.4.6.2.1.c provides a pressure constant, P_{SI}, to be used in the calculation of seal line resistance. The values for this constant (two values for Unit 1 and one value for Unit 2), which are moved to the Bases as described in DOC LA.2, have been increased resulting in a decrease in the calculated seal line resistance flow at any given charging pump pressure. This changes the CTS by increasing the pressure constant value, resulting in a decrease in the calculated seal line resistance flow.

The purpose of CTS 4.4.6.2.1.c is to ensure seal line resistance is high enough to ensure the appropriate ECCS flows assumed in the LOCA analysis. This change effectively increases the seal line flow resistance limit due to the increase in the pressure constant. This change is based on the most recent seal line flow resistance limit due to the increase in the pressure constant. This change is based on the most recent seal line resistance calculation, and is acceptable because it will slightly increase the overall ECCS borated water pumped into the RCS such that there would be an insignificant impact as a result. The change has been designated as more restrictive because it effectively increases the seal line flow resistance limit.

M.2 CTS 4.4.6.2.1.c states that the seal line resistance must be determined at least once per 31 days when the average pressurizer pressure is within 20 psi of its nominal full pressure value. CTS 4.4.6.2.1.c also states that the provisions of CTS 4.0.4 are not applicable for entry into MODES 3 and 4. ITS SR 3.5.5.1 requires verification that the seal injection flow resistance is ≥ 0.227 ft/gpm^2 and is modified by a Note that states the Surveillance is not required to be performed until 4 hours after the pressurizer pressure stabilizes at the specified pressure band. This changes the CTS by explicitly specifying the time required to perform the Surveillance after entering the specified pressure band.

The purpose of CTS 4.4.6.2.1.c is to accurately determine the seal line injection flow resistance. This change is acceptable because the new Surveillance has been evaluated to ensure that it provides an acceptable level of equipment reliability. An accurate measurement of the seal line injection flow resistance must be performed at stable pressurizer pressure conditions. The Note applies a 4 hour period after reaching the specified pressurizer pressure band to perform the test. This is a reasonable period to establish stable operating conditions, install the test equipment, perform the test, and analyze the results. This change is designated as more restrictive as it specifies an explicit time period to perform the test.

RELOCATED SPECIFICATIONS

None

DISCUSSION OF CHANGES
ITS 3.5.5, SEAL INJECTION FLOW

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 3.4.6.2.e Applicability Footnote * states that Specification 3.4.6.2.e is applicable with "average" pressure within 20 psi of the nominal full pressure value. CTS 4.4.6.2.1.c states that the seal line resistance shall be determined when the "average" pressurizer pressure is within 20 psi of its nominal full pressure value. ITS SR 3.5.5.1 Note states that the Surveillance is not required to be performed until 4 hours after the pressurizer pressure stabilizes at ≥ 2065 psig and ≤ 2105 psig (Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2). This changes the CTS by relocating the detail that the pressurizer pressure is an averaged value to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform the seal line injection flow resistance evaluation at a pressurizer pressure of ≥ 2075 psig and ≤ 2095 psig (Unit 1) and ≥ 2225 psig and ≤ 2245 psig (Unit 2). Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.4.6.2.1.c provides a detailed formula to determine the actual seal line resistance. ITS SR 3.5.5.1 does not include this detailed formula. This changes the CTS by relocating the detailed formula of how to determine seal line resistance to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the seal line resistance limit and the requirement to determine the actual seal line resistance is within the limit every 31 days. Also, this change is acceptable because these types of procedural details will be adequately controlled in ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 2 – Relaxation of Applicability)* CTS 3.4.6.2.e is applicable in MODES 1, 2, 3, and 4. If the requirement of the LCO (seal line resistance) is not

DISCUSSION OF CHANGES
ITS 3.5.5, SEAL INJECTION FLOW

met, CTS 3.4.6.2 Action b allows 4 hours to restore the seal line resistance to within limit or be in HOT STANDBY (MODE 3) within the next 6 hours and in COLD SHUTDOWN (MODE 5) within the following 30 hours. ITS 3.5.5 is applicable only in MODES 1, 2, and 3. If the requirement of ITS 3.5.5 is not met, ITS 3.5.5 ACTIONS A and B require similar Required Actions as the CTS. However, the requirement to be in MODE 5 is replaced with a requirement to be in MODE 4 within 12 hours. This changes the CTS by deleting MODE 4 from the Applicability and making corresponding changes to the Action.

The purpose of CTS 3.4.6.2.e is to maintain proper ECCS injection flow in the event of an accident. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. Seal injection flow resistance is less critical in MODE 4 than in MODES 1, 2, and 3. Should an accident occur in MODE 4, it would be less severe due to the lower RCS pressure and decreased decay heat generation. Therefore, it is not necessary to limit seal injection flow in MODE 4 due to the lesser requirements of safety injection flow needed for long term cooling. Requiring the unit be in MODE 4, which is outside the Applicability of the Specification, within 12 hours corresponds with similar Completion Times in the ITS. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Seal Injection Flow

LCO 3.4.6.2.e

LCO 3.5.5 Reactor coolant pump seal injection flow shall be ≤ [40] gpm with [centrifugal charging pump discharge header] pressure ≥ [2480] psig and the [charging flow] control valve full open. (resistance) INSERT 1 TSTF-337 (1) (3)

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action b	A. Seal injection flow not within limit. (resistance)	A.1 (Restore seal injection) Adjust manual seal injection throttle valves to give a flow within limit with [centrifugal charging pump discharge header] pressure ≥ [2480] psig and the [charging flow] control valve full open. (to)	4 hours (4) TSTF-337 (1)
Action b	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

3.5.5

TSTF-337

INSERT 1

(C) ≥ [0.2117] ft/gm² or within the limit of Figure 3.5.5-1] (1)
0.227 (P) (3)

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CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.4.6.2.1.c SR 3.5.5.1	- NOTE - Not required to be performed until 4 hours after the Reactor Coolant System (pressurizer) pressure stabilizes at ≥ [2215 psig and ≤ 2255 psig]. (2) INSERT 2 (1)	
	Verify manual seal injection throttle valves are adjusted to give a flow within limit (seal injection) (4) [resistance] (1) (TSTF-337) with [centrifugal charging pump discharge header] pressure ≥ [2480] psig and the [charging flow] control valve full open. (1) INSERT 3 (1) (4) (TSTF-337)	[of ≤ [40 gpm]] (TSTF-337) (1) 31 days

NOTE – FIGURE 3.5.5-1 added by TSTF-337 not shown (1)

(1) **INSERT 2**

≥ 2065 psig and ≤ 2105 (Unit 1) and ≥ 2215 psig and ≤ 2255 psig (Unit 2)

(TSTF-337) **INSERT 3**

or ≥ [0.2117] ft/gpm^2 or within the limit of Figure 3.5.5-1. (1)

is 0.227

(4)

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.5, SEAL INJECTION FLOW

1. The brackets are removed and the proper plant specific information/value is provided.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Typographical/grammatical error corrected.

4. CTS LCO 3.4.6.2.e requires seal line resistance to be ≥ 2.27 E-1 ft/gpm^2. CTS 3.4.6.2 Actions do not specify the exact method required to restore seal line resistance to within this limit. CTS 4.4.6.2.1.c requires seal line resistance to be measured and verified to be ≥ 2.27 E-1 ft/gpm^2. ISTS 3.5.5 Required Action A.1 requires the manual seal injection throttle valves to be adjusted to give a flow resistance within limit. ISTS SR 3.5.5.1 requires verification that the manual seal injection throttle valves are adjusted to give a flow within limit. The ITS 3.5.5 Required Action A.1 requires restoration of seal injection flow resistance to within limit and ITS SR 3.5.5.1 requires verification that seal injection flow resistance is within limits. This changes the ISTS to be consistent with the level of detail in the CTS, and eliminates the single, specific method allowed by the ISTS to restore compliance with the LCO or to meet the SR acceptance criteria.

   ISTS 3.5.5 Required Action A.1 is essentially describing "how" to restore the LCO to within the required limit. In the ISTS, the manner in which the LCO limit is restored is normally relegated to the Bases. For instance, most ISTS Required Actions simply state to "restore" the component to OPERABLE status or the variable to within limit (e.g., ISTS 3.5.1 Required Action A.1). In this case, there may be other correct ways to restore the LCO limit without having to adjust a manual seal injection throttle valve. For example, the actual calculation that determined the seal injection flow resistance may be in error. Based on the wording of the ISTS, the ISTS appears to only allow the limit to be restored by adjusting the manual seal injection throttle valves. However, this is not the only way to adjust flow resistance. The main components in the seal injection flow path are the manual seal injection throttle valves and the seal injection filters. Seal line resistance may be unacceptable low (i.e., not within the LCO limit) due to one or more seal injection filters being bypassed. In this case, flow resistance could be restored by placing one of the bypassed filters in service (by closing the manual bypass valve). Due to the specific method listed in Required Action A.1, it could be misconstrued by the Operations personnel that placing a filter in service is not an allowed option to restore compliance with the LCO. Therefore, consistent with most other ISTS Required Actions that simply state to restore the variable to within limit, and to ensure Operations personnel have clear, unambiguous directions that do not unnecessarily restrict actions that are technically acceptable to take to restore compliance with the LCO, ISTS 3.5.5 Required Action A.1 has been changed to require restoration of the seal injection flow resistance to within limit. Consistent with the change to the Required Action, ISTS SR 3.5.5.1, the Surveillance that verifies the LCO limit is met, has also been changed to require verification that the seal injection flow resistance is within limit, and to ensure Operations personnel have clear, unambiguous directions that do not necessarily restrict methods that are technically acceptable for performing Surveillance Requirements. This is also consistent with the wording of similar types

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.5, SEAL INJECTION FLOW

of Surveillance Requirements that verify variable are within limits (e.g., ISTS SR 3.5.1.4).

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.5 Seal Injection Flow

BASES

BACKGROUND

This LCO is applicable only to those units that utilize the centrifugal charging pumps for safety injection (SI). The function of the seal injection throttle valves during an accident is similar to the function of the ECCS throttle valves in that each restricts flow from the centrifugal charging pump header to the Reactor Coolant System (RCS). (1)

The restriction on reactor coolant pump (RCP) seal injection flow limits the amount of ECCS flow that would be diverted from the injection path following an accident. This limit is based on safety analysis assumptions that are required because RCP seal injection flow is not isolated during SI. (1)

[safety injection] INSERT 1 TSTF-337 (3) (4)

APPLICABLE SAFETY ANALYSES

All ECCS subsystems are taken credit for in the large break loss of coolant accident (LOCA) at full power (Ref. 1). The LOCA analysis establishes the minimum flow for the ECCS pumps. The centrifugal charging pumps are also credited in the small break LOCA analysis. This analysis establishes the flow and discharge head at the design point for the centrifugal charging pumps. The steam generator tube rupture and main steam line break event analyses also credit the centrifugal charging pumps, but are not limiting in their design. Reference to these analyses is made in assessing changes to the Seal Injection System for evaluation of their effects in relation to the acceptance limits in these analyses.

[(Ref. 2) (2); (Ref. 3) (2); (Ref. 4) (2); TSTF-337]

This LCO ensures that seal injection flow of ≤ [40] gpm, with centrifugal charging pump discharge header pressure ≥ [2480] psig and charging flow control valve full open, will be sufficient for RCP seal integrity but limited so that the ECCS trains will be capable of delivering sufficient water to match boiloff rates soon enough to minimize uncovering of the core following a large LOCA. It also ensures that the centrifugal charging pumps will deliver sufficient water for a small LOCA and sufficient boron to maintain the core subcritical. For smaller LOCAs, the charging pumps alone deliver sufficient fluid to overcome the loss and maintain RCS inventory. Seal injection flow satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

[resistance (3); break (2); during; (1)]

LCO

The intent of the LCO limit on seal injection flow is to make sure that flow through the RCP seal water injection line is low enough to ensure that sufficient centrifugal charging pump injection flow is directed to the RCS via the injection points (Ref. 2).

[resistance (5); (2)]

TSTF-337

INSERT 1

The RCP seal injection flow is restricted by the seal injection line flow [resistance] which is adjusted through positioning of the manual RCP seal injection throttle valves. The RCP seal injection flow [resistance] is determined by measuring the pressurizer pressure, the centrifugal charging pump discharge header pressure, and the RCP seal injection flow rate. 3 3

The charging flow control valve throttles the centrifugal charging pump discharge header flow as necessary to maintain the programmed level in the pressurizer. The charging flow control valve fails open to ensure that, in the event of either loss of air or loss of control signal to the valve, when the centrifugal charging pumps are supplying charging flow, seal injection flow to the RCP seals is maintained. Positioning of the charging flow control valve may vary during normal plant operating conditions, resulting in a proportional change to RCP seal injection flow. The flow [resistance] provided by RCP seal injection throttle valves will remain fixed when charging flow control valve is repositioned provided the throttle valve(s) position are not adjusted. 3 4

the

BASES

LCO (continued)

The LCO is not strictly a flow limit, but rather a flow limit based on a flow line resistance. In order to establish the proper flow line resistance, a pressure and flow must be known. The flow line resistance is determined by assuming that the RCS pressure is at normal operating pressure and that the centrifugal charging pump discharge pressure is greater than or equal to the value specified in this LCO. The centrifugal charging pump discharge header pressure remains essentially constant through all the applicable MODES of this LCO. A reduction in RCS pressure would result in more flow being diverted to the RCP seal injection line than at normal operating pressure. The valve settings established at the prescribed centrifugal charging pump discharge header pressure result in a conservative valve position should RCS pressure decrease. The additional modifier of this LCO, the control valve (charging flow for four loop units and air operated seal injection for three loop units) being full open, is required since the valve is designed to fail open for the accident condition. With the discharge pressure and control valve position as specified by the LCO, a flow limit is established. It is this flow limit that is used in the accident analyses.

The limit on seal injection flow, combined with the centrifugal charging pump discharge header pressure limit and an open wide condition of the charging flow control valve, must be met to render the ECCS OPERABLE. If these conditions are not met, the ECCS flow will not be as assumed in the accident analyses.

APPLICABILITY

In MODES 1, 2, and 3, the seal injection flow limit is dictated by ECCS flow requirements, which are specified for MODES 1, 2, 3, and 4. The seal injection flow limit is not applicable for MODE 4 and lower, however, because high seal injection flow is less critical as a result of the lower initial RCS pressure and decay heat removal requirements in these MODES. Therefore, RCP seal injection flow must be limited in MODES 1, 2, and 3 to ensure adequate ECCS performance.

ACTIONS

A.1

With the seal injection flow exceeding its limit, the amount of charging flow available to the RCS may be reduced. Under this Condition, action must be taken to restore the flow to below its limit. The operator has 4 hours from the time the flow is known to be above the limit to correctly position the manual valves and thus be in compliance with the accident analysis. The Completion Time minimizes the potential exposure of the plant to a LOCA with insufficient injection flow and provides a reasonable

TSTF-337

INSERT 2

OR

(3)

This is accomplished by limiting the seal injection line resistance to a value consistent with the assumptions in the accident analysis. The limit on RCP seal injection flow resistance must be met to assure that the ECCS is OPERABLE. If this limit is not met, the ECCS flow may not be as assumed in the accident analysis. The restriction on seal injection flow is accomplished by maintaining the seal water injection flow resistance ≥ [0.2117] ft/gpm^2. With the seal injection flow resistance within limit, the resulting total seal injection flow will be within the assumptions made for seal flow during accident conditions. 0.227 (3)

In order to establish the proper flow line resistance, the centrifugal charging pump discharge header pressure, the RCP seal injection flow rate, and the pressurizer pressure are measured. The line resistance is then determined from those inputs. A reduction in RCR pressure with no concurrent decrease in centrifugal charging pump discharge header pressure would increase the differential pressure across the manual throttle valves, and result in more flow being discharged through the RCP seal injection line. The flow resistance limit assures that when RCS pressure drops during a LOCA and seal injection flow increases in response to the higher differential pressure, the resulting flow will be consistent with the accident analysis. s d (4) (4)

OR

The LCO is not strictly a flow limit, but rather a flow limit based on a flow line resistance. In order to establish the proper flow line resistance, a pressure and flow must be known. The flow line resistance is established by adjusting the RCP seal injection flow in the acceptable region of Figure 3.5.5-1 at a given pressure differential between the charging header and the RCS. The centrifugal charging pump discharge header pressure remains essentially constant through all the applicable MODES of this LCO. A reduction in RCS pressure would result in more flow being diverted to the RCP seal injection line than at normal operating pressure. The valve settings established at the prescribed centrifugal charging pump discharge header pressure result in a conservative valve position should RCS pressure decrease. The flow limits established by Figure 3.5.5-1 ensures that the minimum ECCS flow assumed in the safety analyses is maintained. (3)

BASES

ACTIONS (continued)

resistance (3) TSTF-337

time to restore seal injection flow within limits. This time is conservative with respect to the Completion Times of other ECCS LCOs; it is based on operating experience and is sufficient for taking corrective actions by operations personnel.

B.1 and B.2

When the Required Actions cannot be completed within the required Completion Time, a controlled shutdown must be initiated. The Completion Time of 6 hours for reaching MODE 3 from MODE 1 is a reasonable time for a controlled shutdown, based on operating experience and normal cooldown rates, and does not challenge plant safety systems or operators. Continuing the plant shutdown begun in Required Action B.1, an additional 6 hours is a reasonable time, based on operating experience and normal cooldown rates, to reach MODE 4, where this LCO is no longer applicable.

SURVEILLANCE REQUIREMENTS

SR 3.5.5.1

INSERT 3 TSTF-337 (3) (4)

Verification every 31 days that the manual seal injection throttle valves are adjusted to give a flow within the limit ensures that proper manual seal injection throttle valve position, and hence, proper seal injection flow, is maintained. The Frequency of 31 days is based on engineering judgment and is consistent with other ECCS valve Surveillance Frequencies. The Frequency has proven to be acceptable through operating experience. INSERT 4 (P) (2) (1)

As noted, the Surveillance is not required to be performed until 4 hours after the RCS pressure has stabilized within a ± 20 psig range of normal operating pressure. The RCS pressure requirement is specified since this configuration will produce the required pressure conditions necessary to assure that the manual valves are set correctly. The exception is limited to 4 hours to ensure that the Surveillance is timely. pressurizer (5) INSERT 5 (2)

REFERENCES

1. (U)FSAR, Chapter [6] and Chapter [15] Section 14.3.1 (2)

2. 10 CFR 50.46 (2)

INSERT 6 (2)

TSTF-337

INSERT 3

seal injection

Verification every 31 days that the manual seal injection throttle valves are adjusted to give a flow [resistance] within the limit ensures that the ECCS injection flows stay within the safety analysis. A differential pressure is established between the charging header and the RCS, and the total seal injection flow is verified to within the limit determined in accordance with the ECCS safety analysis. [The flow [resistance] shall be verified by confirming seal injection flow ≤ [40] gpm with the RCS at normal operating pressure, the charging flow control valve full open, and the charging header pressure > [2480]. OR The flow [resistance] shall be verified by confirming seal injection flow and differential pressure within the acceptable region of Figure 3.5.5-1. OR The flow resistance shall be ≥ [0.2117] ft/gpm². [Control valves in the flow path between the charging header and the RCS pressure sensing points must be in their post accident position (e.g., charging flow control valve open) during this surveillance to correlate with the acceptance criteria.

is be 0.227 (5) (3) (4) (3) (3) (6)

2

INSERT 4

The seal injection flow resistance, R_{SL}, is determined from the following expression:

$R_{SL} = 2.31(P_{CHP}-P_{SI})/Q^2$

where:

P_{CHP} = charging pump header pressure (psig);
P_{SI} = 2148 psig (low pressure operation) or 2300 psig (high pressure operation); and
Q = total seal injection flow (gpm).

(Unit 1 only)

2

INSERT 5

The pressurizer pressure indications are averaged to determine whether the appropriate pressure has been achieved.

2

INSERT 6

2. UFSAR, Section 14.3.2.

3. UFSAR, Section 14.2.4.

4. UFSAR, Section 14.2.5.

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.5 BASES, SEAL INJECTION FLOW

1. Editorial change made for enhanced clarity or to be consistent with the ISTS Writers Guide.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Typographical/grammatical error corrected.

5. Changes have been made to be consistent with changes made to the ISTS.

6. The detail in the ISTS SR 3.5.5.1 Bases, added in accordance with approved TSTF-337, specifying that the control valves in the flow path between the charging header and the RCS pressure sensing points must be in their post accident position during this Surveillance to correlate with the acceptance criteria has been deleted. Seal line resistance (R_{SL}) is calculated based on the equation in the CTS and is included in the ITS SR 3.5.5.1 Bases. The only measured variables in this equation are charging pump header pressure (P_{CHP}) and total seal injection flow (Q). P_{CHP} is measured downstream of the charging system flow control valves. Therefore, the indicated pressure drop and system resistance calculated will not reflect the pressure drop across the charging system flow control valves. Changes in P_{CHP} that are as a result of changes in charging system control valve position will result in a corresponding change in Q. Therefore, the calculated R_{SL} will not change outside of the accuracy of the measurement instrumentation. None of the components within the R_{SL} calculation boundary are adjustable from the control room.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.5, SEAL INJECTION FLOW

There are no specific NSHC discussions for this Specification.

ATTACHMENT 6

Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ISTS 3.5.6, Boron Injection Tank

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

(1)

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.6 Boron Injection Tank (BIT)

LCO 3.5.6 The BIT shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. BIT inoperable.	A.1 Restore BIT to OPERABLE status.	1 hour
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Borate to an SDM equivalent to [1]% Δk/k at 200°F. AND B.3 Restore BIT to OPERABLE status.	6 hours 6 hours 7 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 4.	12 hours

TSTS-420 not shown

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.6.1	Verify BIT borated water temperature is ≥ [145]°F.	24 hours

①

BIT
3.5.6

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.5.6.2	[Verify BIT borated water volume is ≥ [1100] gallons.	7 days]
SR 3.5.6.3	Verify BIT boron concentration is ≥ [20,000] ppm and ≤ [22,500] ppm.	7 days

JUSTIFICATION FOR DEVIATIONS
ISTS 3.5.6, BORON INJECTION TANK

1. This Boron Injection Tank Specification is not included in the CNP Units 1 and 2 ITS. The requirements for the Boron Injection Tank have been deleted from the CTS in License Amendments 158 (Unit 1) and 142 (Unit 2) dated November 20, 1991.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

(1)

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.6 Boron Injection Tank (BIT)

BASES

BACKGROUND

The BIT is part of the Boron Injection System, which is the primary means of quickly introducing negative reactivity into the Reactor Coolant System (RCS) on a safety injection (SI) signal.

The main flow path through the Boron Injection System is from the discharge of the centrifugal charging pumps through lines equipped with a flow element and two valves in parallel that open on an SI signal. The valves can be operated from the main control board. The valves and flow elements have main control board indications. Downstream of these valves, the flow enters the BIT (Ref. 1).

The BIT is a stainless steel tank containing concentrated boric acid. Two trains of strip heaters are mounted on the tank to keep the temperature of the boric acid solution above the precipitation point. The strip heaters are controlled by temperature elements located near the bottom of the BIT. The temperature elements also activate High and Low alarms on the main control board. In addition to the strip heaters on the BIT, there is a recirculation system with a heat tracing system, including the piping section between the motor operated isolation valves, which further ensures that the boric acid stays in solution. The BIT is also equipped with a High Pressure alarm on the main control board. The entire contents of the BIT are injected when required; thus, the contained and deliverable volumes are the same.

During normal operation, one of the two BIT recirculation pumps takes suction from the boron injection surge tank (BIST) and discharges to the BIT. The solution then returns to the BIST. Normally, one pump is running and one is shut off. On receipt of an SI signal, the running pump shuts off and the air operated valves close. Flow to the BIT is then supplied from the centrifugal charging pumps. The solution of the BIT is injected into the RCS through the RCS cold legs.

APPLICABLE SAFETY ANALYSES

During a main steam line break (MSLB) or loss of coolant accident (LOCA), the BIT provides an immediate source of concentrated boric acid that quickly introduces negative reactivity into the RCS.

The contents of the BIT are not credited for core cooling or immediate boration in the LOCA analysis, but for post LOCA recovery. The BIT maximum boron concentration of [22,500] ppm is used to determine the

(1)

BASES

APPLICABLE SAFETY ANALYSES (continued)

minimum time for hot leg recirculation switchover. The minimum boron concentration of [20,000] ppm is used to determine the minimum mixed mean sump boron concentration for post LOCA shutdown requirements.

For the MSLB analysis, the BIT is the primary mechanism for injecting boron into the core to counteract any positive increases in reactivity caused by an RCS cooldown. The analysis uses the minimum boron concentration of the BIT, which also affects both the departure from nucleate boiling and containment design analyses. Reference to the LOCA and MSLB analyses is used to assess changes to the BIT to evaluate their effect on the acceptance limits contained in these analyses.

The minimum temperature limit of [145]°F for the BIT ensures that the solution does not reach the boric acid precipitation point. The temperature of the solution is monitored and alarmed on the main control board.

The BIT boron concentration limits are established to ensure that the core remains subcritical during post LOCA recovery. The BIT will counteract any positive increases in reactivity caused by an RCS cooldown.

The BIT minimum water volume limit of [1100] gallons is used to ensure that the appropriate quantity of highly borated water with sufficient negative reactivity is injected into the RCS to shut down the core following an MSLB, to determine the hot leg recirculation switchover time, and to safeguard against boron precipitation.

The BIT satisfies Criteria 2 and 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum requirements for contained volume, boron concentration, and temperature of the BIT inventory (Ref. 2). This ensures that an adequate supply of borated water is available in the event of a LOCA or MSLB to maintain the reactor subcritical following these accidents.

To be considered OPERABLE, the limits established in the SR for water volume, boron concentration, and temperature must be met.

If the equipment used to verify BIT parameters (temperature, volume, and boron concentration) is determined to be inoperable, then the BIT is also inoperable.

(1)

BIT
B 3.5.6

BASES

APPLICABILITY

In MODES 1, 2, and 3, the BIT OPERABILITY requirements are consistent with those of LCO 3.5.2, "ECCS - Operating."

In MODES 4, 5, and 6, the respective accidents are less severe, so the BIT is not required in these lower MODES.

ACTIONS

A.1

If the required volume is not present in the BIT, both the hot leg recirculation switchover time analysis and the boron precipitation analysis would not be met. Under these conditions, prompt action must be taken to restore the volume to above its required limit to declare the tank OPERABLE, or the plant must be placed in a MODE in which the BIT is not required.

The BIT boron concentration is considered in the hot leg recirculation switchover time analysis, the boron precipitation analysis, and the reactivity analysis for an MSLB. If the concentration were not within the required limits, these analyses could not be relied on. Under these conditions, prompt action must be taken to restore the concentration to within its required limits, or the plant must be placed in a MODE in which the BIT is not required.

The BIT temperature limit is established to ensure that the solution does not reach the boric acid crystallization point. If the temperature of the solution drops below the minimum, prompt action must be taken to raise the temperature and declare the tank OPERABLE, or the plant must be placed in a MODE in which the BIT is not required.

The 1 hour Completion Time to restore the BIT to OPERABLE status is consistent with other Completion Times established for loss of a safety function and ensures that the plant will not operate for long periods outside of the safety analyses.

B.1, B.2, and B.3

When Required Action A.1 cannot be completed within the required Completion Time, a controlled shutdown should be initiated. Six hours is a reasonable time, based on operating experience, to reach MODE 3 from full power conditions and to be borated to the required SDM without challenging plant systems or operators. Borating to the required SDM assures that the plant is in a safe condition, without need for any additional boration.

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(1)

BASES

ACTIONS (continued)

After determining that the BIT is inoperable and the Required Actions of B.1 and B.2 have been completed, the tank must be returned to OPERABLE status within 7 days. These actions ensure that the plant will not be operated with an inoperable BIT for a lengthy period of time. It should be noted, however, that changes to applicable MODES cannot be made until the BIT is restored to OPERABLE status pursuant to the provisions of LCO 3.0.4.

C.1

Even though the RCS has been borated to a safe and stable condition as a result of Required Action B.2, either the BIT must be restored to OPERABLE status (Required Action C.1) or the plant must be placed in a condition in which the BIT is not required (MODE 4). The 12 hour Completion Time to reach MODE 4 is reasonable, based on operating experience and normal cooldown rates, and does not challenge plant safety systems or operators.

SURVEILLANCE REQUIREMENTS

SR 3.5.6.1

Verification every 24 hours that the BIT water temperature is at or above the specified minimum temperature is frequent enough to identify a temperature change that would approach the acceptable limit. The solution temperature is also monitored by an alarm that provides further assurance of protection against low temperature. This Frequency has been shown to be acceptable through operating experience.

SR 3.5.6.2

Verification every 7 days that the BIT contained volume is above the required limit is frequent enough to assure that this volume will be available for quick injection into the RCS. If the volume is too low, the BIT would not provide enough borated water to ensure subcriticality during recirculation or to shut down the core following an MSLB. Since the BIT volume is normally stable, a 7 day Frequency is appropriate and has been shown to be acceptable through operating experience.

SR 3.5.6.3

Verification every 7 days that the boron concentration of the BIT is within the required band ensures that the reactor remains subcritical following a LOCA; it limits return to power following an MSLB, and maintains the resulting sump pH in an acceptable range so that boron precipitation will

BASES

SURVEILLANCE REQUIREMENTS (continued)

not occur in the core. In addition, the effect of chloride and caustic stress corrosion on mechanical systems and components will be minimized.

The BIT is in a recirculation loop that provides continuous circulation of the boric acid solution through the BIT and the boric acid tank (BAT). There are a number of points along the recirculation loop where local samples can be taken. The actual location used to take a sample of the solution is specified in the plant Surveillance procedures. Sampling from the BAT to verify the concentration of the BIT is not recommended, since this sample may not be homogenous and the boron concentration of the two tanks may differ.

The sample should be taken from the BIT or from a point in the flow path of the BIT recirculation loop.

REFERENCES

1. FSAR, Chapter [6] and Chapter [15].
2. 10 CFR 50.46.

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.5.6 BASES, BORON INJECTION TANK

1. Changes are made to be consistent with changes made to the ISTS.

SUMMARY OF CHANGES
ITS SECTION 3.6

Change Description	Affected Pages
A self-identified change for ITS 3.6.3 and 3.6.8, and ISTS 3.6.9, has been made. CTS Amendments 281 (Unit 1) and 265 (Unit 2) have been incorporated into the ITS submittal. This CTS change adopted the allowances of TSTF-359 and affects CTS 3.6.3.1 Actions and CTS 3.6.1.7 Action d, and changes ITS 3.6.8 (deleted Required Action A.1 Note).	Pages 67, 71, 72, 76, 78, 221, 222, 224, 228, 234, 446, and 452 of 498.
The change described in the response to Question 200406301532 for ITS 3.6.3 has been made. This change withdraws the original request to delete "and a closed system" in proposed ITS 3.6.3 Condition C Note, adopting the NUREG-1431, Revision 2 Improved Standard Technical Specification (ISTS) 3.6.3 Condition C Note wording instead.	Pages 93, 99, 110, 111, and 119 of 498.
A self-identified change for ITS 3.6.5 Bases has been made. This change revises the ITS 3.6.5 Bases Applicable Safety Analyses Section to delete the reference to inadvertent containment spray actuation in the fifth paragraph. This is consistent with deletion of this same reference in ITS 3.6.4 Bases and ITS 3.6.6 Bases.	Page 153 of 498.
The change described in the response to Question 200407061802 for ITS 3.6.8 Bases has been made. This change revises the ITS 3.6.8 Bases markup pages for proposed ITS SR 3.6.8.1, ITS SR 3.6.8.2, and ITS SR 3.6.8.3 to correctly identify the change from a bracketed 18 month Frequency to a 24 month Frequency as being justified by ITS 3.6.8 Bases Justification for Deviations (JFD) 7.	Page 237 of 498.
The change described in the response to Question 200407071825 for ITS 3.6.10 has been made. This change revises ITS 3.6.10 Discussion of Changes (DOC) L.3 to provide additional justification for deleting the CTS 4.6.5.6.d requirement to verify that the return air fan can be manually started from the Control Room every 3 months, and to verify that the motor operated valve in the suction line to the containment's lower compartment opens when the return air fan starts.	Page 273 of 498.
The change described in the response to Question 200407191745 for ITS 3.6.12 Bases has been made. This change revises the ITS 3.6.12 ACTIONS C.1 Bases to provide additional justification for the 48 hour Completion Time (i.e., to state that the Completion Time is consistent with the ACTIONS of LCO 3.6.11), consistent with similar words in the ITS 3.6.3 ACTIONS B.1 Bases.	Pages 360, 361, and 366 of 498.

Change Description	Affected Pages
A self-identified change for ITS 3.6.14 Bases has been made. This change makes an editorial change to the ITS 3.6.14 Bases Title to remove "(Ice Condenser)" for consistency with other Bases.	Page 414 of 498.

VOLUME 11

CNP UNITS 1 AND 2
IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.6
CONTAINMENT SYSTEMS

Revision 1

LIST OF ATTACHMENTS

1. ITS 3.6.1
2. ITS 3.6.2
3. ITS 3.6.3
4. ITS 3.6.4
5. ITS 3.6.5
6. ITS 3.6.6
7. ITS 3.6.7
8. ITS 3.6.8
9. ITS 3.6.9
10. ITS 3.6.10
11. ITS 3.6.11
12. ITS 3.6.12
13. ITS 3.6.13
14. ITS 3.6.14
15. Relocated/Deleted Current Technical Specifications (CTS)
16. Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ATTACHMENT 1

ITS 3.6.1, Containment

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.6.1

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY ← OPERABILITY (A.2)

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: (OPERABILITY) (A.2)

ACTION A — Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be
ACTION B — in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS (OPERABILITY) (A.2)

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. At least once per 31 days by verifying that: (L.1)

1. All penetrations* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions, except for values that are open under administrative control as permitted by Specification 3.6.3.1, and (See ITS 3.6.3)

2. All equipment hatches are closed and sealed. (L.1) (L.2)

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3. (A.3)

*Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days. (See ITS 3.6.3)

ITS 3.6.1

A.1

ITS

DEFINITIONS

REPORTABLE EVENT

1.7 A REPORTABLE EVENT shall be any of those conditions specified in 10 CFR 50.73.

CONTAINMENT INTEGRITY

1.8 CONTAINMENT INTEGRITY shall exist when:

See ITS Chapter 1.0

1.8.1 All penetrations required to be closed during accident conditions are either:

a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1.

LA.1

1.8.2 All equipment hatches are closed and sealed.

L.2

1.8.3 Each air lock is in compliance with the requirements of Specification 3.6.1.3.

See ITS 3.6.2

SR 3.6.1.1 — 1.8.4 The containment leakage rates are within the limits of Specification 3.6.1.2

CHANNEL CALIBRATION

1.9 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

See ITS Chapter 1.0

CHANNEL CHECK

1.10 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

ITS 3.6.1

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.2 Containment leakage rates shall be limited to: — A.2

a. An overall integrated leakage rate of ≤ L_a, 0.25 percent by weight of the containment air per 24 hours at P_a, 12.0 psig, and

b. A combined leakage rate of ≤ 0.60 L_a for all penetrations and valves subject to Types B and C tests when pressurized to P_a.

See ITS 5.5

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTIONS A and B — A.4

ACTION:

With either (a) the measured overall integrated containment leakage rate exceeding 0.75 L_a, or (b) with the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding 0.60 L_a, restore the overall integrated leakage rate to ≤ 0.75 L_a and the combined leakage rate for all penetrations and valves subject to Types B and C tests to ≤ 0.60 L_a prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

the Containment Leakage Rate Testing Program — A.5

SR 3.6.1.1 4.6.1.2 Perform leakage rate testing in accordance with 10 CFR 50 Appendix J Option B, except as modified by NRC-approved exemptions, and Regulatory Guide 1.163, dated September 1995. See Notes 1 and 2.

See ITS 5.5

a. Each containment air lock shall be verified to be in compliance with the requirements of Specification 3.6.1.3.

A.5

b. The provisions of Specification 4.0.2 are not applicable.

See ITS 5.5

A.5

Notes:

1 A one-time exception to the requirement to perform post-modification Type A testing is allowed for the steam generators and associated piping, as components of the containment barrier. For this case, ASME Section XI leak testing will be used to verify the leak tightness of the repaired or modified portions of the containment barrier. Entry into MODES 3 and 4 following the extended outage that commenced in 1997 may be made to perform this testing.

2 The Type A testing frequency specified in NEI 94-01, Revision 0, Paragraph 9.2.3, as "...at least once per 10 years based on acceptable performance history" is modified to be "...at least once per 15 years based on acceptable performance history." This change applies only to the interval following the Type A test performed in October 1992.

See ITS 5.5

ITS 3.6.1

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

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ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6. A.2

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS A and B A.4

With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1 4.6.1.6 The structural integrity of the containment structure and steel liner shall be determined in accordance with 10 CFR 50 Appendix J Option B and Regulatory Guide 1.163, dated September 1995.

the Containment Leakage Rate Testing Program A.5

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ITS 3.6.1

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT ~~INTEGRITY~~ ← OPERABILITY (A.2)

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 — 3.6.1.1 Primary CONTAINMENT ~~INTEGRITY~~ [OPERABILITY] shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: (A.2)

ACTION A — Without primary CONTAINMENT ~~INTEGRITY~~ [OPERABILITY], restore CONTAINMENT ~~INTEGRITY~~ [OPERABILITY] within one hour or be

ACTION B — in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS — OPERABILITY (A.2)

4.6.1.1 Primary CONTAINMENT ~~INTEGRITY~~ [OPERABILITY] shall be demonstrated:

a. ~~At least once per 31 days by verifying that:~~ (L.1)

1. All penetrations* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1, and (See ITS 3.6.3)

2. ~~All equipment hatches are closed and sealed.~~ (L.1) (L.2)

b. ~~By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.~~ (A.3)

*Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days. (See ITS 3.6.3)

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ITS 3.6.1

A.1

ITS

DEFINITIONS

REPORTABLE EVENT

1.7 A REPORTABLE EVENT shall be any of those conditions specified in 10 CFR 50.73. — See ITS Chapter 1.0

CONTAINMENT INTEGRITY

1.8 CONTAINMENT INTEGRITY shall exist when:

1.8.1 All penetrations required to be closed during accident conditions are either: — LA.1

a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1.

1.8.2 All equipment hatches are closed and sealed — L.2

1.8.3 Each air lock is in compliance with the requirements of Specification 3.6.1.3. — See ITS 3.6.2

SR 3.6.1.1 1.8.4 The containment leakage rates are within the limits of Specification 3.6.1.2, and

1.8.5 The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE. — LA.1

CHANNEL CALIBRATION

1.9 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated. — See ITS Chapter 1.0

CHANNEL CHECK

1.10 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

ITS 3.6.1

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.2 Containment leakage rates shall be limited to: (A.2)

a. An overall integrated leakage rate of ≤ L_a, 0.25 percent by weight of the containment air per 24 hours at P_a, 12 psig, and

b. A combined leakage rate of ≤ 0.60 L_a for all penetrations and valves subject to Types B and C tests when pressurized to P_a.

{See ITS 5.5}

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTIONS A and B (A.4)

ACTION:

With either (a) the measured overall integrated containment leakage rate exceeding 0.75 L_a, or (b) with the measured combined leakage rate for all penetrations and valves subject to Types B and C tests exceeding 0.60 L_a, restore the overall integrated leakage rate to ≤ 0.75 L_a and the combined leakage rate for all penetrations and valves subject to Types B and C tests to ≤ 0.60 L_a prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

the Containment Leakage Rate Testing Program (A.5)

SR 3.6.1.1 4.6.1.2 Perform leakage rate testing in accordance with 10 CFR 50 Appendix J Option B, except as modified by NRC-approved exemptions, and Regulatory Guide 1.163, dated September 1995. See Note 1. {See ITS 5.5}

a. Each containment air lock shall be verified to be in compliance with the requirements of Specification 3.6.1.3. (A.5)

b. The provisions of Specification 4.0.2 are not applicable. {See ITS 5.5}

(A.5)

Notes:

1 The Type A testing frequency specified in NEI 94-01, Revision 0, Paragraph 9.2.3, as "...at least once per 10 years based on acceptable performance history" is modified to be "...at least once per 15 years based on acceptable performance history." This change applies only to the interval following the Type A test performed in May 1992. {See ITS 5.5}

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ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

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A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.6 The structural integrity of the containment shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6. — A.2

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTIONS A and B — A.4

ACTION:

~~With the structural integrity of the containment not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.~~

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1 4.6.1.6 The structural integrity of the containment structure and steel liner shall be determined in accordance with ~~10 CFR 50 Appendix J Option B and Regulatory Guide 1.163, dated September 1995.~~

the Containment Leakage Rate Testing Program — A.5

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DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.6.1.1 states "Primary CONTAINMENT INTEGRITY shall be maintained." CTS 3.6.1.2 requires containment leakage rates be within specified parameters. CTS 3.6.1.6 requires that the structural integrity of the containment be maintained within specified parameters. ITS 3.6.1 states "Containment shall be OPERABLE." This changes the CTS by deleting the specific CONTAINMENT INTEGRITY definition and all references to it, as well as combining the containment requirements of CTS 3.6.1.1, CTS 3.6.1.2, and CTS 3.6.1.6 into one LCO statement.

The purpose of CTS 3.6.1.1, CTS 3.6.1.2, and CTS 3.6.1.6 is to provide requirements pertaining for containment OPERABILITY. This portion of the change (combining the LCOs) is acceptable because moving these requirements to one LCO, ITS 3.6.1, centralizes the requirements. The purpose of CTS 1.8 is to clearly describe all aspects of CONTAINMENT INTEGRITY. The CTS 3/4.6.1 references to CONTAINMENT INTEGRITY have been deleted since the CTS definition of CONTAINMENT INTEGRITY in CTS 1.8 is incorporated into ITS 3.6.1, 3.6.2 and 3.6.3 and is no longer maintained as a separate definition in the ITS. ITS 3.6.1 requires that the containment shall be OPERABLE. The definition of OPERABLE and the subsequent ITS 3.6.1 LCO, ACTIONS, and Surveillance Requirements are sufficient to encompass the applicable requirements of the CTS definition. This change removes any confusion that may exist between the definition and the specific requirements of the LCO and is a presentation preference consistent with NUREG-1431, Rev. 2. Since all aspects of the CONTAINMENT INTEGRITY definition requirements, along with the remainder of the LCOs in the Containment Systems Primary Containment section (i.e., air locks and containment isolation valves), are maintained in subsequent Specifications of ITS, this change is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 4.6.1.1.b requires that Primary CONTAINMENT INTEGRITY shall be demonstrated by verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3. The ITS does not include the reference to CTS 3.6.1.3 (which has changed to ITS 3.6.2). This changes the CTS by not including a reference to another LCO that is required in the same MODES.

The purpose of the CTS 4.6.1.1.b is to provide assurance that each containment air lock is performing its function in support of CONTAINMENT INTEGRITY. This cross reference to another Specification is not necessary and this change is

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

acceptable because ITS 3.6.2 provides assurance that containment air locks are OPERABLE without the reference in ITS 3.6.1. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 3.6.1.2 Action does not state what action to take if specific leakage rate limits are not met while in MODE 1, 2, 3, or 4; it only includes a requirement that the limits be restored prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). CTS 3.6.1.6 Action does not state what action to take if the structural integrity limits are not met while in MODE 1, 2, 3, or 4; it only includes a requirement that the limits be restored prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Thus, entry into CTS 3.0.3 is required if CTS 3.6.1.2 or CTS 3.6.1.6 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.6.1 ACTION A requires that if the containment is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.1 ACTION B requires that if the Required Action and associated Completion Time are not met (i.e., the containment is not restored to OPERABLE status in 1 hour), the unit must be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes CTS by stating the ACTIONS rather than deferring to CTS 3.0.3. In addition, it deletes the CTS Actions to restore the limits prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.1.2 and CTS 3.6.1.6 are silent on these actions, deferring to CTS 3.0.3 for the actions to accomplish this. This change is acceptable because the ACTIONS specified in ITS 3.6.1 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Actions of CTS 3.6.1.2 and CTS 3.6.1.6 is acceptable, because CTS 3.0.4 (ITS 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.1. This change is designated as administrative because it does not result in technical changes to the CTS.

A.5 CTS 4.6.1.2 and CTS 4.6.1.6 reference specific 10 CFR 50, Appendix J, Option B requirements, and other specific leakage rate criteria. CTS 4.6.1.2 also states "The provisions of Specification 4.0.2 are not applicable." ITS SR 3.6.1.1 requires performance of visual examinations and leakage rate testing, except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program. This changes CTS by referencing the appropriate Containment Leakage Rate Testing Program.

The purpose of ITS 3.6.1 is to ensure that the structural integrity of the containment will be maintained comparable to the original design standards for the life of the facility. This change is acceptable because the appropriate 10 CFR 50, Appendix J, Option B requirements, and other specific leakage rate criteria are retained in the Technical Specifications as part of ITS 5.5.14, "Containment Leakage Rate Testing Program." This change is designated as administrative because it does not result in technical changes to the CTS.

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 2 – Removing Descriptions of System Operation)* CTS 1.8 states "CONTAINMENT INTEGRITY shall exist when: 1.8.1 All penetrations required to be closed during accident conditions are either: a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1; 1.8.2 All equipment hatches are closed and sealed; and (Unit 2 only) 1.8.5 The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE." ITS 3.6.1 states "Containment shall be OPERABLE." This changes the CTS by moving the reference to penetration and equipment hatch requirements to the Bases. The change deleting the phrase "and sealed" in CTS 1.8.2 is addressed by DOC L.2.

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for the containment to be OPERABLE and the relocated material describes aspects of OPERABILITY. The ITS also still retains the requirement to perform required visual inspections and leakage rate testing in accordance with the Containment Leakage Rate Testing Program in accordance with 10 CFR 50 Appendix J, Part B, which would provide verification that the equipment hatch is closed and the sealing mechanisms are OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 5 - Deletion of Surveillance Requirement)* CTS 4.6.1.1.a.2 requires the primary containment equipment hatches to be verified closed and sealed every 31 days. The ITS does not include this requirement. This changes the CTS by deleting the specific Surveillance Requirement to verify primary containment equipment hatches are closed. The deletion of the sealed requirement is addressed in DOC L.2.

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

The purpose of CTS 4.6.1.1.a.2 is to help ensure primary CONTAINMENT INTEGRITY is maintained. However, the ITS still maintains the requirement for the Containment to be OPERABLE, and maintaining the hatches closed is part of this requirement (as described in the Bases). The ITS also continues to require the leakage rate testing in accordance with the Containment Leakage Rate Testing Program. This leakage testing would confirm that the equipment hatch is sealed, since if it was not sealed, then the measured leakage rate would be affected. In addition, opening of the equipment hatch is not a routine evolution, and it is strictly controlled by plant procedures. The appropriate procedure requires proper verification that the opened equipment hatch is resealed when the equipment hatch is closed. Therefore, this specific Surveillance Requirement is not necessary to be included in the ITS. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.2 *(Category 1 – Relaxation of LCO Requirements)* CTS 1.8 states "CONTAINMENT INTEGRITY shall exist when:...1.8.2 All equipment hatches are closed and sealed." ITS 3.6.1 states that the Containment shall be OPERABLE. This changes the CTS by not including an explicit reference to sealing the equipment hatch. The change associated with moving the reference to the equipment hatch into the Bases is addressed by DOC LA.1.

The purpose of CTS 1.8.2 is to help provide assurance that the equipment hatch can perform its safety function. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. The Containment Leakage Rate Testing Program requires testing be performed in accordance with 10 CFR 50 Appendix J, Part B, requiring the containment isolation valves, including the equipment hatch, to be OPERABLE, but there is no specific mention of sealing the equipment hatches. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①
3.6.1

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①

LCO 3.6.1.1, LCO 3.6.1.2, LCO 3.6.1.6

LCO 3.6.1 Containment shall be OPERABLE.

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

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.6.1.1 Action, DOC A.4	A. Containment inoperable.	A.1 Restore containment to OPERABLE status.	1 hour
3.6.1.1 Action, DOC A.4	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.6.1.2, 4.6.1.6	SR 3.6.1.1	Perform required visual examinations and leakage rate testing, except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	②
	SR 3.6.1.2	[Verify containment structural integrity in accordance with the Containment Tendon Surveillance Program.	In accordance with the Containment Tendon Surveillance Program]	③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1, CONTAINMENT

1. The headings for ISTS 3.6.1 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Typographical/grammatical error corrected.

3. This bracketed requirement regarding Containment Tendon Surveillance Program is deleted because it is not applicable to CNP. The CNP containment does not utilize containment tendons.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

 ①

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1C Containment (Ice Condenser) ①

BASES

BACKGROUND

The containment is a free standing steel pressure vessel surrounded by a reinforced concrete shield building. The containment vessel, including all its penetrations, is a low leakage steel shell designed to contain the radioactive material that may be released from the reactor core following a design basis loss of coolant accident (LOCA). Additionally, the containment and shield building provides shielding from the fission products that may be present in the containment atmosphere following accident conditions. ② ② ②

INSERT 1

The containment vessel is a vertical cylindrical steel pressure vessel with hemispherical dome and a concrete base mat with steel membrane. It is completely enclosed by a reinforced concrete shield building. An annular space exists between the walls and domes of the steel containment vessel and the concrete shield building to provide for the collection, mixing, holdup, and controlled release of containment out leakage. Ice condenser containments utilize an outer concrete building for shielding and an inner steel containment for leak tightness. ② ② ②

INSERT 2

Containment piping penetration assemblies provide for the passage of process, service, sampling, and instrumentation pipelines into the containment vessel while maintaining containment integrity. The shield building provides shielding and allows controlled release of the annulus atmosphere under accident conditions, as well as environmental missile protection for the containment vessel and Nuclear Steam Supply System. ②

The inner steel containment and its penetrations establish the leakage limiting boundary of the containment. Maintaining the containment OPERABLE limits the leakage of fission product radioactivity from the containment to the environment. SR 3.6.1.1 leakage rate requirements comply with 10 CFR 50, Appendix J, Option A [B] (Ref. 1), as modified by approved exemptions. ② ③

The isolation devices for the penetrations in the containment boundary are a part of the containment leak tight barrier. To maintain this leak tight barrier:

a. All penetrations required to be closed during accident conditions are either:

2 **INSERT 1**

The containment structure is a reinforced concrete vertical cylinder with a slab base and a hemispherical dome. A welded steel liner (dome, wall, and bottom) is attached to the inside face of the concrete shell, to ensure a high degree of leak tightness.

2 **INSERT 2**

The structure serves as both a biological shield and a pressure container.

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BASES

BACKGROUND (continued)

1. Capable of being closed by an OPERABLE automatic containment isolation system, or

2. Closed by manual valves, blind flanges, or de-activated automatic valves secured in their closed positions, except as provided in LCO 3.6.3, "Containment Isolation Valves";

b. Each air lock is OPERABLE, except as provided in LCO 3.6.2, "Containment Air Locks";

c. All equipment hatches are closed; and

d. The pressurized sealing mechanism associated with a penetration is operable, except as provided in LCO 3.6.[ ].]

APPLICABLE SAFETY ANALYSES

The safety design basis for the containment is that the containment must withstand the pressures and temperatures of the limiting Design Basis Accident (DBA) without exceeding the design leakage rates.

The DBAs that result in a challenge to containment OPERABILITY from high pressures and temperatures are a LOCA, a steam line break, and a rod ejection accident (REA) (Ref. 2). In addition, release of significant fission product radioactivity within containment can occur from a LOCA or REA. In the DBA analyses, it is assumed that the containment is OPERABLE such that, for the DBAs involving release of fission product radioactivity, release to the environment is controlled by the rate of containment leakage. The containment was designed with an allowable leakage rate of [0.1]% of containment air weight per day (Ref. 3). This leakage rate, used in the evaluation of offsite doses resulting from accidents, is defined in 10 CFR 50, Appendix J, Option [A][B] (Ref. 1), as L_a: the maximum allowable containment leakage rate at the calculated peak containment internal pressure (P_a) resulting from the limiting design basis LOCA. The allowable leakage rate represented by L_a forms the basis for the acceptance criteria imposed on all containment leakage rate testing. L_a is assumed to be [0.1]% per day in the safety analysis at P_a = [14.4] psig (Ref. 3).

Satisfactory leakage rate test results are a requirement for the establishment of containment OPERABILITY.

The containment satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

(3) **INSERT 3**

The sealing mechanism associated with each containment penetration (e.g., welds, bellows, or O-rings) is OPERABLE (i.e., OPERABLE such that the containment leakage limits are met).

 (1)

BASES

LCO	Containment OPERABILITY is maintained by limiting leakage to ≤ 1.0 L_a, except prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test. At this time the applicable leakage limits must be met. Compliance with this LCO will ensure a containment configuration, including equipment hatches, that is structurally sound and that will limit leakage to those leakage rates assumed in the safety analysis. Individual leakage rates specified for the containment air lock (LCO 3.6.2) [, purge valves with resilient seals, and secondary bypass leakage (LCO 3.6.3)] are not specifically part of the acceptance criteria of 10 CFR 50, Appendix J. Therefore, leakage rates exceeding these individual limits only result in the containment being inoperable when the leakage results in exceeding the overall acceptance criteria of 1.0 L_a. (6)
APPLICABILITY	In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material into containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, containment is not required to be OPERABLE in MODE 5 to prevent leakage of radioactive material from containment. The requirements for containment during MODE 6 are addressed in LCO 3.9.4 (3) "Containment Penetrations." (8)
ACTIONS	A.1 In the event containment is inoperable, containment must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment is inoperable is minimal. B.1 and B.2 If containment cannot be restored to OPERABLE status within the required Completion Time, the plant (unit) 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 6 hours and to MODE 5 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. (2)

 (1)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

Maintaining the containment OPERABLE requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program. Failure to meet air lock [, secondary containment bypass leakage path, and purge valve with resilient seal] leakage limits specified in LCO 3.6.2 [and LCO 3.6.3] does not invalidate the acceptability of these overall leakage determinations unless their contribution to overall Type A, B, and C leakage causes that to exceed limits. As left leakage prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test is required to be ≤ 0.6 L_a for combined Type B and C leakage, and [≤ 0.75 L_a for Option A] ≤ 0.75 L_a [for Option B] for overall Type A leakage. At all other times between required leakage rate tests, the acceptance criteria is based on an overall Type A leakage limit of ≤ 1.0 L_a. At ≤ 1.0 L_a the offsite dose consequences are bounded by the assumptions of the safety analysis. SR Frequencies are as required by the Containment Leakage Rate Testing Program. These periodic testing requirements verify that the containment leakage rate does not exceed the leakage rate assumed in the safety analysis. (6) (6) (2) (3)

- REVIEWER'S NOTE -

Regulatory Guide 1.163 and NEI 94-01 include acceptance criteria for as-left and as-found Type A leakage rates and combined Type B and C leakage rates, which may be reflected in the Bases. (7)

[SR 3.6.1.2

For ungrouted, post tensioned tendons, this SR ensures that the structural integrity of the containment will be maintained in accordance with the provisions of the Containment Tendon Surveillance Program. Testing and Frequency are consistent with the recommendations of Regulatory Guide 1.35 (Ref. 4).] (8)

REFERENCES

1. 10 CFR 50, Appendix J, Option [A][B]. (3)

2. [U]FSAR, [Chapter 15]. Section 14.3.4 (3)

[3]. [U]FSAR, Section [6.2]. 5.7 (4) (2) (3)

4. Regulatory Guide 1.35, Revision [1]. (8)

3. UFSAR, Section 14.2.6. (2)

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1 BASES, CONTAINMENT

1. The type of Containment (Ice Condenser) and the Specification designator "C" are deleted since they are unnecessary (only one Containment Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric, Subatmospheric, and Dual Containment Specification Bases (ISTS B 3.6.1A, ISTS B 3.6.1B, and ISTS B 3.6.1D) are not used and are not shown.
2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
3. The brackets have been removed and the proper plant specific information/value has been provided.
4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.
5. Editorial change made for enhanced clarity or to be consistent with the ISTS Writers Guide (NEI 01-03).
6. This bracketed requirement is deleted since it is not applicable to CNP.
7. Reviewer's Note not retained.
8. Changes are made to reflect those changes made to the ISTS.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.1, CONTAINMENT

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.6.2, Containment Air Locks

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

LCO 3.6.2 3.6.1.3 Each containment air lock shall be OPERABLE with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and (LA.1)

b. An overall air lock leakage rate of ≤ 0.05 L_a at P_a, 12 psig. [See ITS 5.5]

APPLICABILITY: MODES 1, 2, 3 and 4. [Add proposed ACTIONS Note 1] (L.1)

ACTION: [Add proposed ACTIONS A and B] [Add proposed ACTIONS Note 2] (A.2) [Add proposed ACTIONS Note 3] (A.3)

ACTION C – With an air lock inoperable, restore the air lock to OPERABLE status within 24 hours, or be in at least HOT
ACTION D – STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (L.1)

[Add proposed Required Actions C.1 and C.2] (M.1)

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

SR 3.6.2.1 a. In accordance with 10 CFR 50 Appendix J Option B and Regulatory Guide 1.163, dated September 1995, and [See ITS 5.5] [the Containment Leakage Rate Testing Program] (A.4)

SR 3.6.2.2 b. At least once per 6 months by verifying that only one door in each air lock can be opened at a time. [24] (L.2)

[Add proposed SR 3.6.2.1 Note 1] (A.5)

[Add proposed SR 3.6.2.1 Note 2] (A.6)

ITS

A.1

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ITS 3.6.2

ITS

A.1

DEFINITIONS

REPORTABLE EVENT

1.7 A REPORTABLE EVENT shall be any of those conditions specified in 10 CFR 50.73.

CONTAINMENT INTEGRITY

1.8 CONTAINMENT INTEGRITY shall exist when:

See ITS Chapter 1.0

1.8.1 All penetrations required to be closed during accident conditions are either:

a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1.

See ITS 3.6.1

1.8.2 All equipment hatches are closed and sealed.

LCO 3.6.2 1.8.3 Each air lock is in compliance with the requirements of Specification 3.6.1.3.

1.8.4 The containment leakage rates are within the limits of Specification 3.6.1.2

See ITS 3.6.1

CHANNEL CALIBRATION

1.9 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

CHANNEL CHECK

1.10 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

See ITS Chapter 1.0

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

LCO 3.6.2 — 3.6.1.3 Each containment air lock shall be OPERABLE with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and (LA.1)

b. An overall air lock leakage rate of ≤ 0.05 L_a at P_a, 12.0 psig. (See ITS 5.5)

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTIONS Note 1 (L.1)

Add proposed ACTIONS Note 2 (A.2)

Add proposed ACTIONS Note 3 (A.3)

ACTION: Add proposed ACTIONS A and B

ACTION C — With an air lock inoperable, maintain at least one door closed; restore the air lock to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following

ACTION D — 30 hours. (L.1)

Add proposed Required ACTIONS C.1 and C.2 (M.1)

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

SR 3.6.2.1 — a. In accordance with 10 CFR 50 Appendix J Option B and Regulatory Guide 1.163, dated September 1995, and (See ITS 5.5)

the Containment Leakage Rate Testing Program (A.4)

SR 3.6.2.2 — b. At least once per 6 months by verifying that only one door in each air lock can be opened at a time.

24 (L.2)

Add proposed SR 3.6.2.1 Note 1 (A.5)

Add proposed SR 3.6.2.1 Note 2 (A.6)

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A.1

ITS

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A.1

ITS

DEFINITIONS

REPORTABLE EVENT

1.7 A REPORTABLE EVENT shall be any of those conditions specified in 10 CFR 50.73.

CONTAINMENT INTEGRITY

1.8 CONTAINMENT INTEGRITY shall exist when:

See ITS Chapter 1.0

1.8.1 All penetrations required to be closed during accident conditions are either:

a. Capable of being closed by an OPERABLE containment automatic isolation valve system, or

b. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1.

See ITS 3.6.1

1.8.2 All equipment hatches are closed and sealed,

LCO 3.6.2 1.8.3 Each air lock is in compliance with the requirements of Specification 3.6.1.3,

1.8.4 The containment leakage rates are within the limits of Specification 3.6.1.2, and

1.8.5 The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

CHANNEL CALIBRATION

1.9 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

See ITS Chapter 1.0

CHANNEL CHECK

1.10 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes because they do not result in technical changes to the CTS.

A.2 CTS 3.6.1.3 states "Each containment air lock shall be OPERABLE..." CTS 3.6.1.3 Action a states "With an air lock inoperable" and specifies Actions to be taken. ITS 3.6.2 ACTIONS Note 2 states "Separate Condition entry is allowed for each air lock." ITS 3.6.2 Condition C states "One or more containment air locks inoperable for reasons other than Condition A or B." This changes the CTS by clarifying the current intent of applying the CTS Actions to each air lock separately.

The purpose of CTS 3.6.1.3 is to ensure containment air locks meet their requirements for CONTAINMENT INTEGRITY (changed to containment OPERABILITY in the ITS). One OPERABLE air lock door in each containment air lock provides a pressure boundary, and applying the CTS Actions for an inoperable air lock to each of the air locks separately is appropriate. ITS 3.6.2 ACTIONS Note 2 clearly states this. The Required Actions for each Condition provide appropriate compensatory action for each inoperable air lock. This change is acceptable because it clarifies existing requirements and better describes how the requirements are currently used. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3.6.1.3 does not include a reference to entering applicable Conditions and Required Actions of the CONTAINMENT INTEGRITY LCO (CTS 3.6.1.1) (changed to containment OPERABILITY in the ITS). ITS 3.6.2 ACTIONS Note 3 states "Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate." This changes the CTS by explicitly requiring the Containment Actions be entered when the Containment LCO is not met as a result of air lock leakage exceeding limits.

This change is acceptable because it reinforces the requirement in ITS 3.6.1 to meet overall containment leakage limits. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 4.6.1.3.a references specific 10 CFR 50, Appendix J, Option B requirements, and other specific leakage rate criteria. ITS SR 3.6.2.1 requires performance of containment air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. This changes CTS by referencing the appropriate Containment Leakage Rate Testing Program.

The purpose of CTS 4.6.1.3.a is to ensure that the structural integrity of the containment air locks will be maintained comparable to the original design

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DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

standards for the life of the facility. This change is acceptable because the appropriate 10 CFR 50, Appendix J, Option B requirements, and other specific leakage rate criteria are retained in the Technical Specifications as part of ITS 5.5.14, "Containment Leakage Rate Testing Program." This change is designated as administrative because it does not result in technical changes to the CTS.

A.5 CTS 4.6.1.3.a references specific 10 CFR 50, Appendix J, Option B requirements, and other specific leakage rate criteria. ITS SR 3.6.2.1 requires performance of containment air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. ITS SR 3.6.2.1 Note 1 states "An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test." This changes the CTS by adding a Note as a reminder that either air lock door is capable of providing a fission product barrier in the event of a DBA.

The purpose of CTS 4.6.1.3.a is to ensure that the structural integrity of the containment air locks will be maintained comparable to the original design standards for the life of the facility. This change is acceptable because it provides clarification that the previous overall containment air lock leakage test remains valid when one air lock door is found inoperable, consistent with current requirements and practices. One inoperable door does not invalidate the test for the overall air lock leakage test because the second door is still capable of performing the safety function. This change is designated as administrative because it does not result in technical changes to the CTS.

A.6 CTS 4.6.1.3.a references specific 10 CFR 50, Appendix J, Option B requirements, and other specific leakage rate criteria. ITS SR 3.6.2.1 requires performance of containment air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program. ITS SR 3.6.2.1 Note 2 states "Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1." This changes the CTS by adding a Note as a reminder that the air lock leakage must be accounted for in determining the combined Type B and C containment leakage rate.

The purpose of CTS 4.6.1.3.a is to ensure that the structural integrity of the containment air locks will be maintained comparable to the original design standards for the life of the facility. This change is acceptable because it provides clarification that the containment air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate, consistent with current requirements and practices. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 The CTS 3.6.1.3 Action requires restoration of an inoperable air lock within 24 hours. The ITS requires two additional Required Actions. When one or more containment air locks are inoperable for reasons other than Condition A or B, ITS 3.6.2 Required Action C.1 requires initiation of action to evaluate overall containment leakage rate per LCO 3.6.1 immediately and ITS 3.6.2 Required

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

Action C.2 requires a door in the inoperable air lock to be closed within 1 hour. This changes the CTS by adding new Required Actions.

The purpose of ITS 3.6.2 Required Action C.1 is to verify that the overall leakage rate aspect of containment OPERABILITY is met in the event an airlock is inoperable for a reason other than one door or an interlock mechanism being inoperable. The purpose of ITS 3.6.2 Required Action C.2 is to minimize, to the extent possible, the leakage through the inoperable air lock. This change is acceptable because if the inoperability is something that could cause the overall containment leakage rate limits to be exceeded, this should be evaluated immediately, commensurate with the importance of the limits. This change is considered more restrictive because it provides new Required Actions.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.6.1.3.a states (in part) what constitutes an OPERABLE containment air lock. ITS LCO 3.6.2 does not include this level of detail. This changes the CTS by moving details concerning what constitutes an OPERABLE containment air lock to the Bases.

The removal of these details, which are related to system design, from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to have two OPERABLE containment air locks. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the CTS.

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 - Relaxation of Required Action)* The CTS 3.6.1.3 Action states that with an air lock inoperable (for any reason), restore the air lock to OPERABLE status within 24 hours, and if not restored, the unit must be shutdown within a certain time limit. The ITS provides separate ACTIONS for different inoperabilities of the air lock. With an airlock inoperable due to a single inoperable door, ITS 3.6.2 ACTION A allows unlimited operation, provided the OPERABLE air lock door is closed in 1 hour and locked closed in 24 hours, and a verification is performed every 31 days that the OPERABLE air lock door remains locked closed. For air lock doors in high radiation areas, this 31 day

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DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

verification can be performed by administrative means. In addition, if both air locks have inoperable doors, the ACTION allows containment entry and exit for up to 7 days. With an air lock interlock mechanism inoperable, ITS 3.6.2 ACTION B allows unlimited operation, provided an OPERABLE door in the air lock is closed in 1 hour and locked closed in 24 hours, and a verification is performed every 31 days that an OPERABLE air lock door in the air lock remains locked closed. For air lock doors in high radiation areas, this 31 day verification can be performed by administrative means. In addition, containment entry and exit through the air lock is permissible (i.e., the closed and locked OPERABLE door can be opened) under the control of a dedicated individual. Finally, due to these new ACTIONS, ITS 3.6.2 ACTION C, which requires the air lock to be restored within 24 hours, only applies to an air lock that is inoperable for reasons other than an inoperable door or an inoperable interlock mechanism. For both of these new ACTIONS as well as ACTION C, as stated in ITS ACTIONS Note 1, entry and exit (i.e., the closed and locked OPERABLE air lock doors can be opened) is also permissible to perform repairs on the affected air lock components. This changes the CTS by allowing unlimited operation, with certain restrictions, for air locks that are inoperable due to an inoperable door or interlock mechanism, and also allows separate Condition entry for each of the two air locks.

The purpose of the CTS air lock Action is to ensure the containment is not allowed to operate indefinitely in a condition such that it cannot perform its safety function. The changes are acceptable because the proposed ACTIONS will still ensure the containment safety function is met. Since there are two redundant doors in each air lock, only one OPERABLE air lock door is needed to be maintained closed to ensure the leak tightness requirements are met. The leak tightness of each door is verified, as required by ITS SR 3.6.2.1, in accordance with the Containment Leakage Rate Testing Program. In addition, the interlock mechanism only ensures that both doors in the air lock are not inadvertently opened at the same time. With either an OPERABLE air lock door locked closed, or a dedicated individual ensuring that only one door at a time is opened, the function of the interlock mechanism is being met. The allowances to open the air lock doors to perform repairs or other reasons is acceptable since the time the door is opened is short and the opening is under administrative controls. Also, for the case where the air lock door is opened for reasons other than to effect repairs, the time period (7 days) is short. These changes are designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.6.1.3.b requires testing of the containment airlock interlock once per 6 months. ITS SR 3.6.2.2 requires testing of the containment airlock interlock every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 6 months (i.e., a maximum of 7.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of ITS SR 3.6.2.2 is to ensure that the containment airlock interlock prevents more than one of the containment airlock doors from opening at a time.

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. Typically, the interlock is installed after each refueling outage, verified OPERABLE with the Surveillance. If the need for maintenance arises when the interlock is required, the performance of the interlock Surveillance would be required following the maintenance. In addition, when an air lock is opened during times the interlock is required, the operator first verifies that one door is completely shut before attempting to open the other door. Therefore, the interlock is not challenged except during actual testing of the interlock. Consequently, it should be sufficient to ensure proper operation of the interlock by testing the interlock on a 24 month interval.

Testing of the air lock interlock mechanism is accomplished through having one door not completely engaged in the closed position, while attempting to open the second door. Failure of this Surveillance effectively results in a loss of containment OPERABILITY. Administrative controls and training do not allow this interlock to be challenged for normal ingress and egress. One door is opened, all personnel and equipment as necessary are placed into the air lock, and then the door is completely closed prior to attempting to open the second door. This Surveillance is contrary to processes and training of conservative operation, in that it requires an operator to challenge an interlock during a MODE when the interlock function is required. The door interlock mechanism cannot be readily bypassed; linkages must be removed to allow bypass of the interlock, which are under the control of station processes such as temporary modifications, primary containment closure procedures, and out of service practices. Failure rate of this physical device is very low based on the design of the interlock.

Historically, the Frequency of this interlock verification was established to coincide with the Frequency of the overall air lock leakage test. According to 10 CFR 50, Appendix J, Option A, this Frequency is once per 6 months. However, Appendix J, Option B, to which CNP Units 1 and 2 are currently licensed, allows for an extension of the overall air lock leakage test Frequency to a maximum of 30 months.

Therefore, it is proposed to change the required Frequency for this Surveillance to 24 months. With the allowance of ITS SR 3.0.2, this provides a total of 30 months, which corresponds to the overall air lock leakage test Frequency. In this fashion, the interlock can be tested in a MODE where the interlock is not required. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①

3.6.1.3 LCO 3.6.2 [Two] containment air lock[s] shall be OPERABLE. ②

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

ACTIONS

- NOTES -

DOC L.1 1. Entry and exit is permissible to perform repairs on the affected air lock components.

DOC A.2 2. Separate Condition entry is allowed for each air lock.

DOC A.3 3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.

DOC L.1

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment air locks with one containment air lock door inoperable.	- NOTES - 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls [if both air locks are inoperable]. ②	
	A.1 Verify the OPERABLE door is closed in the affected air lock. AND	1 hour

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CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION		COMPLETION TIME
Doc L.1		A.2	Lock the OPERABLE door closed in the affected air lock.	24 hours
		AND		
		A.3	- NOTE - Air lock doors in high radiation areas may be verified locked closed by administrative means. Verify the OPERABLE door is locked closed in the affected air lock.	Once per 31 days
Doc L.1	B. One or more containment air locks with containment air lock interlock mechanism inoperable.		- NOTES - 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under the control of a dedicated individual.	
		B.1	Verify an OPERABLE door is closed in the affected air lock.	1 hour
		AND		

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CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
DOC L.1		B.2	Lock an OPERABLE door closed in the affected air lock.	24 hours
		AND		
		B.3	- NOTE - Air lock doors in high radiation areas may be verified locked closed by administrative means. Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days
Action	C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
		AND		
		C.2	Verify a door is closed in the affected air lock.	1 hour
		AND		
		C.3	Restore air lock to OPERABLE status.	24 hours
Action	D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
		AND		
		D.2	Be in MODE 5.	36 hours

CTS

SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY	
4.6.1.3.a	SR 3.6.2.1	- NOTES - 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	
4.6.1.3.b	SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	24 months	(2)

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.2, CONTAINMENT AIR LOCKS

1. The headings for ISTS 3.6.2 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. The brackets are removed and the proper plant specific information/value is provided.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.2 Containment Air Locks (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①

BASES

BACKGROUND

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

Each air lock is nominally a right circular cylinder, approximately 10 ft in diameter, with a door at each end. The doors are interlocked to prevent simultaneous opening. During periods when containment is not required to be OPERABLE, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. To effect a leak tight seal, the air lock design uses pressure seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door). ②

Each personnel air lock is provided with limit switches on both doors that provide local control room indication of door position. Additionally, control room indication is provided to alert the operator whenever an air lock door interlock mechanism is defeated. INSERT 1 ②

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analyses.

APPLICABLE SAFETY ANALYSES

The DBAs that (Refs. 1 and 2) result in a release of radioactive material within containment are a loss of coolant accident and a rod ejection accident (Ref. 2). In the analysis of each of these accidents, it is assumed that containment is OPERABLE such that release of fission products to the environment is controlled by the rate of containment leakage. The containment was designed with an allowable leakage rate of [0.1] 0.25% of containment air weight per day (Ref. 2). This leakage rate is defined in 10 CFR 50, Appendix J, Option B (Ref. 3), as L_a = [0.1]% of containment air weight per day, the maximum allowable containment leakage rate at ② ④ ②

(2) **INSERT 1**

a control room alarm is provided for each air lock to alert the operator whenever an air lock door is open for greater than approximately 5 minutes.

BASES

APPLICABLE SAFETY ANALYSES (continued) ④

the calculated peak containment internal pressure P_a = (14.4) (12) psig following a design basis LOCA. This allowable leakage rate forms the basis for the acceptance criteria imposed on the SRs associated with the air locks.

The containment air locks satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). ②

LCO	Each containment air lock forms part of the containment pressure boundary. As part of the containment pressure boundary, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event. Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into or exit from containment.
APPLICABILITY	In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.3, "Containment Penetrations."
ACTIONS	The ACTIONS are modified by a Note that allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. It is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the ⑥

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ACTIONS (continued)

OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. (If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.) ⑥

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each air lock. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable air lock. Complying with the Required Actions may allow for continued operation, and a subsequent inoperable air lock is governed by subsequent Condition entry and application of associated Required Actions.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note 3 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1, "Containment."

A.1, A.2, and A.3

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (Required Action A.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This action must be completed within 1 hour. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires containment be restored to OPERABLE status within 1 hour.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour Completion Time. The 24 hour Completion Time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required Action A.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage boundary is maintained. The Completion Time of once per 31 days is based on engineering judgment and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls. Required Action A.3 is modified by a Note that applies to air

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ACTIONS (continued)

lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. The exception of Note 1 does not affect tracking the Completion Time from the initial entry into Condition A; only the requirement to comply with the Required Actions. Note 2 allows use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7 day restriction begins when the second air lock is discovered inoperable. Containment entry may be required on a periodic basis to perform Technical Specifications (TS) Surveillances and Required Actions, as well as other activities on equipment inside containment that are required by TS or activities on equipment that support TS-required equipment. This Note is not intended to preclude performing other activities (i.e., non-TS required activities) if the containment is entered, using the inoperable air lock, to perform an allowed activity listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.

B.1, B.2, and B.3

With an air lock interlock mechanism inoperable in one or more air locks, the Required Actions and associated Completion Times are consistent with those specified in Condition A.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. Note 2 allows entry into and exit from containment under the control of a dedicated individual stationed at the

BASES

ACTIONS (continued)

air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

Required Action B.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small. (3)

C.1, C.2, and C.3

With one or more air locks inoperable for reasons other than those described in Condition A or B, Required Action C.1 requires action to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal test or if the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits. (2)

Required Action C.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2 (5)

If the inoperable containment air lock cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 (2) (2)

(5) **INSERT 2**

any Required Action and associated Completion Time is not met

BASES

ACTIONS (continued)

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. unit ②

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining containment air locks OPERABLE requires compliance with the leakage rate test requirements of the Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria which is applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate.

SR 3.6.2.2 ④

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency is based on the need to perform this ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

Surveillance under the conditions that apply during a plant outage, and the potential for loss of containment OPERABILITY if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at 24 month Frequency. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the airlock. ②

INSERT 1 ②

REFERENCES ④ 1. 10 CFR 50, Appendix J, Option A B ② ④

③ 2. UFSAR, Section 6.2 5.7 ② ④

(2) INSERT 3

1. UFSAR, Section 14.3.4.

2. UFSAR, Section 14.2.6.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.2 BASES, CONTAINMENT AIR LOCKS

1. Changes are made to reflect those changes made to the ISTS.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Editorial/grammatical error corrected.

4. The subsequent requirements are renumbered or revised, where applicable, to reflect the changes.

5. The words in the ISTS do not convey the complete intent of the actual ISTS Condition and when the Condition should be entered. Therefore, to be consistent with the actual ISTS Condition words, the Bases have been modified.

6. The Bases statement that entry through the OPERABLE air lock is preferred when entering the containment to repair an inoperable air lock door has been deleted. The divider barrier must be breached (i.e., opened) in order to access one air lock by entering through the other air lock, and the ITS requires the divider barrier to be closed. Therefore, it is not practical to enter through the OPERABLE air lock when accessing the other air lock to repair its inoperable door.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.2, CONTAINMENT AIR LOCKS

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 3

ITS 3.6.3, Containment Isolation Valves

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.6.3

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

LCO 3.6.3 — 3.6.3.1 Each containment isolation valve shall be OPERABLE. Containment purge valves and locked or sealed closed valves may be opened on an intermittent basis under administrative control. (L.1)

SR 3.6.3.2 and ACTIONS Note 1 — The ACTION statement of T/S 3/4.6.3.1 is not applicable to the containment purge supply and exhaust isolation valves. The Limiting Condition for Operation and its associated ACTION statement for these valves is given in Technical Specification 3/4.6.1.7. (A.2)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS Note 2 (A.3)
Add proposed ACTIONS Note 3 (A.4)
Add proposed ACTIONS Note 4 (A.5)

ACTION A, ACTION B, ACTION C — With one or more of the containment isolation valve(s) inoperable, either:

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or (A.6)

b. Isolate each affected penetration within [4] hours by use of at least one deactivated automatic valve secured in the isolation position, or (1 hour for ACTION B) (M.1)

c. Isolate each affected penetration within [4] hours by use of at least one closed manual valve or blind flange, [or check valve with flow secured] or (72 hours for ACTION C) (L.2) (L.3)

ACTION D — d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1.1	Each containment isolation valve shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test and verification of isolation time.

(L.4)

ITS 3.6.3

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.3.5 4.6.3.1.2 Each containment isolation valve shall be demonstrated OPERABLE at least once per ~~18~~ 24 months by: (L.5) (L.13)

a. Verifying that on a actual or ~~Phase A Containment~~ isolation test signal, each ~~Phase A~~ isolation valve actuates to its isolation position. (LA.1)

b. Verifying that on a ~~Phase B Containment~~ isolation test signal, each ~~Phase B~~ isolation valve actuates to its isolation position.

c. Verifying that on a ~~Containment Purge and Exhaust~~ isolation signal, each ~~Purge and Exhaust~~ valve actuates to its isolation position.

not locked, sealed, or otherwise secured in position (L.6)

SR 3.6.3.4 4.6.3.1.3 The isolation time of each power operated ~~or~~ automatic containment isolation valve shall be determined to be within its limit when tested ~~pursuant to Specification 4.0.5~~ in accordance with the Inservice Testing Program. (L.7) (A.8)

ITS 3.6.3

A.1

Pages 3/4 6-17 through 3/4 6-22
deleted

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A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

See ITS 3.6.1

ACTION:

Add proposed ACTIONS Notes 2, 3, and 4 and ACTIONS A, B, and C — L.8

ACTION D — Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.6.1

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated: — L.9

Add proposed Required Actions A.2 and C.2 Notes 1 and 2 and SRs 3.6.3.2 and 3.6.3.3 Note — L.10

Required Actions A.2 and C.2, SR 3.6.3.2, SR 3.6.3.3

a. At least once per 31 days by verifying that:

1. All penetrations* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.1, and

and not locked, sealed, or secured

or check valves with flow secured — L.3

ACTIONS Note 1, SR 3.6.3.2, SR 3.6.3.3

2. All equipment hatches are closed and sealed.

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

See ITS 3.6.1

not — L.10

SR 3.6.3.3

*Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.3, SR 3.6.3.1 — 3.6.1.7 The containment purge supply and exhaust system shall be closed except when operation of the containment purge system is required for pressure control, ALARA, and respirable air quality considerations for personnel entry, and for surveillance testing and maintenance activities. No more than one purge supply path and one purge exhaust path shall be open at a time. (A.2)

SR 3.6.3.1

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

Add proposed ACTIONS Note 2 (L.11)

ACTION:

Add proposed ACTIONS Note 4 (A.5)

ACTION A

a. With one containment purge supply and/or one exhaust isolation valve inoperable, isolate the affected penetration by use of at least one automatic valve secured in the closed position, and, within ~~72~~ 4 hours, either: (M.2)

1) ~~Restore the inoperable valve to OPERABLE status, or,~~ (A.6)

2) Deactivate the automatic valve secured in the closed position.

b. ~~Operation may then continue until performance of the next required valve test~~ provided that the automatic valve secured in the closed position is verified to be deactivated in the closed position at least once per 31 days. (L.12)

Add proposed ACTION B (L.11)

ACTION D

c. Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

~~4.6.1.7.1 The surveillance requirements of Technical Specifications 3/4.6.1.2 and 3/4.6.3.1 apply.~~ (A.9)

Add proposed SR 3.6.3.1 (M.3)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

LCO 3.6.3 — 3.6.3.1 Each containment isolation valve shall be OPERABLE. Containment purge valves and locked or sealed closed valves may be opened on an intermittent basis under administrative control. (L.1)

SR 3.6.3.2 and ACTIONS Note 1 — The ACTION statement of Technical Specification 3/4.6.3.1 is not applicable to the containment purge and exhaust isolation valves. The Limiting Condition for Operation and its associated ACTION statement for these valves are given in Technical Specification 3/4.6.1.7. (A.2)

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTIONS Note 2 (A.3)

Add proposed ACTIONS Note 3 (A.4)

Add proposed ACTIONS Note 4 (A.5)

ACTION:

ACTIONS A and C — With one or more of the containment isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either: (A.10) (L.2)

a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or (A.6)

b. Isolate each affected penetration within [4] hours by use of at least one deactivated automatic valve secured in the isolation position, or

72 hours for ACTION C (L.2)

c. Isolate each affected penetration within [4] hours by use of at least one closed manual valve or blind flange; or

Add proposed ACTION B (A.11)

ACTION D — d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.3.1.1 Each containment isolation valve shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test and verification of isolation time. (L.4)

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ITS 3.6.3

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.3.5 4.6.3.1.2 Each containment isolation valve specified shall be demonstrated OPERABLE at least once per 18 [24] months by: (L.5) (L.13)

a. Verifying that [actual or] on a Phase A containment isolation test signal, each Phase A isolation valve actuates to its isolation position. (LA.1)

b. Verifying that on a Phase B containment isolation test signal, each Phase B isolation valve actuates to its isolation position.

c. Verifying that on a Containment Purge and Exhaust isolation signal, each Purge and Exhaust valve actuates to its isolation position. [not locked, sealed, or otherwise secured in position] (L.6)

SR 3.6.3.4 4.6.3.1.3.1 The isolation time of each power operated or automatic containment isolation valve shall be determined to be within its limit when tested pursuant to Specification 4.0.5 [in accordance with the Inservice Testing Program]. (L.7) (A.8)

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A.1

Page 3/4 6-16 through 3/4 6-32
deleted

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A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

(See ITS 3.6.1)

ACTION:

(Add proposed ACTIONS Notes 2, 3, and 4 and ACTIONS A, B, and C) (L.8)

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (ACTION D)

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated: (See ITS 3.6.1)

a. At least once per 31 days by verifying that: (Add proposed Required Actions A.2 and C.2 Notes 1 and 2 and SRs 3.6.3.2 and 3.6.3.3 Note) (L.9)

(Required Actions A.2 and C.2, SR 3.6.3.2, SR 3.6.3.3)

1. All penetrations* not capable of being closed by OPERABLE containment automatic isolation valves (and not locked, sealed, or secured) (L.10) and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions (or check valves with flow secured) (L.3), except for valves that are open under administrative control as permitted by Specification 3.6.3.1, and

(ACTIONS Note 1, SR 3.6.3.2, SR 3.6.3.3)

2. All equipment hatches are closed and sealed.

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

(See ITS 3.6.1)

(SR 3.6.3.3) *Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are (not) (L.10) locked, sealed or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

ITS 3.6.3

(A.1)

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.3, SR 3.6.3.1 — 3.6.1.7 The containment purge supply and exhaust system shall be closed except when operation of the containment purge system is required for pressure control, ALARA, and respirable air quality considerations for personnel entry, and for surveillance testing and maintenance activities. No more than one purge supply path and one purge exhaust path shall be open at a time. (A.2) [SR 3.6.3.1]

APPLICABILITY: MODES 1, 2, 3, and 4. — Add proposed ACTIONS Note 2 (L.11)

ACTION: — Add proposed ACTIONS Note 4 (A.5)

ACTION A

a. With one containment purge supply and/or one exhaust isolation valve inoperable, isolate the affected penetration by use of at least one automatic valve secured in the closed position, and, within ~~72~~ 4 hours, either: (M.2)

1) ~~Restore the inoperable valve to OPERABLE status, or,~~ (A.6)

2) Deactivate the automatic valve secured in the closed position.

b. ~~Operation may then continue until performance of the next required valve test~~ provided that the automatic valve secured in the closed position is verified to be deactivated in the closed position at least once per 31 days. (L.12)

Add proposed ACTION B (L.11)

ACTION D

c. Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

~~4.6.1.7.1 The surveillance requirements of Technical Specifications 3/4.6.1.2 and 3/4.6.3.1 apply.~~ (A.9)

Add proposed SR 3.6.3.1 (M.3)

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DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.6.3.1 states that the Actions of CTS 3/4.6.3.1 are not applicable to the containment purge supply and exhaust isolation valves. The Actions for these valves are provided in CTS 3/4.6.1.7. The ITS combines these two CTS Specifications into one Specification, ITS 3.6.3. Therefore this CTS statement is not necessary and has been deleted.

The CTS 3.6.3.1 statement is a cross reference to direct the user to the proper actions to take when the containment purge supply and exhaust isolation valves are inoperable. This change is acceptable because the two CTS Specifications have been combined into one in the ITS and this statement is not needed. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.3 CTS 3.6.3.1 Action provides requirements to be taken for each containment isolation valve that is inoperable. The ITS includes an explicit Note (ACTIONS Note 2) that provides instructions for the proper application of the ACTIONS for ITS compliance (i.e., Separate Condition entry is allowed for each penetration flow path). This changes the CTS by providing explicit direction as to how to utilize the ACTIONS when a containment isolation valve is inoperable.

This change is acceptable because the addition of the Note reflects the CTS allowance to take the appropriate Actions on a per valve basis (the change to a penetration basis is discussed in DOC M.1). This change is designated as administrative since it does not result in a technical change to the CTS.

A.4 CTS 3.6.3.1 does not specifically require Conditions to be entered for systems supported by inoperable containment isolation valves. OPERABILITY of supported systems is addressed through the definition of OPERABILITY for each system, and appropriate LCO Actions are taken. ITS 3.6.3 ACTIONS Note 3 states "Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves." ITS LCO 3.0.6 provides an exception to ITS LCO 3.0.2, stating "When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered." This changes the CTS by adding a specific statement to require supported system Conditions and Required Actions be entered, whereas in the CTS this would be done without the Note.

This change is acceptable because the addition of the ITS Note reflects the CTS requirement to take applicable Actions for inoperable systems. The ITS Note is

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

required because of the addition of ITS LCO 3.0.6, and because the requirement to declare supported systems inoperable is being retained. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.5 CTS 3.6.3.1 and CTS 3.6.1.7 do not include a reference to entering applicable Conditions and Actions of the CONTAINMENT INTEGRITY LCO (CTS 3.6.1.1) (changed to containment OPERABILITY in the ITS). ITS 3.6.3 ACTIONS Note 4 states "Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when leakage for a penetration flow path results in exceeding the overall containment leakage rate acceptance criteria." This changes the CTS by explicitly stating an existing requirement that the Containment Specification Actions be taken when the Containment LCO is not met as a result of containment isolation valve leakage exceeding limits.

This change is acceptable because it reinforces the existing CTS requirement to meet overall containment leakage limits. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.6 CTS 3.6.3.1 Action a requires restoring the inoperable valve(s) to OPERABLE status within 4 hours with one or more of the containment isolation valves inoperable, or taking one of the other specified compensatory actions. CTS 3.6.1.7 Action a requires either restoring an inoperable containment purge supply or exhaust isolation valve or deactivating the automatic valve used to isolate the affected penetration in the closed position within 72 hours. ITS 3.6.3 does not state the requirement to restore an inoperable isolation valve to OPERABLE status, but includes other compensatory Required Actions to take within 4 hours or 72 hours, as applicable. This changes the CTS by not explicitly stating the requirement to restore an inoperable valve to OPERABLE status.

This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.7 Not used.

A.8 CTS 4.6.3.1.3 (Unit 1) and CTS 4.6.3.1.3.1 (Unit 2) require the isolation time of each power operated or automatic containment isolation valve be determined to be within its limit when tested pursuant to Specification 4.0.5. ITS SR 3.6.3.4 requires verifying the isolation time of each automatic power operated containment isolation valve is within limits, with a Frequency in accordance with the Inservice Testing Program. This changes the CTS by stating that the Frequency is in accordance with the Inservice Testing Program.

The purpose of CTS 4.6.3.1.3 (Unit 1) and CTS 4.6.3.1.3.1 (Unit 2) is to verify the isolation time of each power operated or automatic containment isolation valve is tested in accordance with Specification 4.0.5, which provides the requirements for the Inservice Testing Program. This change is acceptable because the

Frequencies regarding the containment isolation valves remain the same. The inservice testing requirements of CTS 4.0.5 have been moved to the Inservice Testing Program contained in Section 5.5 of the ITS. This change is designated as administrative because it does not result in a technical change to the CTS.

A.9 CTS 4.6.1.7.1, the Surveillance Requirement for the containment purge supply and exhaust system valves, states that the Surveillance Requirements of CTS 3/4.6.1.2 and CTS 3/4.6.3.1 apply. The ITS combines CTS 3/4.6.1.7 and CTS 3/4.6.3.1 into one Specification, ITS 3.6.3. In addition, the Surveillances of CTS 3/4.6.1.2, the Containment Leakage Specification, are adequately covered in ITS 3.6.1. Therefore this CTS statement is not necessary and has been deleted.

The CTS 4.6.1.7.1 statement is a cross reference to direct the user to the proper Surveillances for the containment purge supply and exhaust valves, since no additional Surveillances are listed in CTS 3/4.6.1.7. This change is acceptable because the two CTS Specifications (CTS 3/4.6.3.1 and CTS 3/4.6.1.7) have been combined into one in the ITS, and ITS 3.6.1 adequately covers the containment purge valve leakage test (as a part of the Type C leakage testing requirements), thus this statement is not needed. This change is designated as administrative because it does not result in any technical changes to the CTS.

A.10 (Unit 2 only) CTS 3.6.3.1 Action states that with one or more of the containment isolation valve(s) inoperable, "maintain at least one isolation valve OPERABLE in each affected penetration that is open." ITS 3.6.3 Conditions A and B Notes state "Only applicable to penetration flow paths with two containment isolation valves." ITS 3.6.3 Required Action A.1 requires the affected flow path be isolated by one of the means specified when one or more penetration flow paths have one containment isolation valve inoperable. ITS 3.6.3 Required Action A.1 assumes the other isolation valve is OPERABLE for the isolation function. If two valves in a penetration flow path with two containment isolation valves are inoperable, ACTION B provides the appropriate actions to be taken. This changes the Unit 2 CTS by incorporating the concept of assuring that the second means of containment isolation for a penetration flow path is OPERABLE into the Conditions and Required Actions associated with ITS 3.6.3 ACTIONS A and B.

This change is acceptable because when one containment isolation valve in a penetration (with two containment isolation valves) is inoperable, the other containment isolation valve must be OPERABLE or the ITS requires Required Actions be taken for two inoperable containment isolation valves. This retains the CTS 3.6.3.1 concept of maintaining at least one isolation valve OPERABLE in each affected penetration that is open when one or more isolation valves are inoperable. This change is designated as administrative because it does not result in any technical changes to the Unit 2 CTS.

A.11 (Unit 2 only) CTS 3.6.3.1 Action does not include any actions when two containment isolation valves in a single penetration are inoperable and the associated penetration is open. Thus, CTS 3.0.3 must be entered if this occurs. ITS 3.6.3 ACTION B states that with one or more penetration flow paths with two containment isolation valves inoperable, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 1 hour. ITS 3.6.3 ACTION D requires the unit be placed in MODE 3 in 6 hours and MODE 5 in 36 hours if Required Action and associated Completion Time of Condition B is not met. This changes the Unit 2 CTS by stating the Actions to be taken for two containment isolation valves inoperable in the containment isolation valve Specification, rather than relying on CTS 3.0.3, which essentially contains the same Completion Times for isolating the affected penetration or placing the unit outside its MODE of Applicability.

This change is acceptable because it places CTS 3.0.3 requirements into the individual system Specification. This change is designated as administrative because it does not result in any technical changes to the Unit 2 CTS.

MORE RESTRICTIVE CHANGES

M.1 (Unit 1 only) CTS 3.6.3.1 Action b allows 4 hours to isolate the affected penetration when one or more containment isolation valves are inoperable. ITS 3.6.3 Required Action B.1 will only allow 1 hour to isolate the affected penetration when both valves in the same penetration are inoperable. This changes the Unit 1 CTS by decreasing the time allowed to isolate the affected penetration when both containment isolation valves in the same penetration are inoperable.

The purpose of the CTS 3.6.3.1 Action is to provide compensatory actions for inoperable containment isolation valves. However, when both valves in the same penetration are inoperable, the time allowed to isolate the affected penetration should be the same as that allowed to restore an inoperable containment, since the containment isolation valves support the leak tightness of the containment. Therefore, this change is acceptable since the new time allowed is consistent with the time allowed when the containment is inoperable. This change is considered more restrictive because a shorter amount of time is provided to complete the ITS Required Action than is allowed in the Unit 1 CTS.

M.2 CTS 3.6.1.7 Action a allows 72 hours to isolate the affected penetration (by closing and deactivating an automatic containment purge valve) when one containment purge valve in a penetration is inoperable. ITS 3.6.3 ACTION A only allows 4 hours to isolate the affected penetration when one containment purge valve in a penetration is inoperable. This changes the CTS by decreasing the time allowed to isolate the affected penetration when one containment purge valve in the penetration is inoperable.

The purpose of the CTS 3.6.1.7 Action is to provide compensatory actions for when containment purge valves are inoperable. However, when one containment purge valve in the penetration is inoperable, the time allowed to isolate the affected penetration should be the same as that allowed to isolate all other similar type penetrations, since the containment purge valves support the leak tightness of the containment. Therefore, this change is acceptable since the new time allowed is consistent with the time allowed in the CTS 3.6.3.1 Actions when other similar containment isolation valves are inoperable. This change is considered more restrictive because a shorter amount of time is provided to complete the ITS Required Action than is allowed in the CTS.

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DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

M.3 CTS 3/4.6.1.7 does not provide any specific testing requirements for the containment purge supply and exhaust valves, other than those required by CTS 3/4.6.1.2 and CTS 3/4.6.3.1. ITS SR 3.6.3.1 requires a 31 day verification that the containment purge valves are closed, except for certain allowed reasons (consistent with the stated reasons of CTS 3.6.1.7). This changes the CTS by requiring a new Surveillance verifying containment purge valve position.

The purpose of ITS SR 3.6.3.1 is to ensure that the containment purge valves are only open for the specified reasons. The 31 day verification is consistent with the valve position verification required for non-automatic valves in CTS 4.6.1.1.a.1 and ITS SR 3.6.3.2. This change is acceptable because it provides additional assurance that the containment purge valves are in their correct post-accident position. This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.6.3.1.2 states that each containment isolation valve shall be demonstrated OPERABLE by verifying that on a "Phase A," "Phase B," or "Containment Purge and Exhaust" isolation signal, each "Phase A," "Phase B," and "Containment Purge and Exhaust" isolation valve, respectively, actuates to its isolation position. ITS SR 3.6.3.5 requires verification that each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal. This changes the CTS by moving the detail concerning what type of signals are used to conduct the Surveillance Requirement to the Bases. Changes associated with not requiring the Surveillance Requirement be conducted on valves locked, sealed, or otherwise secured in position are addressed by DOC L.6.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify that the required valve automatically actuate. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

LESS RESTRICTIVE CHANGES

L.1 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.6.3.1 states that containment purge valves and locked or sealed closed valves may be opened on an intermittent basis under administrative control. ITS 3.6.3 ACTIONS Note 1 states "Penetration flow paths may be unisolated intermittently under administrative controls." This changes the CTS by allowing any penetration to be unisolated on an intermittent basis under administrative control, and not just containment purge valves and locked or sealed closed valves.

The purpose of the CTS 3.6.3.1 is to provide reasonable operational flexibility regarding containment penetrations. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. This change allows any penetration flow path, and not just locked or sealed closed valves, to be opened on an intermittent basis under administrative control, except for the specific exceptions listed. The administrative controls used provide the same level of protection whether the flow paths include locked or sealed closed valves or not. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.2 *(Category 3 – Relaxation of Completion Time)* The Unit 1 CTS 3.6.3.1 Action states that with one or more of the containment isolation valve(s) inoperable, isolate each affected penetration within 4 hours by use of one deactivated automatic valve secured in the isolation position, closed manual valve, or blind flange. The Unit 2 CTS 3.6.3.1 Action states that with one or more of the containment isolation valve(s) inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open, and isolate each affected penetration within 4 hours by use of one deactivated automatic valve secured in the isolation position, closed manual valve, or blind flange. ITS 3.6.3 ACTION C, which only applies to penetration flow paths with only one containment isolation valve, requires that with one or more penetration flow paths with one containment isolation valve inoperable, the penetration flow path be isolated by means similar to those specified in the CTS within 72 hours. This changes the Unit 1 and Unit 2 CTS by extending the Completion Time from 4 hours to 72 hours when the inoperable containment isolation valve is in a single valve penetration. This also changes the Unit 2 CTS by providing an Action for a single valve penetration, consistent with the Unit 1 CTS, instead of entering CTS 3.0.3.

The purpose of the CTS 3.6.3.1 Action is to provide a degree of assurance that the penetration flow path with an inoperable containment isolation valve maintains the containment penetration isolation boundary. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. In the case of a single valve penetration with an inoperable valve, 72 hours is a reasonable time period considering the relative stability of a closed system to act as a penetration isolation boundary, or the small diameter of the pipe penetration and the instrument to act as a penetration isolation boundary. This change is designated as less restrictive because additional time is allowed to restore the components to within the LCO limits than was allowed in the CTS.

L.3 *(Category 4 – Relaxation of Required Action)* The CTS 3.6.3.1 Action states that with one or more of the containment isolation valve(s) inoperable, isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position (Action b), closed manual valve (Action c), or blind flange (Action c). CTS 4.6.1.1.a.1 requires a periodic verification that the affected penetration remains isolated by the same methods. ITS 3.6.3 Required Action A.1 requires that with one or more penetration flow paths with one containment isolation valve inoperable, the affected penetration flow path be isolated by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. ITS 3.6.3 Required Action A.2 requires a periodic verification that the affected penetration remains isolated by one of the methods of ITS 3.6.3 Required Action A.1. This changes the CTS by allowing penetration flow paths with two containment isolation valves that have one containment isolation valve inoperable to use a check valve with flow through the valve secured as the means of isolating the penetration flow path.

The purpose of CTS 3.6.3.1 Actions b and c and CTS 4.6.1.1.a.1 is to provide assurance that the affected penetration flow path is isolated. This change is acceptable because the ITS Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The ITS Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. This change allows the flow path to be isolated by one check valve with flow through the valve secured. The requirement to isolate the flow path is retained, and using a check valve with flow through the valve secured is an appropriate method of isolation. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.4 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.6.3.1.1 describes tests that must be performed prior to returning a valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit. The ITS does not include these testing requirements. This changes the CTS by deleting this post-maintenance Surveillance.

The purpose of CTS 4.6.3.1.1 is to verify OPERABILITY of containment isolation valves following their maintenance, repair or replacement. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. Any time the OPERABILITY of a system or component has been affected by repair, maintenance, modification, or replacement of a

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component, post-maintenance testing is required to demonstrate the OPERABILITY of the system or component. This is described in the Bases for ITS SR 3.0.1 and required under SR 3.0.1. The OPERABILITY requirements for the containment isolation valves are described in the Bases for ITS 3.6.3. In addition, the requirements of 10 CFR 50, Appendix B, Section XI (Test Control), provide adequate controls for test programs to ensure that testing incorporates applicable acceptance criteria. Compliance with 10 CFR 50, Appendix B, is required under the unit operating license. As a result, post-maintenance testing will continue to be performed and an explicit requirement in the Technical Specifications is not necessary. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.5 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.6.3.1.2 requires the demonstration of OPERABILITY of the containment isolation valves by verifying every 18 months that the automatic containment isolation valves actuate to the isolation position. ITS SR 3.6.3.5 requires the containment isolation valve test to be performed every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.6.3.1.2 is to ensure that the automatic containment isolation valves function properly on receipt of an automatic isolation signal. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the containment isolation valve automatic isolation test is acceptable because during the operating cycle, the containment isolation valves are cycled in accordance with the Inservice Testing (IST) Program, or justifications exist to document less frequent testing. This testing ensures that the containment isolation valves will function properly and will detect significant failures. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.6 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.3.1.2 requires verification that each containment isolation valve actuates to its isolation position. ITS SR 3.6.3.5 requires verification that each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal. This changes the CTS by not requiring automatic valves locked, sealed or otherwise secured in position to be tested to verify that they automatically actuate to their isolation position. Changes associated with moving the details concerning the types of signals to the Bases are addressed by DOC LA.1.

The purpose of CTS 4.6.3.1.2 is to provide assurance that the automatic valves required to actuate in case of a design basis accident (DBA) isolate containment properly. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Automatic valves already in the isolated position and secured are not required to be tested to automatically actuate because, in case of a DBA, they are already in their required position. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.7 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.3.1.3 (Unit 1) and CTS 4.6.3.1.3.1 (Unit 2) state that the isolation time of each "power operated or automatic" containment isolation valve shall be determined to be within its limit. ITS SR 3.6.3.4 states "Verify the isolation time of each automatic power operated containment isolation valve is within limits." This changes the CTS by deleting the reference to the power operated containment isolation valves that are not automatic.

The purpose of CTS 4.6.3.1.3 (Unit 1) and CTS 4.6.3.1.3.1 (Unit 2) is to provide assurance that automatic containment isolation valves actuate within the times assumed in the DBA analyses. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Remote manual (i.e., non-automatic) power operated valves do not have an isolation time assumed in the DBA analyses since they require operator action. Deleting reference to power operated, non-automatic isolation valve stroke time testing reduces the potential for misinterpreting the requirements of the Surveillance Requirement while maintaining the assumptions of the accident analysis. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.8 *(Category 4 – Relaxation of Required Action)* CTS 4.6.1.1.a requires verification that all non-automatic containment isolation valves that are required to be closed are closed every 31 days. If a non-automatic valve that is supposed to be closed is found open, CTS 3.6.1.1 Action applies. That Action states "Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours." ITS 3.6.3 ACTIONS A, B, and C do not differentiate between automatic and non-automatic valves and allow 1 hour, 4 hours, or 72 hours to isolate the affected flow path. ITS 3.6.3 allows continued operation with the inoperable containment isolation valve, but if the affected penetrations are not isolated, a shutdown to MODE 3 in 6 hours and MODE 5 in

36 hours is required. In addition, ITS 3.6.3 ACTIONS Notes 2, 3 and 4 allow separate condition entry for each penetration flow path, require entry into the applicable Conditions and Required Actions for systems made inoperable by containment isolation valves, and require entry into the applicable Conditions and Required Actions for LCO 3.6.1, "Containment," when leakage for a penetration flow path results in exceeding the overall containment leakage rate acceptance criteria. This changes the CTS by providing 1 hour, 4 hours or 72 hours to isolate a penetration flow path affected by an inoperable non-automatic containment isolation valve, and allowing continued operation with an inoperable non-automatic containment isolation valve. This also changes the CTS by allowing separate condition entry for each penetration flow path with an inoperable non-automatic containment isolation valve, requiring entry into the applicable Conditions and Required Actions for systems made inoperable by inoperable non-automatic containment isolation valves, and requiring entry into the applicable Conditions and Required Actions for LCO 3.6.1, "Containment," when leakage through a penetration flow path due to an inoperable non-automatic containment isolation valve results in exceeding the overall containment leakage rate acceptance criteria.

The purpose of the CTS 3.6.1.1 Action is to ensure that overall containment leakage rate does not exceed the accident analysis assumptions. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. This change makes the actions for an inoperable non-automatic containment isolation valve consistent with the actions for all other types of containment isolation valves and ensures that leakage through a penetration flow path affected by an inoperable non-automatic containment isolation valve is isolated. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.9 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.1.1.a.1 requires verification that specified containment penetrations are closed. ITS 3.6.3 Required Actions A.2 and C.2, ITS SR 3.6.3.2 and ITS SR 3.6.3.3 include similar requirements, but contain a Note that allows valves and blind flanges in high radiation areas to be verified administratively. In addition, ITS 3.6.3 Required Actions A.2 and C.2 include a second Note that allows verification of isolation devices that are locked, sealed, or otherwise secured to also be performed using administrative means. This changes the CTS by allowing certain valves and blind flanges to not require physical verification.

The purpose of CTS 4.6.1.1.a.1 is to provide assurance that containment penetrations are closed when necessary. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the

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DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

LCO can perform its required functions. The position of containment isolation valves and blind flanges in high radiation areas that are required to be closed can be verified administratively, not requiring physical verification. Access to high radiation areas is limited, making access to the valves and blind flanges more difficult, and mispositioning less likely. For those isolation devices that are locked, sealed, or otherwise secured, plant procedures control their operation. Therefore, the potential for inadvertent misalignment of these devices after locking, sealing, or securing is low. In addition, all the isolation devices were verified to be in the correct position (as required by ITS 3.6.3 Required Actions A.1 and C.1) prior to locking, sealing, or otherwise securing. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.10 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.1.1.a.1 requires a verification that all penetrations not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves, secured in their positions. ITS SR 3.6.3.2 and ITS SR 3.6.3.3 require a verification that each containment isolation manual valve and blind flange that is located outside containment (ITS SR 3.6.3.2) or inside containment (ITS SR 3.6.3.3) and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. This changes the CTS by not requiring valves locked, sealed or otherwise secured be verified closed as part of the Technical Specification Surveillance Requirements.

The purpose of CTS 4.6.1.1.a.1 is to provide assurance that valves required to be closed are closed. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Valves are verified in position prior to being locked, sealed, or otherwise secured, and are not expected to change position because other controls are placed on them by the means of securing their position. Valves that are locked, sealed, or otherwise secured in the closed position do not require verification as part of ITS SR 3.6.3.2 or ITS SR 3.6.3.3 because these valves were verified to be in the correct position upon locking, sealing, or securing. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.11 *(Category 4 - Relaxation of Required Action)* CTS 3.6.1.7 Action a only allows one containment purge supply and one containment purge exhaust valve to be inoperable. If more than one supply valve and one exhaust valve is inoperable, CTS 3.0.3 (which requires a unit shutdown) must be entered. ITS 3.6.3 includes ACTIONS Note 2, which allows separate Condition entry for each containment purge supply and exhaust penetration. ITS 3.6.3 ACTION B also allows both containment purge supply or exhaust valves in the same penetration to be inoperable, provided the affected penetration is isolated within one hour (and verified isolated every 31 days per ITS 3.6.3 Required Action A.2). This changes the CTS by allowing more than one containment purge supply valve and more than one containment purge exhaust valve to be inoperable simultaneously, without requiring a unit shutdown.

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

The purpose of CTS 3.6.1.7 Action a is to ensure that the containment isolation function is maintained when a containment purge supply and/or exhaust valve is inoperable. This change is acceptable because the containment isolation function can still be maintained: a) with both valves in one or more supply and exhaust penetrations inoperable; or b) one valve in both of the supply penetrations or one valve in both of the exhaust penetrations inoperable. Isolation capability is maintained since the ITS still requires the affected penetration to be isolated. In addition, this allowance (to have more than one valve in a penetration inoperable or to have valves in both redundant penetrations inoperable for a short period of time) is consistent with the allowance currently provided in CTS 3/4.6.3.1 (ITS 3.6.3) for all other containment penetrations. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.12 *(Category 4 - Relaxation of Required Action)* CTS 3.6.1.7 Action b allows operation to continue with a containment purge valve inoperable and the associated penetration isolated only until the next required valve test. ITS 3.6.3 ACTION A does not include this restriction. This changes the CTS by allowing operation with an inoperable containment purge valve for an unlimited amount of time provided the associated penetration is isolated.

The purpose of CTS 3.6.1.7 Action b statement is to only allow operation until the next required Surveillance tests for the inoperable valve. However, this requirement is based upon the assumption that the inoperable valve will fail to meet the Surveillance Requirements in CTS 3/4.6.1.2 and CTS 3/4.6.3.1. For the tests of CTS 3/4.6.1.2, this may not be true, since the test of CTS 3/4.6.1.2 is a leakage test (Type C) and the valve could be inoperable for reasons other than leakage. In addition, if the purge valve leakage is such that the Type C limit is exceeded (there is not an individual purge valve leakage limit), then ITS SR 3.6.1.1 will be failed and ITS 3.6.1 will enforce the proper requirements. As such, the CTS 3.6.1.7 Action b statement is not needed for the leakage test requirements of the containment purge valves. CTS 3/4.6.3.1 has Surveillance requirements to verify the containment purge valves isolate on a proper signal and that their isolation time is within limits. Both of these Surveillances ensure that the containment purge valves can be placed in their post-accident condition. However, with the penetration already isolated as required by CTS 3.6.1.7 Action a (ITS 3.6.3 Required Action A.1) and periodically verified isolated as required by CTS 3.6.1.7 Action b (ITS 3.6.3 Required Action A.2), there is no need to confirm the containment purge valves can be placed in their post-accident position because they already are in the post-accident position. In addition, this allowance (to allow operation for an unlimited time provided the affected penetration is isolated) is consistent with that allowed for all other inoperable automatic containment isolation valves in CTS 3/4.6.3.1. As such, the CTS 3.6.1.7 Action b statement is not necessary for the isolation and stroke time test requirements of the containment purge valves. Therefore, this change is acceptable for the above described reasons. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

L.13 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.3.1.2 requires verification of the containment isolation on a "test" or "isolation" signal. ITS SR 3.6.3.5 specifies that the signal may be from either an "actual" or simulated (i.e., test or isolation) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of CTS 4.6.3.1.2 is to ensure that the containment isolation valves (Phase A, Phase B, and Containment Purge and Exhaust valves) operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

LCO 3.6.3.1 LCO 3.6.1.7 3.6.3 Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (1)

LCO 3.6.3 Each containment isolation valve shall be OPERABLE.

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

ACTIONS

- NOTES -

LCO 3.6.3.1 1. Penetration flow path(s) [except for [42] inch purge valve flow paths] may be unisolated intermittently under administrative controls. (2)

DOCs A.3, L.8, and L.11 2. Separate Condition entry is allowed for each penetration flow path.

DOCs A.4 and L.8 3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

DOCs A.5 and L.8 4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. - NOTE - Only applicable to penetration flow paths with two [or more] containment isolation valves. One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] D [and E]].	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours

3.6.3.1 Actions B and C, 3.6.1.7 Action G, DOC L.8 (3) (4) (5)

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Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①
3.6.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2 - NOTES - 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.	
4.6.1.1.a, 3.6.1.7 Action b, DOC L.8	Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment

CTS

Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①
3.6.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. ----- - NOTE - Only applicable to penetration flow paths with two [or more] containment isolation valves. ----- One or more penetration flow paths with two [or more] containment isolation valves inoperable [for reasons other than Condition[s] D [and E]].	B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
C. ----- - NOTE - Only applicable to penetration flow paths with only one containment isolation valve and a closed system. ----- One or more penetration flow paths with one containment isolation valve inoperable.	C.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange. AND	72 hours

Unit 1 3.6.3.1 Actions b and c, DOCs A.11, L.8, and L.11

3.6.3.1 Actions b and c, DOC L.8

③ ③ ④ ⑤

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DOC L.8, 4.6.1.1.a

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	C.2	- NOTES - 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. Verify the affected penetration flow path is isolated.	Once per 31 days
D. [One or more shield building bypass leakage [or purge valve leakage] not within limit.	D.1	Restore leakage within limit.	4 hours for shield building bypass leakage AND 24 hours for purge valve leakage]
E. [One or more penetration flow paths with one or more containment purge valves not within purge valve leakage limits.	E.1 AND	Isolate the affected penetration flow path by use of at least one [closed and de-activated automatic valve, closed manual valve, or blind flange].	24 hours

④ ⑤ ④

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
	E.2	- NOTES - 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	AND E.3	Perform SR 3.6.3.7 for the resilient seal purge valves closed to comply with Required Action E.1.	Once per [92] days]
3.6.3.1 Action d, 3.6.1.1 Action, 3.6.1.7 Action C (D) F. Required Action and associated Completion Time not met.	(D) F.1	Be in MODE 3.	6 hours
	AND F.2	Be in MODE 5.	36 hours

(4)

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Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①
3.6.3

CTS

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
	SR 3.6.3.1	[Verify each [42] inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.	31 days]	④
LCO 3.6.1.7, DOC M.3	SR 3.6.3.2 ①	① Verify each (8) inch containment purge valve is closed, except when the (8) inch containment purge valves are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	31 days ① or maintenance activities ④ INSERT 1 ④	④ ⑦
4.6.1.1.a	SR 3.6.3.3 ②	- NOTE - Valves and blind flanges in high radiation areas may be verified by use of administrative controls. Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	31 days	④
4.6.1.1.a, including footnote *	SR 3.6.3.4 ③	- NOTE - Valves and blind flanges in high radiation areas may be verified by use of administrative means. Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days	④
Unit 1 4.6.3.1.3, Unit 2 4.6.3.1.3.1	SR 3.6.3.5 ④	Verify the isolation time of each automatic power operated containment isolation valve is within limits.	[In accordance with the Inservice Testing Program or 92 days]	④ ⑦

(4) **INSERT 1**

, provided only valves in one containment purge supply penetration and one containment purge exhaust penetration are open.

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SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
	SR 3.6.3.6	[Cycle each weight or spring loaded check valve testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.	92 days]	(8)
	SR 3.6.3.7	[Perform leakage rate testing for containment purge valves with resilient seals.	184 days AND Within 92 days after opening the valve]	(4)
4.6.3.1.2	SR 3.6.3.8 (5)	Verify each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	[18] 24 months	(4)(7)(9)
	SR 3.6.3.9	[Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.	18 months]	(8)
	SR 3.6.3.10	[Verify each [ ] inch containment purge valve is blocked to restrict the valve from opening > [50]%.	[18] months]	(4)
	SR 3.6.3.11	[Verify the combined leakage rate for all shield building bypass leakage paths is ≤ [L_a] when pressurized to ≥ [psig].	In accordance with the Containment Leakage Rate Testing Program]	(5)

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

1. The headings for ISTS 3.6.3 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made.

2. The restriction in ACTIONS Note 1 concerning purge valves has been deleted, consistent with the current licensing basis.

3. The bracketed term "or more," added to ISTS 3.6.3 Condition A Note, Condition B Note, and Condition B, is not adopted. At CNP, only two valves in each penetration addressed by Conditions A and B are required. This is consistent with the current licensing basis.

4. All ISTS requirements (ACTIONS and Surveillance Requirements) related to containment purge valve leakage have been deleted. The containment purge valves at CNP do not have resilient seats, thus individual leakage limits do not apply. ISTS SR 3.6.3.1 has been deleted since the containment purge valves are not required to be sealed, and ISTS SR 3.6.3.10 has been deleted since the containment purge valves are not required to be blocked from full opening. Furthermore, ISTS SR 3.6.3.2 (ITS SR 3.6.3.1) has been modified to: a) allow the containment purge valves to also be open for maintenance activities; and b) allow only one containment purge supply penetration and one containment purge exhaust penetration to be open (i.e., both supply or both exhaust penetrations cannot be open at the same time). These changes are consistent with the current licensing basis. The remaining Surveillances have been renumbered due to these deletions.

5. Conditions, Surveillance Requirements and other references to shield building bypass are not retained. Shield building bypass is not part of the CNP design.

6. Not used.

7. The brackets are removed and the proper plant specific information/value is provided.

8. ISTS SR 3.6.3.6 and SR 3.6.3.9 have been deleted since these Surveillances are for plants with subatmospheric containments, and CNP has an ice condenser containment.

9. Typographical/grammatical error corrected to be consistent with similar words in SR 3.6.3.2.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual)

BASES

BACKGROUND

The containment isolation valves form part of the containment pressure boundary and provide a means for fluid penetrations not serving accident consequence limiting systems to be provided with two isolation barriers that are closed on a containment isolation signal. These isolation devices are either passive or active (automatic). Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system. These barriers (typically containment isolation valves) make up the Containment Isolation System.

Automatic isolation signals are produced during accident conditions. Containment Phase "A" isolation occurs upon receipt of a safety injection signal. The Phase "A" isolation signal isolates nonessential process lines in order to minimize leakage of fission product radioactivity. Containment Phase "B" isolation occurs upon receipt of a containment pressure High-High signal and isolates the remaining process lines, except systems required for accident mitigation. In addition to the isolation signals listed above, the purge and exhaust valves receive an isolation signal on a containment high radiation condition. As a result, the containment isolation valves (and blind flanges) help ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the containment atmosphere as a result of a Design Basis Accident (DBA).

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

(1) **INSERT 1**

In addition, for one penetration both barriers are provided by a single blind flange, since the blind flange has two separate seals (each of the two seals is considered a barrier for the purposes of this LCO). An exception to the requirement for two barriers applies to those penetrations which carry instrument sensing lines. Such penetrations consist of single manual valve (normally open) and a closed system outside containment, which is considered an extension of the containment liner.

(1) **INSERT 1A**

Input from Engineered Safety Features Actuation System (ESFAS)

(1) **INSERT 1B**

isolate upon receipt of a Containment Radiation - High signal or a Safety Injection Input from ESFAS signal

BASES

BACKGROUND (continued)

Containment Supply and Exhaust

Shutdown Purge System ([42] inch purge valves) (3)

The Shutdown Purge System operates to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment prior to and during personnel access. The supply and exhaust lines each contain two isolation valves. Because of their large size, the [42] inch purge valves in some units are not qualified for automatic closure from their open position under DBA conditions. Therefore, the [42] inch purge valves are normally maintained closed in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained. INSERT 2 Containment (4) However INSERT 3 INSERT 4

Minipurge System ([8] inch purge valves)

The Minipurge System operates to:

a. Reduce the concentration of noble gases within containment prior to and during personnel access and

b. Equalize internal and external pressures.

Since the valves used in the Minipurge System are designed to meet the requirements for automatic containment isolation valves, these valves may be opened as needed in MODES 1, 2, 3, and 4. (3)

APPLICABLE SAFETY ANALYSES

The containment isolation valve LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during major accidents. As part of the containment boundary, containment isolation valve OPERABILITY supports leak tightness of the containment. Therefore, the safety analyses of any event requiring isolation of containment is applicable to this LCO.

The DBAs that result in a release of radioactive material within (Ref. 1) (3) containment are a loss of coolant accident (LOCA) and a rod ejection (3) accident (Ref. 1). (2) In the analyses for each of these accidents, it is assumed that containment isolation valves are either closed or function to close within the required isolation time following event initiation. This ensures that potential paths to the environment through containment isolation valves (including containment purge valves) are minimized. The safety analyses assume that the [42] inch purge valves are closed at event initiation. (3)

(3) **INSERT 2**

In addition, it serves as a backup means of pressure relief, in the event that the Containment Pressure Relief System is out of service.

(3) **INSERT 3**

(except for the reasons listed in SR 3.6.3.1)

(3) **INSERT 4**

and to minimize the time the associated penetrations are open

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Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①
B 3.6.3

BASES

APPLICABLE SAFETY ANALYSES (continued)

and prior to core damage

The DBA analysis assumes that, within 60 seconds after the accident, isolation of the containment is complete and leakage terminated except for the design leakage rate, L_a. [The containment isolation total response time of 60 seconds includes signal delay, diesel generator startup (for loss of offsite power), and containment isolation valve stroke times.] ③

INSERT 5

[The single failure criterion required to be imposed in the conduct of plant safety analyses was considered in the original design of the containment purge valves. Two valves in series on each purge line provide assurance that both the supply and exhaust lines could be isolated even if a single failure occurred. The inboard and outboard isolation valves on each line are provided with diverse power sources, motor operated and pneumatically operated spring closed, respectively. This arrangement was designed to preclude common mode failures from disabling both valves on a purge line.] ③

[The purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain sealed closed during MODES 1, 2, 3, and 4. In this case, the single failure criterion remains applicable to the containment purge valves due to failure in the control circuit associated with each valve. Again, the purge system valve design precludes a single failure from compromising the containment boundary as long as the system is operated in accordance with the subject LCO.] ①

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). ③

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. [The [42] inch purge valves must be maintained sealed closed [or have blocks installed to prevent full opening]. [Blocked purge valves also actuate on an automatic signal.]] ① The valves covered by this LCO are listed along with their associated stroke times in the FSAR (Ref. 2). ③

INSERT 6A

INSERT 6B

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are

(3) **INSERT 5**

The Containment Purge Supply and Exhaust System is designed in accordance with the requirements of NRC Branch Technical Position CSB 6-4, Rev. 1. This includes, but is not limited to, an analysis of the impact of purging on Emergency Core Cooling System performance, an evaluation of the radiological consequences of a design basis accident while purging, and limiting containment purge operation to using no more than one supply path and one exhaust path at a time. The containment purge valves have been demonstrated capable of closing against the dynamic forces associated with a LOCA and are assured of receiving a containment ventilation isolation signal.

(3) **INSERT 6A**

in the UFSAR (Ref. 3) and

(3) **INSERT 6B**

are listed in the Inservice Testing Program

 (1)

BASES

LCO (continued)

intact. These passive isolation valves/devices are those listed in Reference 2 3. (3)

Purge valves with resilient seals [and secondary containment bypass valves] must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing. (1)

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.3 (3), "Containment Penetrations." (1)

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow paths, except for [42] inch purge valve penetration flow paths, to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. [Due to the size of the containment purge line penetration and the fact that those penetrations exhaust directly from the containment atmosphere to the environment, the penetration flow path containing these valves may not be opened under administrative controls. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.3.1.] (1)

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions. (5)

BASES

ACTIONS (continued)

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

In the event the isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

A.1 and A.2

In the event one containment isolation valve in one or more penetration flow paths is inoperable, (except for purge valve or shield building bypass leakage not within limit), the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within 4 hours. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. ①

For affected penetration flow paths that cannot be restored to OPERABLE status within the 4 hour Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification (through a system walkdown) that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the (TSTF-440)

BASES

ACTIONS (continued)

previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Condition A has been modified by a Note indicating that this Condition is only applicable to those penetration flow paths with two (or more) containment isolation valves. For penetration flow paths with only one containment isolation valve (and a closed system), Condition C provides the appropriate actions. ① ①

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small.

B.1

With two (or more) containment isolation valves in one or more penetration flow paths inoperable, (except for purge valve or shield building bypass leakage not within limit,) the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. In the event the affected penetration is isolated in accordance with Required Action B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative control and the probability of their misalignment is low. ① ① ⑥

BASES

ACTIONS (continued)

Condition B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two (or more) containment isolation valves. Condition A of this LCO addresses the condition of one containment isolation valve inoperable in this type of penetration flow path. ①

C.1 and C.2

With one or more penetration flow paths with one containment isolation valve inoperable, the inoperable valve flow path must be restored to OPERABLE status or the affected penetration flow path must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. A check valve may not be used to isolate the affected penetration flow path. Required Action C.1 must be completed within the 72 hour Completion Time. The specified time period is reasonable considering the relative stability of the closed system (hence, reliability) to act as a penetration isolation boundary and the relative importance of maintaining containment integrity during MODES 1, 2, 3, and 4. In the event the affected penetration flow path is isolated in accordance with Required Action C.1, the affected penetration flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to assure leak tightness of containment and that containment penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying that each affected penetration flow path is isolated is appropriate because the valves are operated under administrative controls and the probability of their misalignment is low. INSERT 7 ①

Condition C is modified by a Note indicating that this Condition is only applicable to those penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Ref. 3. This Note is necessary since this Condition is written to specifically address those penetration flow paths in a closed system. ⑦ (erence)

Required Action C.2 is modified by two Notes. Note 1 applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices

(1) **INSERT 7**

for those penetrations with a closed system

INSERT 8

Not Used.

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BASES

ACTIONS (continued)

to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these valves, once they have been verified to be in the proper position, is small.

[D.1

With the shield building bypass leakage rate (SR 3.6.3.11) [or purge valve leakage rate (SR 3.6.3.7)] not within limit, the assumptions of the safety analyses are not met. Therefore, the leakage must be restored to within limit. Restoration can be accomplished by isolating the penetration(s) that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time for shield building bypass leakage is reasonable considering the time required to restore the leakage by isolating the penetration(s) and the relative importance of secondary containment bypass leakage to the overall containment function. [The 24 hour Completion time for purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of the containment does not exist.] (1)

- REVIEWER'S NOTE -

[The bracketed options provided in ACTION D reflect options in plant design and options in adopting the associated leakage rate Surveillances.

The options (in both ACTION D and ACTION E) for purge valve leakage, are based primarily on the design - if leakage rates can be measured separately for each purge valve, ACTION E is intended to apply. This would be required to be able to implement Required Action E.3. Should the design allow only for leak testing both purge valves simultaneously, then the Completion Time for ACTION D should include the "24 hours for purge valve leakage" and ACTION E should be eliminated.]]

BASES

ACTIONS (continued)

[E.1, E.2, and E.3

In the event one or more containment purge valves in one or more penetration flow paths are not within the purge valve leakage limits, purge valve leakage must be restored to within limits, or the affected penetration flow path must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a [closed and de-activated automatic valve, closed manual valve, or blind flange]. A purge valve with resilient seals utilized to satisfy Required Action E.1 must have been demonstrated to meet the leakage requirements of SR 3.6.3.7. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist. (1)

In accordance with Required Action E.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment purge valve with resilient seal that is isolated in accordance with Required Action E.1, SR 3.6.3.7 must be performed at least once every [92] days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. The normal Frequency for SR 3.6.3.7, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 4). Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per [92] days was chosen and has been shown to be acceptable based on operating experience.

BASES

ACTIONS (continued)

Required Action E.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned.] (1)

D F.1 and F.2 (1)

If the any Required Actions and associated Completion Times are is not met, the plant unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant unit conditions from full power conditions in an orderly manner and without challenging plant unit systems. (7) (3) (3)

SURVEILLANCE REQUIREMENTS

[SR 3.6.3.1

Each [42] inch containment purge valve is required to be verified sealed closed at 31 day intervals. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. The Frequency is a result of an NRC initiative, Generic Issue B-24 (Ref. 5), related to containment purge valve use during plant operations. In the event purge valve leakage requires entry into Condition E, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.] (1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.2 (1)

This SR ensures that the minipurge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the minipurge valves are open for the reasons stated. The valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. The minipurge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. The 31 day Frequency is consistent with other containment isolation valve requirements discussed in SR 3.6.3.4.

SR 3.6.3.6

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification through a system walkdown that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing. (TSTF-440)

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3 and 4 for ALARA reasons. Therefore, the

BASES

SURVEILLANCE REQUIREMENTS (continued)

probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.4 (3) (1)

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4, for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.5 (4) (1)

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses. The isolation time and Frequency of this SR are (is) in accordance with the Inservice Testing Program or 92 days. (8) (1) (4)

[SR 3.6.3.6 (1)

In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check

BASES

SURVEILLANCE REQUIREMENTS (continued)

Valves will remain closed when the inside containment atmosphere returns to subatmospheric conditions following a DBA. SR 3.6.3.6 requires verification of the operation of the check valves that are testable during unit operation. The Frequency of 92 days is consistent with the Inservice Testing Program requirement for valve testing on a 92 day Frequency.] ①

[SR 3.6.3.7

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option [A][B], is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 4). ①

Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval (from 184 days) is a prudent measure after a valve has been opened.]

SR 3.6.3.8 ⑤ ①

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] (24) month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant (unit) 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 this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. ① ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.3.9

In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere returns to subatmospheric conditions following a DBA. SR 3.6.3.9 verifies the operation of the check valves that are not testable during unit operation. The Frequency of 18 months is based on such factors as the inaccessibility of these valves, the fact that the unit must be shut down to perform the tests, and the successful results of the tests on an 18 month basis during past unit operation.] (1)

[SR 3.6.3.10

- REVIEWER'S NOTE -

This SR is only required for those units with resilient seal purge valves allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices on the valves that are not permanently installed.

Verifying that each [42] inch containment purge valve is blocked to restrict opening to ≤ [50]% is required to ensure that the valves can close under DBA conditions within the times assumed in the analyses of References 1 and 2. If a LOCA occurs, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of [recently] irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. The 18 month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.] (1)

[SR 3.6.3.11

This SR ensures that the combined leakage rate of all shield building bypass leakage paths is less than or equal to the specified leakage rate. This provides assurance that the assumptions in the safety analysis are met. The leakage rate of each bypass leakage path is assumed to be the maximum pathway leakage (leakage through the worse of the two isolation valves) unless the penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. In this case, the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. (1)

Containment Isolation Valves (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (1)
B 3.6.3

BASES

SURVEILLANCE REQUIREMENTS (continued)

If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. (1)

[Bypass leakage is considered part of L_a.

- REVIEWER'S NOTE -

Unless specifically exempted.]]

REFERENCES

1. (U)FSAR, Section (15) 14.3.4 (3)
2. (U)FSAR, Section (6.2) 5.4.1 and Table 5.4-1
2. UFSAR, Section 14.2.6
3. Standard Review Plan 6.2.4.
4. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration."
5. Generic Issue B-24.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3 BASES, CONTAINMENT ISOLATION VALVES

1. Changes are made to reflect those changes made to the ISTS. The subsequent requirements are renumbered or revised, where applicable, to reflect the changes.

2. The Bases are changed to eliminate a statement classifying check valves as active devices. Information Report SECY-77-439, dated August 17, 1977, states "Check valves are classified as active components for the purposes of functional specification, inservice inspection, testing, and valve design (re: Regulatory Guide 1.146). Check valves are classified as passive components for the purposes of single failure and system design." The reference in the ISTS 3.6.3 Bases that is deleted is part of a discussion that addresses failures of automatic valves for the purposes of single failure. This is not accurate for check valves at CNP.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Typographical/grammatical error corrected.

6. The words in the ITS 3.6.3 ACTIONS B.1 Bases, concerning how Required Action A.2 works, has been deleted. This description is already in the ACTION A.1, A.2 Bases, and does not need to be repeated. This is consistent with many other Bases descriptions of ACTIONS, which do not include a description of other Conditions' Required Actions that may also be required when in another ACTION. This is also consistent with the BWR ISTS Bases, NUREG-1433 and NUREG-1434.

7. These changes have been made to be consistent with similar phrases in other parts of the ITS Bases and to be consistent with the ITS Condition.

8. The statement that the isolation times of the containment isolation valves are in the Inservice Testing Program has been deleted from ITS SR 3.6.3.4 (ISTS SR 3.6.3.5). The isolation times of the containment isolation valves are in the Inservice Testing Program, and this has already been stated in the second paragraph of the ISTS LCO Bases.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 4

ITS 3.6.4, Containment Pressure

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

INTERNAL PRESSURE

LIMITING CONDITION FOR OPERATION

LCO 3.6.4 3.6.1.4 Primary containment internal pressure shall be maintained between -1.5 and +0.3 psig.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A / ACTION B — With the containment internal pressure outside of the limits above, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1 4.6.1.4 The primary containment internal pressure shall be determined to within the limits at least once per 12 hours.

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

INTERNAL PRESSURE

LIMITING CONDITION FOR OPERATION

LCO 3.6.4 3.6.1.4 Primary containment internal pressure shall be maintained between -1.5 and +0.3 psig.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A — With the containment internal pressure outside of the limits above, restore the internal pressure to within the limits within 1 hour
ACTION B — or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1 4.6.1.4 The primary containment internal pressure shall be determined to within the limits at least once per 12 hours.

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DISCUSSION OF CHANGES
ITS 3.6.4, CONTAINMENT PRESSURE

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

 (1)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.4A Containment Pressure (Atmospheric, Dual, and Ice Condenser) (1)

LCO 3.6.1.4 LCO 3.6.4A Containment pressure shall be ≥ -0.3 [-1.5] psig and ≤ +1.5 [+0.3] psig. (1)(2)

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action	A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
Action	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		AND	
		B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.1.4	SR 3.6.4A.1 Verify containment pressure is within limits.	12 hours	(1)

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.4, CONTAINMENT PRESSURE

1. The type of Containment (Atmospheric, Dual, and Ice Condenser) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Pressure Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Subatmospheric Containment Pressure Specification (ISTS 3.6.4B) is not used and is not shown.

2. The brackets are removed and the proper plant specific information/value is provided.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4A Containment Pressure (Atmospheric, Dual, and Ice Condenser)

BASES

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the outside atmosphere in the event of inadvertent actuation of the Containment Spray System.

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment functional analyses and the containment structure external pressure analysis. Should operation occur outside these limits coincident with a Design Basis Accident (DBA), post accident containment pressures could exceed calculated values.

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst case SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was [17.7] psia ([3.0] psig). This resulted in a maximum peak pressure from a LOCA of [53.9] psig. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure, P_a, results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA, [44.1] psig, does not exceed the containment design pressure, [55] psig.

The containment was also designed for an external pressure load equivalent to [-2.5] psig. The inadvertent actuation of the Containment Spray System was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was [-0.3] psig. This resulted in a minimum pressure inside containment of [-2.0] psig, which is less than the design load.

(4) **INSERT 1**

However, in localized areas, the SLB event results in higher short term subcompartment pressures than a LOCA (Ref. 1).

(4) **INSERT 2**

The -1.5 psig limit is a conservative limit for normal operations. In addition, the -1.5 psig limit is assumed in the Transient Mass Distribution analysis, which analyzes the containment response during the blowdown phase of the large break LOCA (Ref. 2).

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BASES

APPLICABLE SAFETY ANALYSES (continued)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. Therefore, for the reflood phase, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the containment pressure response in accordance with 10 CFR 50, Appendix K (Ref. 2). ③ ④

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii). ④

LCO

Maintaining containment pressure at less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure. Maintaining containment pressure at greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative differential pressure following the inadvertent actuation of the Containment Spray System. ④ INSERT 3

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3, and 4. ②

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1 and B.2

If containment pressure cannot be restored to within limits within the required Completion Time, the plant (unit) must be brought to a MODE in which ④

(4) **INSERT 3**

during normal operations. In addition, maintaining containment pressure at greater than or equal to the LCO lower pressure limit ensures that assumptions made in the blowdown phase of the large break LOCA analysis remain valid.

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BASES

ACTIONS (continued) ④

the LCO does not apply. To achieve this status, the plant (unit) must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant (unit) conditions from full power conditions in an orderly manner and without challenging plant systems. ④

SURVEILLANCE REQUIREMENTS

SR 3.6.4A.1 ①

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.

REFERENCES

1. (U)FSAR, Section 6.2 (14.3.4). ④ ③
2. UFSAR, Section 5.2.2.2 ④
3. 10 CFR 50, Appendix K. ④

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.4 BASES, CONTAINMENT PRESSURE

1. The type of Containment (Atmospheric, Dual, and Ice Condenser) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Pressure Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Subatmospheric Containment Pressure Specification Bases (ISTS B 3.6.4B) is not used and is not shown.

2. Typographical/grammatical error corrected.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.4, CONTAINMENT PRESSURE

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.6.5, Containment Air Temperature

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.6.5

ITS

A.1

CONTAINMENT SYSTEMS

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

LCO 3.6.5 — 3.6.1.5 Primary containment average air temperature shall be maintained:

a. between 60 and 100°F in the containment upper compartment, and

b. between 60 and 120°F in the containment lower compartment.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A — With the containment average air temperature not conforming to the above limits, restore the air temperature to within the limits within 8 hours

ACTION B — or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1 — 4.6.1.5.1 The primary containment upper compartment average air temperature shall be the arithmetical average of the temperatures at the following locations:

Location

a. UV - Nominal Elev. 712'0"

b. UV - Nominal Elev. 712'0"

c. UV - Nominal Elev. 624'10"

within limits — LA.1

SR 3.6.5.2 — 4.6.1.5.2 The primary containment lower compartment average air temperature shall be the arithmetical average of the temperatures at the locations:

D. C. COOK-UNIT 1 3/4 6-7

ITS

A.1

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.5.2

Location
a. LV Nominal Elev. 624' 10-1/2"
b. LV Nominal Elev. 624' 0"
c. LV Nominal Elev. 626' 6"

LA.1

SR 3.6.5.1, SR 3.6.5.2

4.6.1.5.3 The primary containment average air temperatures shall be determined at least once per 24 hours.

ITS

(A.1)

CONTAINMENT SYSTEMS

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

LCO 3.6.5 — 3.6.1.5 Primary containment average air temperature shall be maintained:

a. between 60 and 100°F in the containment upper compartment, and

b. between 60 and 120°F in the containment lower compartment.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A — With the containment average air temperature not conforming to the above limits, restore the air temperature to within the limits within 8 hours

ACTION B — or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1 — 4.6.1.5.1 The primary containment upper compartment average air temperature shall be the arithmetical average of the temperatures at the following locations: [within limits] (LA.1)

Location

a. UV - Nominal Elev. 712' 0"

b. UV - Nominal Elev. 712' 0"

c. UV - Nominal Elev. 624' 10"

SR 3.6.5.2 — 4.6.1.5.2 The primary containment lower compartment average air temperature shall be the arithmetical average of the temperatures at the following locations: [within limits]

D. C. COOK - UNIT 2 3/4 6-7

A.1

ITS

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.5.2

Location	
a.	LV - Nominal Elev. 624' 10 1/2"
b.	LV - Nominal Elev. 624' 0"
c.	LV - Nominal Elev. 626' 6"

LA.1

SR 3.6.5.1, SR 3.6.5.2

4.6.1.5.3 The primary containment average air temperatures shall be determined at least once per 24 hours.

DISCUSSION OF CHANGES
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.1.5.1 and CTS 4.6.1.5.2 include specific locations where containment temperatures are to be measured and the method of determining the average temperatures. ITS SR 3.6.5.1 and ITS SR 3.6.5.2 do not include these details. This changes the CTS by moving the description of how compliance with the Technical Specification LCO is determined to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify containment average air temperatures are within limits. Also, this change is acceptable because these types of procedural details will be adequately controlled in the Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.5B Containment Air Temperature (Ice Condenser) ①

LCO 3.6.1.5 LCO 3.6.5B Containment average air temperature shall be: ①

a. ≥ [85] 60 °F and ≤ [110] 100 °F for the containment upper compartment and ②

b. ≥ [100] 60 °F and ≤ [120] °F for the containment lower compartment. ②

- NOTE -
The minimum containment average air temperature in MODES 2, 3, and 4 may be reduced to [60]°F. ③

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action	A. Containment average air temperature not within limits.	A.1 Restore containment average air temperature to within limits.	8 hours
Action	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.1.5.1, 4.6.1.5.3	SR 3.6.5B.1	Verify containment upper compartment average air temperature is within limits.	24 hours	①

Containment Air Temperature (Ice Condenser)
3.6.5B (1)

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
4.6.1.5.2, 4.6.1.5.3	SR 3.6.5B.2	Verify containment lower compartment average air temperature is within limits.	24 hours	(1)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

1. The type of Containment (Ice Condenser) and the Specification designator "B" are deleted since they are unnecessary (only one Containment Air Temperature Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric and Dual Specification (ISTS 3.6.5A) and the Subatmospheric Specification (ISTS 3.6.5C) are not used and are not shown.

2. The brackets are removed and the proper plant specific information/value is provided.

3. The LCO Note that allows the minimum temperature limit to be reduced to 60°F in MODES 2, 3, and 4 has been deleted since it is unnecessary. The CTS already allow the minimum temperature to be 60°F in MODES 1, 2, 3, and 4; thus the ITS LCO 3.6.5 minimum temperature limit is 60°F, and a Note modifying the minimum temperature is not needed.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

 (1)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5B Containment Air Temperature (Ice Condenser) (1)

BASES

BACKGROUND

The containment structure serves to contain radioactive material that may be released from the reactor core following a Design Basis Accident (DBA). The containment average air temperature is limited, during normal operation, to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or [and] steam line break (SLB). (2)

The containment average air temperature limit is derived from the input conditions used in the containment functional analyses and the containment structure external pressure analyses. This LCO ensures that initial conditions assumed in the analysis of containment response to a DBA are not violated during unit operations. The total amount of energy to be removed from containment by the Containment Spray [System] and Cooling systems [the Ice Bed] during post accident conditions is dependent upon the energy released to the containment due to the event, as well as the initial containment temperature and pressure. The higher the initial temperature, the more energy that must be removed, resulting in a higher peak containment pressure and temperature. Exceeding containment design pressure may result in leakage greater than that assumed in the accident analysis. Operation with containment temperature in excess of the LCO limit violates an initial condition assumed in the accident analysis. (3) (3)

APPLICABLE SAFETY ANALYSES

Containment average air temperature is an initial condition used in the DBA analyses that establishes the containment environmental qualification operating envelope for both pressure and temperature. The limit for containment average air temperature ensures that operation is maintained within the assumptions used in the DBA analyses for containment (Ref. 1).

The limiting DBAs considered relative to containment OPERABILITY [air temperature] are the LOCA and SLB. The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train each of Containment Spray System, Residual Heat Removal System, and Air Return System [Containment Air Recirculation/Hydrogen Skimmer (CEQ) System] being rendered inoperable. (3) (3)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The limiting DBA for the maximum peak containment air temperature is an SLB. For the upper compartment, the initial containment average air temperature assumed in the design basis analyses (Ref. 1) is 110°F. For the lower compartment, the initial average containment air temperature assumed in the design basis analyses is 120°F. This resulted in a maximum containment air temperature of 326°F. The design temperature is 250°F.

The temperature upper limits are used to establish the environmental qualification operating envelope for both containment compartments. The maximum peak containment air temperature for both containment compartments was calculated to exceed the containment design temperature for only a few seconds during the transient. The basis of the containment design temperature, however, is to ensure the performance of safety related equipment inside containment (Ref. 2). Thermal analyses showed that the time interval during which the containment air temperature exceeded the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment air temperatures are acceptable for the DBA SLB.

The temperature upper limits are also used in the depressurization analyses to ensure that the minimum pressure limit is maintained following an inadvertent actuation of the Containment Spray System for both containment compartments.

The containment pressure transient is sensitive to the initial air mass in containment and, therefore, to the initial containment air temperature. The limiting DBA for establishing the maximum peak containment internal pressure is a LOCA. The temperature lower limits, 85°F for the upper compartment and 100°F for the lower compartment, are used in this analysis to ensure that, in the event of an accident, the maximum containment internal pressure will not be exceeded in either containment compartment.

Containment average air temperature satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, with an initial containment average air temperature within the LCO temperature limits, the resultant peak accident temperature is maintained below the containment design temperature. As a result, the ability of containment to perform its design function is ensured. In MODES 3 and 4, containment air temperature may be as low as 60°F.

(4) INSERT 1

at P_a is 196°F for the containment upper compartment and 244°F for the containment lower compartment.

(3) INSERT 2

The limiting DBA for the peak clad temperature analysis is a large break LOCA. For this analysis, the bounding range for the upper containment initial temperature is 60°F to 100°F and the bounding range for the lower containment initial is 60°F to 120°F.

(TSTF-401) INSERT 2A

accident temperature profile assures that the containment structural temperature is maintained below its design temperature and that required safety related equipment will continue to perform its function.

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 (1)

BASES

LCO (continued)

because the resultant calculated peak containment accident pressure would not exceed the design pressure due to a lesser amount of energy released from the pipe break in these MODES. (5)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment average air temperature within the limit is not required in MODE 5 or 6.

ACTIONS

A.1

When containment average air temperature in the upper or lower compartment is not within the limit of the LCO, the average air temperature in the affected compartment must be restored to within limits within 8 hours. This Required Action is necessary to return operation to within the bounds of the containment analysis. The 8 hour Completion Time is acceptable considering the sensitivity of the analysis to variations in this parameter and provides sufficient time to correct minor problems.

B.1 and B.2

If the containment average air temperature cannot be restored to within its limits within the required Completion Time, the plant [unit] must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant [unit] must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant [unit] conditions from full power conditions in an orderly manner and without challenging plant [unit] systems. (3) (3) (3)

SURVEILLANCE REQUIREMENTS

SR 3.6.5B.1 and SR 3.6.5B.2 (1)

Verifying that containment average air temperature is within the LCO limits ensures that containment operation remains within the limits assumed for the containment analyses. In order to determine the containment average air temperature, a weighted [an arithmetic] average is calculated using measurements taken at locations within the containment selected to provide a representative sample of the overall containment atmosphere. [INSERT 3] The 24 hour Frequency of these SRs is considered acceptable based on observed slow rates of temperature increase within (3) (3)

(3) INSERT 3

In the upper compartment, two locations at a nominal elevation of 712 ft 0 inches and a third location at a nominal elevation of 624 ft 10 inches are used. In the lower compartment, the locations at nominal elevations 626 ft 6 inches, 624 ft 10 1/2 inches, and 624 ft 0 inches are used.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

containment as a result of environmental heat sources (due to the large volume of containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment temperature condition.

REFERENCES

1. (U)FSAR, Section (6.2). (14.3.4) ③④
2. 10 CFR 50.49.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.5 BASES, CONTAINMENT AIR TEMPERATURE

1. The type of Containment (Ice Condenser) and the Specification designator "B" are deleted since they are unnecessary (only one Containment Air Temperature Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2 to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric and Dual Specification (ISTS 3.6.5A) and the Subatmospheric Specification (ISTS 3.6.5C) are not used and are not shown.

2. Typographical/grammatical error corrected.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. Changes are made to reflect those changes made to the ISTS.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 6

ITS 3.6.6, Containment Spray System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.6 3.6.2.1 Two independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the RWST and transferring suction to the containment sump. (LA.1)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A – With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable spray system to OPERABLE
ACTION B – status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. (A.2)

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

SR 3.6.6.1 a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position. (A.3)

SR 3.6.6.2 b. By verifying that each containment spray pump's developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. (L.1)

Add proposed Note to SR 3.6.6.3

c. At least once per ~~18~~ 24 months by: (L.2)

SR 3.6.6.3 1. Verifying that each automatic valve in the flow path [not locked, sealed, or otherwise secured in position] actuates to its correct position on a [actual or] Containment Pressure -- High-High test signal. (LA.2) (L.3)

Add proposed Note to SR 3.6.6.4

SR 3.6.6.4 2. Verifying that each spray pump starts automatically on a [actual or] Containment Pressure -- High-High test signal. (LA.2) (L.3)

SR 3.6.6.5 d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed. (LA.3) (A.3)

A.1

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ITS 3.6.6

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.6 3.6.2.1 Two independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the RWST and transferring suction to the containment sump. (LA.1)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A: With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours

ACTION B: or be in at least HOT STANDBY within the next 6 hours; restore the inoperable spray system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. (A.2)

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

SR 3.6.6.1 a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

SR 3.6.6.2 b. By verifying that each containment spray pump's developed head at the test flow point is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. (A.3)

c. At least once per 18 [24] months by: (L.1)

Add proposed Note to SR 3.6.6.3

SR 3.6.6.3 1. Verifying that each automatic valve in the flow path [not locked, sealed, or otherwise secured in position] (L.2) actuates to its correct position on a [actual or] (L.3) Containment Pressure -- High-High test signal. (LA.2)

Add proposed Note to SR 3.6.6.4

SR 3.6.6.4 2. Verifying that each spray pump starts automatically on a [actual or] (L.3) Containment Pressure -- High-High test signal. (LA.2)

SR 3.6.6.5 d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed. (LA.3) (A.3)

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.6.2.1 Action states that with one Containment Spray System inoperable, if the Containment Spray System is not restored to OPERABLE status within 72 hours, then the unit must be in HOT STANDBY within the next 6 hours, and to either restore the inoperable Containment Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. With an inoperable containment spray train not restored to OPERABLE status in 72 hours, ITS 3.6.6 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within 84 hours. ITS 3.6.6 does not contain the second phrase stating that the Containment Spray System (i.e., train) must be restored to OPERABLE status after the unit is in MODE 3, but combines the time allowed for restoration and to be in MODE 5 together into one Required Action to be in MODE 5.

This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3/4.6.2.1 is applicable in MODES 1, 2, 3, and 4. CTS 4.6.2.1.c.1 requires verification of the automatic actuation of the Containment Spray System valves. CTS 4.6.2.1.c.2 requires verification of the automatic actuation of the Containment Spray System pumps. The requirements for these Surveillances are included in ITS SR 3.6.6.3 and SR 3.6.6.4, respectively; however, a Note has been included in the SRs that states that in MODE 4, only the manual portion of the actuation signal is required. This changes the CTS by not requiring automatic actuation in MODE 4.

The purpose of CTS 3/4.6.2.1 is to ensure the Containment Spray System is OPERABLE to support the safety analysis. The purpose of CTS 4.6.2.1.c.1 is to ensure the Containment Spray System valves operate upon receipt of an actuation signal, while the purpose of CTS 4.6.2.1.c.2 is to ensure that the Containment Spray System pumps start upon receipt of an actuation signal. This change is acceptable because the requirements continue to ensure that the systems are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. CTS Table 3.3-3 (ITS Table 3.3.2-1) specifies the requirements for the Containment Spray Instrumentation, and includes three actuation Functions: Manual Initiation, Automatic Actuation Logic and Actuation Relays, and Containment Pressure - High High. The Manual

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

Initiation and Automatic Actuation Logic and Actuation Relays Functions are required to be OPERABLE in MODES 1, 2, 3, and 4. The Containment Pressure - High High Function is only required to be OPERABLE in MODES 1, 2, and 3. The Applicability of the Automatic Actuation Logic and Actuation Relays Function is consistent with the Manual Initiation Function, since the relays associated with the automatic actuation logic are also used to support the Manual Initiation Function. The Containment Pressure - High High Function is the only automatic actuation Function and it is only required to be OPERABLE in MODES 1, 2, and 3. Therefore, this change to the Applicability in CTS 4.6.2.1.c.1 and CTS 4.6.2.1.c.2 is made for consistency with the Containment Spray Instrumentation requirements in CTS, which does not require automatic actuation in MODE 4. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.2.1 states that two "independent" Containment Spray Systems shall be OPERABLE "with each spray system capable of taking suction from the RWST and transferring suction to the containment sump." ITS 3.6.6 requires two containment spray trains (i.e., systems) to be OPERABLE, but does not include the details of what constitutes OPERABILITY. This changes the CTS by moving the detail that the trains must be "independent" and the description of the capability of the trains (i.e., taking suction from the RWST and transferring suction to the containment sump) to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that two containment spray trains shall be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.2.1.c.1 and CTS 4.6.2.1.c.2 require

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

verification of the automatic actuation of containment spray components on a Containment Pressure - High-High signal. ITS SR 3.6.6.3 and SR 3.6.6.4 do not specify the name of the signal, but only specify an actuation signal. This changes the CTS by moving the detail concerning what type of signal is used to conduct the Surveillance Requirements to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that appropriate containment spray pumps and valves start or actuate on an actuation signal. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.2.1.d states to perform "an air or smoke flow test through each spray header" to verify each spray nozzle is unobstructed. ITS SR 3.6.6.5 states to verify each spray nozzle is unobstructed. This changes the CTS by moving the details of how to perform the test to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that spray nozzles are verified unobstructed. Also, this change is acceptable because these types of procedural details will be adequately controlled the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

<u>LESS RESTRICTIVE CHANGES</u>

L.1 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.6.2.1.c requires each containment spray system to be demonstrated OPERABLE at least once per 18 months by verifying that each automatic valve in the flow path automatically actuates to its correct position and by verifying that each containment spray pump starts automatically. ITS SR 3.6.6.3 requires the same type of test to be performed on the containment spray valves while ITS SR 3.6.6.4 requires the same type of test on the containment spray pumps. The Frequency of testing for both ITS SR 3.6.6.3 and ITS SR 3.6.6.4 is 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.6.2.1.c is to demonstrate that all active components will function as required if an accident were to occur. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the containment spray automatic actuation test is acceptable because the system is tested in accordance with the Inservice Testing Program throughout the operating cycle. This testing ensures that the active components (pumps and valves) will function properly and will detect significant failures of the system. Additional justification for extending the Surveillance test interval is that the Containment Spray System, including the actuating logic, is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one containment spray train. Based on the inherent system and component reliability and the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.2 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.2.1.c.1 requires verification that each automatic valve in the flow path actuates to its correct position on a Containment Pressure - High-High signal. ITS SR 3.6.6.3 requires verification that each automatic valve in the flow path that is not locked, sealed, or otherwise secured in position actuates to its correct position on an actual or simulated actuation signal. This changes the CTS by excluding those valves that are locked, sealed, or otherwise secured in position from this test. Removal of the Containment Pressure - High-High signal reference is addressed by DOC LA.2.

The purpose of CTS 4.6.2.1.c.1 is to ensure that the containment spray valves that are required to automatically actuate upon receipt of an actuation signal actuate to their correct position. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Those automatic valves that are locked, sealed, or otherwise secured in position are not required to actuate on a Containment Pressure - High High signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any

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DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

additional assurance of OPERABILITY. Valves that are required to automatically actuate will continue to be tested. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.3 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.2.1.c.1 requires verification of the automatic actuation of the Containment Spray System valves on a "test" signal. CTS 4.6.2.1.c.2 requires verification of the automatic actuation of the Containment Spray System pumps on a "test" signal. ITS SR 3.6.6.3 and ITS SR 3.6.6.4 specify that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of CTS 4.6.2.1.c.1 is to ensure the Containment Spray System valves operate upon receipt of an actuation signal while the purpose of CTS 4.6.2.1.c.2 is to ensure that the Containment Spray System pumps start upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.6 Containment Spray System (Ice Condenser) ①

LCO 3.6.2.1

LCO 3.6.6 Two containment spray trains shall be OPERABLE. ①

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action	A. One containment spray train inoperable.	A.1 Restore containment spray train to OPERABLE status.	72 hours
Action	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.2.1.a	SR 3.6.6.1	Verify each containment spray 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	①
4.6.2.1.b	SR 3.6.6.2	Verify each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program	①
4.6.2.1.c.1	SR 3.6.6.3	Verify each automatic containment spray valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18~~ 24 months	① ②

INSERT 1 ④

(4) **INSERT 1**

-NOTE-
In MODE 4, only the manual portion of the actuation signal is required.

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY
4.6.2.1.c.2	SR 3.6.6C.4 INSERT 2	Verify each containment spray pump starts automatically on an actual or simulated actuation signal.	[18] 24 months
4.6.2.1.d	SR 3.6.6C.5	Verify each spray nozzle is unobstructed.	[At first refueling] AND 10 years

(4) **INSERT 2**

-NOTE-

In MODE 4, only the manual portion of the actuation signal is required.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

1. The type of Containment Spray System (Ice Condenser) and the Specification designator "C" are deleted since they are unnecessary (only one Containment Spray Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Containment Spray and Cooling Systems Specifications for Atmospheric and Dual Containments (ISTS 3.6.6A and ISTS 3.6.6B), Quench Spray System Specification for a Subatmospheric Containment (ISTS 3.6.6D), and Recirculation Spray System Specification for Subatmospheric Containment (ISTS 3.6.6E) are not used and are not shown.

2. The brackets are removed and the proper plant specific information/value is provided.

3. CNP Units 1 and 2 have completed the first refueling outages. Therefore, the ISTS SR 3.6.6.5 bracketed Frequency of "At first refueling" is not needed and is removed.

4. ISTS SR 3.6.6.3 and ISTS SR 3.6.6.4 have been modified by a Note stating that in MODE 4, only the manual portion of the actuation signal is required. This change has been made to be consistent with ITS 3.3.2. CTS Table 3.3-3 (ITS Table 3.3.2-1) specifies the requirements for the Containment Spray Instrumentation, and includes three actuation Functions: Manual Initiation, Automatic Actuation Logic and Actuation Relays, and Containment Pressure - High High. The Manual Initiation and Automatic Actuation Logic and Actuation Relays Functions are required to be OPERABLE in MODES 1, 2, 3, and 4. The Containment Pressure - High High Function is only required to be OPERABLE in MODES 1, 2, and 3. The Applicability of the Automatic Actuation Logic and Actuation Relays Function is consistent with the Manual Initiation Function, since the relays associated with the automatic actuation logic are also used to support the Manual Initiation Function. The Containment Pressure - High High Function is the only automatic actuation Function and it is only required to be OPERABLE in MODES 1, 2, and 3. Therefore, this change to the Applicability in ISTS SR 3.6.6.3 and ISTS SR 3.6.6.4 is made for consistency with the Containment Spray Instrumentation Specification in both the CTS and ITS, which does not require automatic actuation in MODE 4.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

 (1)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.6C Containment Spray System (Ice Condenser) (1)

BASES

BACKGROUND

The Containment Spray System provides containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. Reduction of containment pressure and the iodine removal capability of the spray reduce the release of fission product radioactivity from containment to the environment, in the event of a Design Basis Accident (DBA). The Containment Spray System is designed to meet the requirements of 10 CFR 50, Appendix A, GDC 38, "Containment Heat Removal," GDC 39, "Inspection of Containment Heat Removal Systems," GDC 40, "Testing of Containment Heat Removal Systems," GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems" (Ref. 1), or other documents that were appropriate at the time of licensing (identified on a unit specific basis). INSERT 1 (2)

The Containment Spray System consists of two separate trains of equal capacity, each capable of meeting the system design basis spray coverage. Each train includes a containment spray pump, one containment spray heat exchanger, spray headers, nozzles, valves, and piping. Each train is powered from a separate Engineered Safety Feature (ESF) bus. The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of operation. In the recirculation mode of operation, containment spray pump suction is transferred from the RWST to the containment recirculation sump(s). (3)

The diversion of a portion of the recirculation flow from each train of the Residual Heat Removal (RHR) System to additional redundant spray headers completes the Containment Spray System heat removal capability. Each RHR train is capable of supplying spray coverage, if required, to supplement the Containment Spray System.

The Containment Spray System and RHR System provide a spray of cold or subcooled borated water into the upper and lower regions of containment and in dead ended volumes to limit the containment pressure and temperature during a DBA. The RWST solution temperature is an important factor in determining the heat removal capability of the Containment Spray System during the injection phase. In the recirculation mode of operation, heat is removed from the containment sump water by the Containment Spray System and RHR (3) (3)

(Containment Spray System Only)

(2) **INSERT 1**

Plant Specific Design Criteria (PSDC) 41, "Engineered Safety Features Performance Capability," PSDC 42, "Emergency Safety Features Components Capability," PSDC 49, "Reactor Containment Design Basis," PSDC 52, "Containment Heat Removal Systems," PSDC 58, "Inspection of Containment Pressure – Reducing Systems," PSDC 59, "Testing of Containment Pressure – Reducing Systems," PSDC 60, "Testing of Containment Spray System," PSDC 61, "Testing of Operational Sequence of the Containment Pressure – Reducing Systems" (Ref. 1)

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BASES

BACKGROUND (continued)

heat exchangers. Each train of the Containment Spray System, supplemented by a train of RHR spray, provides adequate spray coverage to meet the system design requirements for containment heat removal.

INSERT 2 The Spray Additive System injects a sodium hydroxide (NaOH) solution into the spray. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge iodine fission products from the containment atmosphere. The NaOH added in the spray also ensures an alkaline pH for the solution recirculated in the containment sump. The alkaline pH of the containment sump water minimizes the evolution of iodine and the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to the fluid. ③ ⑨

The Containment Spray System is actuated either automatically by a containment High-3 pressure signal or manually. An automatic actuation opens the containment spray pump discharge valves, starts the two containment spray pumps, and begins the injection phase. A manual actuation of the Containment Spray System requires the operator to actuate two separate switches on the main control board to begin the same sequence. The injection phase continues until an RWST level Low-Low alarm is received. The Low-Low alarm for the RWST actuates valves to align the containment spray pump suction to the containment sump and/or signals the operator to manually align the system to the recirculation mode. The Containment Spray System in the recirculation mode maintains an equilibrium temperature between the containment atmosphere and the recirculated sump water. Operation of the Containment Spray System in the recirculation mode is controlled by the operator in accordance with the emergency operation procedures. INSERT 3 ③ ③ ③ ③ High Pressure train a a INSERT 4 operating

The RHR spray operation is initiated manually, when required by the emergency operating procedures, after the Emergency Core Cooling System (ECCS) is operating in the recirculation mode. The RHR sprays are available to supplement the Containment Spray System, if required, in limiting containment pressure. This additional spray capacity would typically be used after the ice bed has been depleted and in the event that containment pressure rises above a predetermined limit. The Containment Spray System is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained.

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial

(3) **INSERT 2**

, *by an eductor system, using the containment spray pump discharge flow as the motive force*

(3) **INSERT 3**

and the valves associated with the Spray Additive System tank

(3) **INSERT 4**

When the RWST has decreased to a level indicating a sufficient volume has been transferred to containment, the operator aligns the containment spray pump suction to the containment recirculation sump.

BASES

BACKGROUND (continued)

blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice.

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of the Containment Spray System, the RHR System, and the ARS being rendered inoperable (Ref. 2).

The DBA analyses show that the maximum peak containment pressure of [14.1] psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of [385]°F results from the SLB analysis and was calculated to exceed the containment design temperature for a [few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB.

The modeled Containment Spray System actuation from the containment analysis is based on a response time associated with exceeding the containment High-3 pressure signal setpoint to achieving full flow through the containment spray nozzles. A delayed response time initiation provides conservative analyses of peak calculated containment temperature and pressure responses. The Containment Spray System

BASES

APPLICABLE SAFETY ANALYSES (continued)

total response time of ~~45~~ 115 seconds ~~is composed of~~ includes signal delay, diesel generator startup, and system startup time. (4) (3)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the ECCS cooling effectiveness during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K (Ref. 4).

~~Inadvertent actuation of the Containment Spray System is evaluated in the analysis, and the resultant reduction in containment pressure is calculated. The maximum calculated reduction in containment pressure resulted in a containment external pressure load of [1/2] psid, which is below the containment design external pressure load.~~ (6)

The Containment Spray System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, one train of Containment Spray System is required to provide the heat removal capability assumed in the safety analyses. Additionally, a minimum of one train of the Containment Spray System, with spray pH adjusted by the Spray Additive System, is required to scavenge iodine fission products from the containment atmosphere and ensure their retention in the containment sump water. To ensure that these requirements are met, two containment spray trains must be OPERABLE with power from two safety related, independent power supplies. Therefore, in the event of an accident, at least one train in each system operates.

Each ~~C~~containment ~~S~~spray ~~System~~ train ~~typically~~ includes a spray pump, headers, valves, heat ~~exchangers~~ exchangers, nozzles, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal ~~and automatically transferring suction to the containment sump~~. (3) (7) (3)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the Containment Spray System.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the probability and consequences of these events are reduced because of the pressure and temperature limitations of these MODES. Thus, the Containment Spray System is not required to be OPERABLE in MODE 5 or 6.

ACTIONS

A.1

With one containment spray train inoperable, the affected train must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the heat removal and iodine removal needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal and iodine removal capabilities afforded by the OPERABLE train and the low probability of a DBA occurring during this period.

B.1 and B.2

If the affected containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant (unit) must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant (unit) must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant (unit) conditions from full power conditions in an orderly manner and without challenging plant (unit) systems. The extended interval to reach MODE 5 allows additional time and is reasonable when considering that the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3. (3)

SURVEILLANCE REQUIREMENTS

SR 3.6.6C.1 (1)

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the Containment Spray System provides assurance that the proper flow path exists for Containment Spray System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since they were verified in the correct position prior to being secured. [INSERT 5 (11)] This SR does not require any testing or valve manipulation. Rather, it involves verification ~~through a system walkdown~~, that those valves outside containment and capable of potentially being mispositioned, are in the correct position. (TSTF-446)

(11) **INSERT 5**

This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

to an unacceptable level ③

SR 3.6.6.2

Verifying that each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. ③
Flow and differential head are normal tests of centrifugal pump OM performance required by Section XI of the ASME Code (Ref. 5). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. tests ⑦
Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program. ⑤

SR 3.6.6.3 and SR 3.6.6.4

These SRs require verification that each automatic containment spray valve actuates to its correct position and each containment spray pump starts upon receipt of an actual or simulated containment spray actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillances when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. unit ③ ④ ㉔

INSERT 6 ⑧

The surveillance of containment sump isolation valves is also required by SR 3.6.6.3. A single surveillance may be used to satisfy both requirements. ③

SR 3.6.6.5

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded. Because of the passive design of the nozzle, a test at the first refueling and at 10 year intervals is considered adequate to detect obstruction of the spray nozzles. ⑧

8

INSERT 6

These Surveillances include a Note that states that in MODE 4, only the manual portion of the actuation signal is required. This is acceptable since the automatic portion of the actuation signal is not required to be OPERABLE by ITS 3.3.2, "Engineered Safety Features Actuation System (ESFAS) Instrumentation."

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BASES

REFERENCES	1.	10 CFR 50, Appendix A, GDC 38, GDC 39, GDC 40, GDC 41, GDC 42, and GDC 43. UFSAR, Section 1.4.7 (2)
	2.	UFSAR, Section 6.2 14.3.4 (3) (4)
	3.	10 CFR 50.49.
	4.	10 CFR 50, Appendix K.
	5.	ASME, Boiler and Pressure Vessel Code, Section XI. Operation and Maintenance Standards and Guides (OM Codes) (3)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6 BASES, CONTAINMENT SPRAY SYSTEM

1. The type of Containment Spray System (Ice Condenser) and the Specification designator "C" are deleted since they are unnecessary (only one Containment Spray Specification is used in the CNP ITS). This information is provided in NUREG-1431, Rev. 2, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Containment Spray and Cooling Systems Specification Bases for Atmospheric and Dual Containments (ISTS B 3.6.6A and ISTS B 3.6.6B), Quench Spray System Specification Bases for a Subatmospheric Containment (ISTS B 3.6.6D), and Recirculation Spray System Specification Bases for Subatmospheric Containment (ISTS B 3.6.6E) are not used and are not shown.

2. CNP Units 1 and 2 were designed and under construction prior to the promulgation of 10 CFR 50, Appendix A. CNP Units 1 and 2 were designed and constructed to meet the intent of the proposed General Design Criteria, published in 1967. However, the CNP UFSAR contains discussions of the Plant Specific Design Criteria (PSDCs) used in the design of CNP Units 1 and 2. Bases references to the 10 CFR 50, Appendix A criteria have been replaced with references to the appropriate section and description in the UFSAR.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. The brackets have been removed and the proper plant specific information/value has been provided.

5. The IST Program at CNP Units 1 and 2 is not required to provide information for trend performance. Therefore, these words have been deleted.

6. The Bases ASA section discussion of the inadvertent actuation of the Containment Spray System has been deleted because this incident does not describe how the Containment Spray System mitigates DBAs. In addition, analysis of an inadvertent Containment Spray actuation event is not part of the CNP licensing basis.

7. Typographical/grammatical error corrected

8. Changes are made to reflect those changes made to the Specification.

9. The statements describing explicit details of the design of the Spray Additive System have been deleted. These details are adequately covered by the Spray Additive System Specification (ITS 3.6.7), and do not need to be repeated in this Specification's Bases. The generic statement describing that the Spray Additive System injects sodium hydroxide solution using the Containment Spray System pumps is sufficient.

10. Editorial change made for clarity.

11. Changes are made to be consistent with similar statements in the Bases (e.g., B 3.7.5, B 3.7.7, and B 3.7.8).

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 7

ITS 3.6.7, Spray Additive System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SPRAY ADDITIVE SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.7 — 3.6.2.2 The spray additive system shall be OPERABLE with:

SR 3.6.7.2, SR 3.6.7.3 — a. A spray additive tank containing a volume between 4000 and 4600 gallons of between 30 and 34 percent by weight NaOH solution, and

b. Two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a containment spray system pump flow. — LA.1

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A, ACTION B — With the spray additive system inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the spray additive system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. — A.2

SURVEILLANCE REQUIREMENTS

4.6.2.2 The spray additive system shall be demonstrated OPERABLE:

SR 3.6.7.1 — a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. At least once per 6 months by:

SR 3.6.7.2 — 1. Verifying the solution level in the tank, and

SR 3.6.7.3 — 2. Verifying the concentration of the NaOH solution by chemical analysis. — LA.2

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A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

24 — not locked, sealed, or otherwise secured in position — L.1, L.2

SR 3.6.7.4 c. At least once per 18 months by verifying that each automatic valve in the flow path actuates to its correct position on a ~~Containment Pressure – High-High~~ signal. [actual or] — LA.3, L.3

SR 3.6.7.5 d. At least once per 5 years by verifying the flow rate from the spray additive tank ~~test line to each containment spray system with the spray pump operating on recirculation.~~ — LA.4

A.1

ITS

CONTAINMENT SYSTEMS

SPRAY ADDITIVE SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.7 3.6.2.2 The spray additive system shall be OPERABLE with:

SR 3.6.7.2, SR 3.6.7.3 a. A spray additive tank containing a volume between 4000 and 4600 gallons of between 30 and 34 percent by weight NaOH solution, and

b. Two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a containment spray system pump flow. LA.1

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A With the spray additive system inoperable, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours;
ACTION B restore the spray additive system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. A.2

SURVEILLANCE REQUIREMENTS

4.6.2.2 The spray additive system shall be demonstrated OPERABLE:

SR 3.6.7.1 a. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

b. At least once per 6 months by:

SR 3.6.7.2 1. Verifying the contained solution volume in the tank, and

SR 3.6.7.3 2. Verifying the concentration of the NaOH solution by chemical analysis. LA.2

ITS 3.6.7

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

24 — L.1

not locked, sealed, or otherwise secured in position — L.2

SR 3.6.7.4 c. At least once per 18 months by verifying that each automatic valve in the flow path actuates to its correct position on a ~~Containment Pressure - High-High~~ test signal. (actual or — L.3) (LA.3)

SR 3.6.7.5 d. At least once per 5 years by verifying the flow rate from the spray additive tank test line to each containment spray system with the spray pump operating on recirculation. (LA.4)

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes because they do not result in technical changes to the CTS.

A.2 CTS 3.6.2.2 Action states that with the Spray Additive System inoperable, if the Spray Additive System is not restored to OPERABLE status within 72 hours, then the unit must be in HOT STANDBY within the next 6 hours, and to either restore the Spray Additive System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours. With an inoperable Spray Additive System not restored to OPERABLE status in 72 hours, ITS 3.6.7 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within the 84 hours. ITS 3.6.7 does not contain the second phrase stating that the Spray Additive System (i.e., train) must be restored to OPERABLE status after the unit is in MODE 3, but combines the time allowed for restoration and to be in MODE 5 together into one Required Action to be in MODE 5.

This change is acceptable because the technical requirements have not changed. Restoration of compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.2.2.b states that, as part of the Spray Additive System, two spray additive eductors each capable of adding NaOH solution from the chemical additive tank to a containment spray system pump flow are required. ITS 3.6.7 states that the Spray Additive System shall be OPERABLE, but the details of what constitutes an OPERABLE system are moved to the Bases. This changes the CTS by moving the details of what constitutes a Spray Additive System to the Bases.

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to have the Spray Additive System OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.2.2.b.2 requires the verification of the concentration of the NaOH solution "by chemical analysis." ITS SR 3.6.7.3 also requires verification of the concentration of NaOH solution, but does not include the method to perform the verification. This changes the CTS by moving the specific method (by chemical analysis) to the Bases.

The removal of this detail for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the NaOH solution concentration. Also, this change is acceptable because this type of procedural detail will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.2.2.c requires verification that each automatic spray additive valve in the flow path actuates to its correct position on a Containment Pressure - High-High signal. ITS SR 3.6.7.4 does not specify the signal, but only specifies an actual or simulated actuation signal. This changes the CTS by moving the type of actuation signal to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify that appropriate equipment actuates upon receipt of an actuation signal. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

LA.4 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.2.2.d specifies that the spray additive flow test is accomplished by verifying flow rate from the spray additive tank test line to each Containment Spray System (i.e., train) with the spray pump operating on recirculation. ITS SR 3.6.7.5 states "Verify spray additive flow rate from each solution's flow path." This changes the CTS by moving the details regarding the test method to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify spray additive flow rate. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.6.2.2.c requires verifying that each spray additive automatic valve in the flow path actuates to its correct position at least once per 18 months. ITS SR 3.6.7.4 requires the same type of test to be performed every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.6.2.2.c is to demonstrate that all active components will function as required if an accident were to occur. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the spray additive automatic actuation test is acceptable because the valves are tested in accordance with the Inservice Testing Program throughout the operating cycle. This testing ensures that the active valves will function properly and will detect significant failures of the system. Additional justification for extending the Surveillance test interval is that the Spray Additive System, including the actuating logic, is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one spray additive train. Based on the inherent system and component reliability and

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DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

the testing performed during the operating cycle, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.2 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.2.2.c requires verification that each automatic valve in the spray additive flow path actuates to its correct position on a Containment Pressure - High High test signal. ITS SR 3.6.7.4 requires verification that each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to its correct position on an actual or simulated actuation signal. This changes the CTS by excluding those valves that are locked, sealed, or otherwise secured in position from this test. Removal of the Containment Pressure - High High signal reference is discussed in DOC LA.3.

The purpose of CTS 4.6.2.2.c is to verify that appropriate valves automatically actuate when they receive an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Proper position of valves is verified before they are locked, sealed, or otherwise secured in position. Administrative controls verify these valves are in their correct position before being locked, sealed, or otherwise secured, so they are not required to actuate on an actuation signal, and verification of their actuation is not required. The verification is to test that they actuate to their correct position, but these valves already are in their correct position. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.3 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 2 CTS 4.6.2.2.c requires verification of the automatic actuation of the Spray Additive System valves on a "test" signal. While Unit 1 CTS 4.6.2.2.c does not use the term "test," it is implied. ITS SR 3.6.7.4 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of CTS 4.6.2.2.c is to ensure the Spray Additive System valves operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive

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DISCUSSION OF CHANGES
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) ①

3.6.2.2 LCO 3.6.7 The Spray Additive System shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Action	A. Spray Additive System inoperable.	A.1	Restore Spray Additive System to OPERABLE status.	72 hours
Action	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.2.2.a	SR 3.6.7.1	Verify each spray additive 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	
4.6.2.2.b.1	SR 3.6.7.2	Verify spray additive tank solution volume is ≥ [2568] 4000 gal and ≤ [4000] 4600 gal.	184 days	②
4.6.2.2.b.2	SR 3.6.7.3	Verify spray additive tank [NaOH] solution concentration is ≥ [30]% and ≤ [32] 34% by weight.	184 days	②

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS		SURVEILLANCE	FREQUENCY	
4.6.2.2.c	SR 3.6.7.4	Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	[18] months 24	2
4.6.2.2.d	SR 3.6.7.5	Verify spray additive flow [rate] from each solution's flow path.	5 years	2

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

1. The headings for ISTS 3.6.7 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made.

2. The brackets are removed and the proper plant specific information/value is provided.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

 (1)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (1)

BASES

BACKGROUND

The Spray Additive System is a subsystem of the Containment Spray System that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA). (2)

Radioiodine in its various forms is the fission product of primary concern in the evaluation of a DBA. It is absorbed by the spray from the containment atmosphere. To enhance the iodine absorption capacity of the spray, the spray solution is adjusted to an alkaline pH that promotes iodine hydrolysis, in which iodine is converted to nonvolatile forms. Because of its stability when exposed to radiation and elevated temperature, sodium hydroxide (NaOH) is the preferred spray additive. The NaOH added to the spray also ensures a pH value of between 8.5 and 11.0 of the solution recirculated from the containment sump. This pH band minimizes the evolution of iodine as well as the occurrence of chloride and caustic stress corrosion on mechanical systems and components. (2)

Eductor Feed Systems Only (2)

The Spray Additive System consists of one spray additive tank that is shared by the two trains of spray additive equipment. Each train of equipment provides a flow path from the spray additive tank to a containment spray pump and consists of an eductor for each containment spray pump, valves, instrumentation, and connecting piping. Each eductor draws the NaOH spray solution from the common tank using a portion of the borated water discharged by the containment spray pump as the motive flow. The eductor mixes the NaOH solution and the borated water and discharges the mixture into the spray pump suction line. The eductors are designed to ensure that the pH of the spray mixture is between 8.5 and 11.0. (2)

Gravity Feed Systems Only

The Spray Additive System consists of one spray additive tank, two parallel redundant motor operated valves in the line between the additive tank and the refueling water storage tank (RWST), instrumentation, and recirculation pumps. The NaOH solution is added to the spray water by a balanced gravity feed from the additive tank through the connecting piping into a weir within the RWST. There, it mixes with the borated water flowing to the spray pump suction. Because of the hydrostatic (2)

BASES

BACKGROUND (continued)

balance between the two tanks, the flow rate of the NaOH is controlled by the volume per foot of height ratio of the two tanks. This ensures a spray mixture pH that is ≥ 8.5 and ≤ 11.0. (2)

The Containment Spray System actuation signal opens the valves from the spray additive tank to the spray pump suctions or the containment spray pump start signal opens the valves from the spray additive tank after a 5 minute delay. The 28% to 30% NaOH solution is drawn into the spray pump suctions. The spray additive tank capacity provides for the addition of NaOH solution to all of the water sprayed from the RWST into containment. The percent solution and volume of solution sprayed into containment ensures a long term containment sump pH of ≥ 8.0 and ≤ 9.5. This ensures the continued iodine retention effectiveness of the sump water during the recirculation phase of spray operation and also minimizes the occurrence of chloride induced stress corrosion cracking of the stainless steel recirculation piping. (2) 30 34 7.0 10.0

APPLICABLE SAFETY ANALYSES

The Spray Additive System is essential to the removal of airborne iodine within containment following a DBA.

Following the assumed release of radioactive materials into containment, the containment is assumed to leak at its design value volume following the accident. The analysis assumes that 100% of containment is covered by the spray (Ref. 1). (2) INSERT 1

The DBA response time assumed for the Spray Additive System is the same as for the Containment Spray System and is discussed in the Bases for LCO 3.6.6, "Containment Spray and Cooling Systems."

The DBA analyses assume that one train of the Containment Spray System/Spray Additive System is inoperable and that the entire spray additive tank volume is added to the remaining Containment Spray System flow path. (2) minimum required volume of the

The Spray Additive System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The Spray Additive System is necessary to reduce the release of radioactive material to the environment in the event of a DBA. To be considered OPERABLE, the volume and concentration of the spray additive solution must be sufficient to provide NaOH injection into the spray flow until the Containment Spray System suction path is switched from the RWST to the containment sump, and to raise the average spray

2

INSERT 1

There are portions of the containment that are not sprayed (e.g., steam generator enclosures and pressurizer enclosure). In order to account for these unsprayed regions, the analysis assumes that removal of iodine takes place only in the sprayed regions, while mass transfer of iodine from unsprayed to sprayed regions accounts for the decrease in the iodine concentration in the unsprayed regions

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Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (1)
B 3.6.7

BASES

LCO (continued)

minimizes the evolution of iodine

7.0 and 10.0

solution pH to a level conducive to iodine removal, namely, to between 7.2 and 11.0. This pH range maximizes the effectiveness of the iodine removal mechanism without introducing conditions that may induce caustic stress corrosion cracking of mechanical system components. In addition, it is essential that valves in the Spray Additive System flow paths are properly positioned and that automatic valves are capable of activating to their correct positions. (5) (2)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment requiring the operation of the Spray Additive System. The Spray Additive System assists in reducing the iodine fission product inventory prior to release to the environment.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Thus, the Spray Additive System is not required to be OPERABLE in MODE 5 or 6.

ACTIONS

A.1

If the Spray Additive System is inoperable, it must be restored to OPERABLE within 72 hours. The pH adjustment of the Containment Spray System flow for corrosion protection and iodine removal enhancement is reduced in this condition. The Containment Spray System would still be available and would remove some iodine from the containment atmosphere in the event of a DBA. The 72 hour Completion Time takes into account the redundant flow path capabilities and the low probability of the worst case DBA occurring during this period.

retention (2) it (3) is In addition, if

B.1 and B.2

If the Spray Additive System cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows 48 hours for restoration of the Spray Additive System in MODE 3 and 36 hours to reach MODE 5. This is reasonable when considering the reduced pressure and temperature

unit (2) (4)

allows additional time and that the driving force (4)

BASES

ACTIONS (continued)

conditions in MODE 3 for the release of radioactive material from the Reactor Coolant System. is reduced (4)

SURVEILLANCE REQUIREMENTS

SR 3.6.7.1

Verifying the correct alignment of Spray Additive System manual, power operated, and automatic valves in the spray additive flow path provides assurance that the system is able to provide additive to the Containment Spray System in the event of a DBA. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. INSERT 2 (6) This SR does not require any testing or valve manipulation. Rather, it involves verification through a system walkdown, that those valves outside containment and capable of potentially being mispositioned are in the correct position. TSTF-440

SR 3.6.7.2 (2)

To provide effective iodine removal retention, the containment spray must be an alkaline solution. Since the RWST contents are normally acidic, the volume of the spray additive tank must provide a sufficient volume of spray additive to adjust pH for all water injected. This SR is performed to verify the availability of sufficient NaOH solution in the Spray Additive System. The 184 day Frequency was developed based on the low probability of an undetected change in tank volume occurring during the SR interval (the tank is isolated during normal unit operations). Tank level is also indicated and alarmed in the control room, so that there is high confidence that a substantial change in level would be detected. (2)

SR 3.6.7.3 (2)

This SR provides verification (by chemical analysis) of the NaOH concentration in the spray additive tank and is sufficient to ensure that the spray solution being injected into containment is at the correct pH level. The 184 day Frequency is sufficient to ensure that the concentration level of NaOH in the spray additive tank remains within the established limits. This is based on the low likelihood of an uncontrolled change in concentration (the tank is normally isolated) and the probability that any substantial variance in tank volume will be detected.

6 **INSERT 2**

This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.7.4

This SR provides verification that each automatic valve in the Spray Additive System flow path actuates to its correct position. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] (24) month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant (unit) 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 Surveillance when performed at the [18] (24) month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. (5) (2) (5)

SR 3.6.7.5

To ensure that the correct pH level is established in the borated water solution provided by the Containment Spray System, the flow rate in the Spray Additive System is verified once every 5 years. This SR provides assurance that the correct amount of NaOH will be metered into the flow path upon Containment Spray System initiation. Due to the passive nature of the spray additive flow controls, the 5 year Frequency is sufficient to identify component degradation that may affect flow rate. INSERT 3 (2)

REFERENCES 1. [U]FSAR, Chapter [15] (14.3.5.9) (2) (5)

2

INSERT 3

The test is performed by verifying the flow rate from the spray additive tank test line to each Containment Spray System train with each containment spray pump operating in the recirculation mode.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7 BASES, SPRAY ADDITIVE SYSTEM

1. Changes are made to reflect those changes made to the ISTS.
2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
3. Changes were made to the ISTS Required Action A.1 Bases to modify the reference to the Containment Spray System and move it to the end of the paragraph. The ISTS Bases states that the Containment Spray System would still be available and would remove some iodine from the containment atmosphere in the event of a DBA. This statement may not always be true since both Containment Spray Systems could be inoperable while also operating within ISTS 3.6.7 ACTION A.
4. Changes are made to be consistent with similar statements in the Bases (e.g., B 3.6.6).
5. The brackets have been removed and the proper plant specific information/value has been provided.
6. Changes are made to be consistent with similar statements in the Bases (e.g., B 3.7.5, B 3.7.6, and B 3.7.8).

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.7, SPRAY ADDITIVE SYSTEM

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 8

ITS 3.6.8, Hydrogen Recombiners

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION (LA.1)

LCO 3.6.8 — 3.6.4.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

ACTION A / ACTION C — With one hydrogen recombiner system inoperable, restore the inoperable system to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours.

Add proposed ACTION B (L.2)

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE:

SR 3.6.8.1 — a. At least once per 18 [24] (L.3) months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to ≥ 700°F within 90 minutes and is maintained for at least 2 hours. (LA.2)

b. At least once per 18 [24] (L.3) months by:

1. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits. (L.4)

SR 3.6.8.2 — 2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiners (i.e., loose wiring or structural connections, deposits of foreign materials, etc.) (LA.2)

SR 3.6.8.1 — 3. Verifying during a recombiner system functional test that the heater sheath temperature increases to ≥ 1200°F within 5 hours and is maintained for at least 4 hours. (LA.2)

SR 3.6.8.3 — 4. Verifying the integrity of all heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be ≥ 10,000 ohms. (LA.2)

ITS 3.6.8

A.1

ITS

CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION

LA.1

LCO 3.6.8 3.6.4.2 Two independent containment hydrogen recombiner systems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

ACTION A With one hydrogen recombiner system inoperable, restore the inoperable system to OPERABLE status within 30 days

ACTION C or be in at least HOT STANDBY within the next 6 hours.

Add proposed ACTION B — L.2

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE:

SR 3.6.8.1 a. At least once per 18 [24] months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to ≥700 °F within 90 minutes and is maintained for at least 2 hours. — L.3, LA.2

b. At least once per 18 [24] months by: — L.3

1. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits. — L.4

SR 3.6.8.2 2. Verifying through a visual examination that there is no evidence of abnormal conditions within the recombiners (i.e., loose wiring or structural connections, deposits of foreign materials, etc.). — LA.2

SR 3.6.8.1 3. Verifying during a recombiner system functional test that the heater sheath temperature increases to ≥ 1200 °F within 5 hours and is maintained for at least 4 hours. — LA.2

SR 3.6.8.3 4. Verifying the integrity of all heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be ≥ 10,000 ohms. — LA.2

DISCUSSION OF CHANGES
ITS 3.6.8, HYDROGEN RECOMBINERS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.4.2 states that two "independent" containment hydrogen recombiner systems shall be OPERABLE. ITS 3.6.8 also states that two hydrogen recombiners shall be OPERABLE, but does not specify that the hydrogen recombiners are "independent." This changes the CTS by moving the detail that the hydrogen recombiners are "independent" to the Bases.

The removal of this detail, which is related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that two hydrogen recombiners shall be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.4.2.a, CTS 4.6.4.2.b.2, CTS 4.6.4.2.b.3, and CTS 4.6.4.2.b.4 include details for performance of functional tests, a resistance to ground test, and a visual examination. ITS SR 3.6.8.1, ITS SR 3.6.8.2, and ITS SR 3.6.8.3 together require that each of these three types of tests be performed. This changes CTS by moving the detail of how these tests are performed to the Bases.

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DISCUSSION OF CHANGES
ITS 3.6.8, HYDROGEN RECOMBINERS

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform the functional test, visual examination, and resistance to ground test. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 Not used.

L.2 *(Category 3 – Relaxation of Completion Time)* CTS 3.6.4.2 does not provide an Action for two inoperable hydrogen recombiners. Thus, CTS 3.0.3 is required to be entered when both hydrogen recombiners are inoperable. ITS 3.6.8 ACTION B requires that with two hydrogen recombiners inoperable, to verify by administrative means that the hydrogen control function is maintained within one hour, and to restore one hydrogen recombiner to OPERABLE status within 7 days. A shutdown is only required if the hydrogen control function is not maintained within 1 hour or if one hydrogen recombiner is not restored to OPERABLE status within 7 days. This changes the CTS by allowing both hydrogen recombiners to be inoperable for 7 days, provided the hydrogen control function is maintained, prior to requiring a unit shutdown, instead of entering CTS 3.0.3 immediately.

The purpose of CTS 3.6.4.2 is to provide the capability for controlling bulk hydrogen concentration in containment to less than the lower flammable concentration following a Design Basis Accident. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the alternate hydrogen control function. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. The change allows 7 days to restore at least one inoperable hydrogen recombiner to OPERABLE status when both hydrogen recombiners are inoperable, instead of entering LCO 3.0.3. The criteria for allowing this additional restoration time verifies that an alternate means of performing the hydrogen control function is available. The alternate means of performing the hydrogen control function is described in letter AEP:NRC:00500, dated January 12, 1981. The description explains that the alternate means of hydrogen control ensures that failure of both recombiner systems will not leave the containment without hydrogen control capability. Seven days is a reasonable time to allow two hydrogen recombiners to be inoperable because the hydrogen control function is maintained and because of the low probability of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit. This change is designated as less

DISCUSSION OF CHANGES
ITS 3.6.8, HYDROGEN RECOMBINERS

restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the CTS.

L.3 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.6.4.2.a requires the performance of a recombiner functional test to ensure the minimum heater sheath temperatures increase to ≥ 700°F within 90 minutes and is maintained for at least 2 hours. CTS 4.6.4.2.b.3 requires the performance of a recombiner system functional test to ensure the heater sheath temperatures increase to ≥ 1200°F within 5 hours and is maintained for at least 4 hours. CTS 4.6.4.2.b.2 requires the verification through visual examination that there is no evidence of abnormal conditions within the recombiners. CTS 4.6.4.2.b.4 requires the verification of the integrity of all heater electrical circuits by performing a continuity and resistance to ground test following the required functional tests. These tests are required to be performed every 18 months. ITS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.3 require the same testing requirements, however the Surveillance Frequency has been changed to 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.6.4.2 is to verify the OPERABILITY of the containment hydrogen recombiner systems. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the containment hydrogen recombiners is acceptable because the containment hydrogen recombiners are designed to be single failure proof, therefore ensuring system availability in the event of a failure of one hydrogen recombiner. Based on the inherent system and component reliability, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data revealed that there were a number of tests indicated as failures. These failures were reviewed and there were no failures indicative of a time-based failure mechanism that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.4 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.6.4.2.b.1 requires performing a CHANNEL CALIBRATION of all instrumentation and control circuits on each hydrogen recombiner once per 18 months. ITS 3.6.8 does not include this requirement. This changes the CTS by deleting a Surveillance Requirement.

DISCUSSION OF CHANGES
ITS 3.6.8, HYDROGEN RECOMBINERS

The purpose of CTS 4.6.4.2.b.1 is to verify that the hydrogen recombiner instrumentation and control circuits respond correctly to known inputs. This change is acceptable because the deleted Surveillance Requirement is not necessary to be in Technical Specifications to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. The requirement to perform the functional test, visual examination, and resistance to ground test is retained and is adequate to verify that each hydrogen recombiner will perform its function when required. The hydrogen recombiners are manually initiated since flammable limits would not be reached until several days after a DBA. A CHANNEL CALIBRATION is still required as part of ITS 3.3.3 for the hydrogen analyzers, which are used to determine when to manually initiate the hydrogen recombiners. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.8 Hydrogen Recombiners (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (if permanently installed) ①

3.6.4.2 LCO 3.6.8 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action	A. One hydrogen recombiner inoperable.	A.1 - NOTE - LCO 3.0.4 is not applicable. Restore hydrogen recombiner to OPERABLE status.	TSTF-359 30 days	
DOC L.2	B. Two hydrogen recombiners inoperable.	B.1 Verify by administrative means that the hydrogen control function is maintained. AND B.2 Restore one hydrogen recombiner to OPERABLE status.	1 hour AND Once per 12 hours thereafter ③ 7 days	②
Action	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours	

CTS

Hydrogen Recombiners (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (1)
3.6.8

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.6.4.2.a, 4.6.4.2.b.3	SR 3.6.8.1	Perform a system functional test for each hydrogen recombiner.	[18] 24 months (2)
4.6.4.2.b.2	SR 3.6.8.2	Visually examine each hydrogen recombiner enclosure and verify there is no evidence of abnormal conditions.	[18] 24 months (2)
4.6.4.2.b.4	SR 3.6.8.3	Perform a resistance to ground test for each heater phase.	[18] 24 months (2)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8, HYDROGEN RECOMBINERS

1. The headings for ISTS 3.6.8 include the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual (if permanently installed)). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made.

2. The brackets are removed and the proper plant specific information/value is provided.

3. The hydrogen control function is maintained by one train of the Distributed Ignition System, one train of the Containment Spray System, and one train of the Containment Air Recirculation/Hydrogen Skimmer System, which are in the ITS. Therefore, as discussed in the second Reviewer's Note to Bases ACTIONS B.1 and B.2, the periodic 12 hour verification is not required.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.8 Hydrogen Recombiners (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (if permanently installed) ①

BASES

BACKGROUND

The function of the hydrogen recombiners is to eliminate the potential breach of containment due to a hydrogen oxygen reaction.

Per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and GDC 41, "Containment Atmosphere Cleanup" (Ref. 2), hydrogen recombiners are required to reduce the hydrogen concentration in the containment following a loss of coolant accident (LOCA) or steam line break (SLB). The recombiners accomplish this by recombining hydrogen and oxygen to form water vapor. The vapor remains in containment, thus eliminating any discharge to the environment. The hydrogen recombiners are manually initiated since flammable limits would not be reached until several days after a Design Basis Accident (DBA). ② ③ ③ hours

Two 100% capacity independent hydrogen recombiner systems are provided. Each consists of controls located in the control room, a power supply and a recombiner. Recombination is accomplished by heating a hydrogen air mixture above 1150°F. The resulting water vapor and discharge gases are cooled prior to discharge from the recombiner. A single recombiner is capable of maintaining the hydrogen concentration in containment below the 4.0 volume percent (v/o) flammability limit. Two recombiners are provided to meet the requirement for redundancy and independence. Each recombiner is powered from a separate Engineered Safety Features bus, and is provided with a separate power panel and control panel. ③ 4.0 ③

APPLICABLE SAFETY ANALYSES

The hydrogen recombiners provide for the capability of controlling the bulk hydrogen concentration in containment to less than the lower flammable concentration of 4.0 v/o following a DBA. This control would prevent a containment wide hydrogen burn, thus ensuring the pressure and temperature assumed in the analyses are not exceeded. The limiting DBA relative to hydrogen generation is a LOCA. Hydrogen may accumulate in containment following a LOCA as a result of: ③ 4.0

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant, ④ ③

BASES

APPLICABLE SAFETY ANALYSES (continued)

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump, (3)

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space), or (3)

d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.

(4)

To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 2 are used to maximize the amount of hydrogen calculated. (2) (3)

Based on the conservative assumptions used to calculate the hydrogen concentration versus time after a LOCA, the hydrogen concentration in the primary containment would reach 3.5 v/o about 6 days after the LOCA and 4.0 v/o about 2 days later if no recombiner was functioning (Ref. 3). Initiating the hydrogen recombiners when the primary containment hydrogen concentration reaches 3.5 v/o will maintain the hydrogen concentration in the primary containment below flammability limits. (Ref. 4) (12 hours) (13 hours) (3) (3)

The hydrogen recombiners are designed such that, with the conservatively calculated hydrogen generation rates discussed above, a single recombiner is capable of limiting the peak hydrogen concentration in containment to less than 4.0 v/o (Ref. 4). The Hydrogen Purge System is similarly designed such that one of two redundant trains is an adequate backup to the redundant hydrogen recombiners. (5)

The hydrogen recombiners satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). (3)

LCO

Two hydrogen recombiners must be OPERABLE. This ensures operation of at least one hydrogen recombiner in the event of a worst case single active failure.

Operation with at least one hydrogen recombiner ensures that the post LOCA hydrogen concentration can be prevented from exceeding the flammability limit.

BASES

APPLICABILITY

In MODES 1 and 2, two hydrogen recombiners are required to control the hydrogen concentration within containment below its flammability limit of 4.0 v/o following a LOCA, assuming a worst case single failure. (3)

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the hydrogen recombiners is low. Therefore, the hydrogen recombiners are not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA are low, due to the pressure and temperature limitations in these MODES. Therefore, hydrogen recombiners are not required in these MODES.

ACTIONS

A.1

With one containment hydrogen recombiner inoperable, the inoperable recombiner must be restored to OPERABLE status within 30 days. In this condition, the remaining OPERABLE hydrogen recombiner is adequate to perform the hydrogen control function. However, the overall reliability is reduced because a single failure in the OPERABLE recombiner could result in reduced hydrogen control capability. The 30 day Completion Time is based on the availability of the other hydrogen recombiner, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit. (3)

Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one recombiner is inoperable. This allowance is based on the availability of the other hydrogen recombiner, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit. (TSTF-359)

BASES

ACTIONS (continued)

B.1 and B.2

- REVIEWER'S NOTE -
This Condition is only allowed for units with an alternate hydrogen control system acceptable to the technical staff. (6)

With two hydrogen recombiners inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by [the containment Hydrogen Purge System/ Hydrogen Recombiner/Hydrogen Ignitor System/ Hydrogen Mixing System/ Containment Air Dilution System/ Containment Inerting System]. INSERT 1A (7) *The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist.*

function is maintained (9)

- REVIEWER'S NOTE -
The following is to be used if a non-Technical Specification alternate hydrogen control function is used to justify this Condition: In addition, the alternate hydrogen control system capability must be verified once per 12 hours thereafter to ensure its continued availability. (6)

[Both] the [initial] verification [and all subsequent verifications] may be performed as an administrative check by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the Surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two hydrogen recombiners inoperable for up to 7 days. Seven days is a reasonable time to allow two hydrogen recombiners to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit. (1) (2)-(5)

INSERT 1 (8)

C.1

If the inoperable hydrogen recombiner(s) cannot be restored to OPERABLE status within the required Completion Time, the ~~plant~~ unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the ~~plant~~ unit must be brought to at least MODE 3 within 6 hours. The Completion Time of 6 hours is reasonable, based on operating (3)

(7) **INSERT 1A**

one train of the Distributed Ignition System, one train of the Containment Spray System, and one train of the Containment Air Recirculation/Hydrogen Skimmer System are OPERABLE

(8) **INSERT 1**

If any Required Action and associated Completion Time is not met,

BASES

ACTIONS (continued)

experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. unit (3)

SURVEILLANCE REQUIREMENTS

SR 3.6.8.1

Performance of a system functional test for each hydrogen recombiner ensures the recombiners are operational and can attain and sustain the temperature necessary for hydrogen recombination. In particular, this SR verifies that the minimum heater sheath temperature increases to ≥ 700°F in ≤ 90 minutes. After reaching 700°F, the power is increased to maximum power for approximately 2 minutes and power is verified to be ≥ 60 kW. INSERT 2 (3)

Operating experience has shown that these components usually pass the Surveillance when performed at the 18 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. (7)

SR 3.6.8.2

INSERT 3 (3)

This SR ensures there are no physical problems that could affect recombiner operation. Since the recombiners are mechanically passive, they are not subject to mechanical failure. The only credible failure involves loss of power, blockage of the internal flow, missile impact, etc.

A visual inspection is sufficient to determine abnormal conditions that could cause such failures. The 18 24 month Frequency for this SR was developed considering the incidence of hydrogen recombiners failing the SR in the past is low. (7)

SR 3.6.8.3

This SR requires performance of a resistance to ground test for each heater phase to ensure that there are no detectable grounds in any heater phase. This is accomplished by verifying that the resistance to ground for any heater phase is ≥ 10,000 ohms. INSERT 4 (3)

The 18 24 month Frequency for this Surveillance was developed considering the incidence of hydrogen recombiners failing the SR in the past is low. (7)

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(3) **INSERT 2**

and is maintained ≥2 hours, and it verifies that the minimum heater sheath temperature increases to ≥ 1200°F in ≤ 5 hours and is maintained ≥ 4 hours.

(3) **INSERT 3**

(e.g., loose wiring or structural connections, deposits of foreign material, etc.)

(3) **INSERT 4**

following the completion of SR 3.6.8.1.

BASES

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41. ②
3. Regulatory Guide 1.7, Revision 1. (Safety) (2.) (March 1971) ③
4. FSAR Section 6.2. (U) (14.3.6.4) ① ③

(3. UFSAR, Figure 14.3.6-10.) ③

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8 BASES, HYDROGEN RECOMBINERS

1. Changes are made to be consistent with the changes made to the Specification.

2. CNP Units 1 and 2 were designed and under construction prior to the promulgation of 10 CFR 50, Appendix A. CNP Units 1 and 2 were designed and constructed to meet the intent of the proposed General Design Criteria, published in 1967. However, the CNP UFSAR contains discussions of the Plant Specific Design Criteria (PSDCs) used in the design of CNP Units 1 and 2. Bases references to the 10 CFR 50, Appendix A criteria have been replaced with references to the appropriate section of the UFSAR.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

5. The statement in the Applicable Safety Analyses Section concerning the design of the Hydrogen Purge System, which is a backup to the hydrogen recombiners (ISTS only), has been deleted since it is not appropriate to be discussed in this section of the Bases. The backup is discussed in the Bases for ACTIONS B.1 and B.2, since Required Action B.1 requires a backup to be maintained.

6. Reviewer's Notes are deleted.

7. The brackets have been removed and the proper plant specific information/value has been provided.

8. The words in the ISTS do not convey the complete intent of the actual ISTS Condition and when the Condition should be entered. Therefore, to be consistent with the actual ISTS Condition words, the Bases have been modified.

9. Changes have been made to be consistent with the ISTS Required Action.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.8, HYDROGEN RECOMBINERS

There are no specific NSHC discussions for this Specification.

ATTACHMENT 9

ITS 3.6.9, Distributed Ignition System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

DISTRIBUTED IGNITION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.9 — 3.6.4.3 Both trains of the Distributed Ignition System shall be OPERABLE. ← Add second part of LCO 3.6.9 — L.1

APPLICABILITY: MODES 1 and 2.

ACTION:

ACTION A — With one train of the Distributed Ignition System inoperable:

a. Restore the inoperable train to OPERABLE status within 7 days, or

b. Perform surveillance requirement 4.6.4.3a once per 7 days on the OPERABLE train until the inoperable train is restored to OPERABLE status. — A.2

ACTION B — With no OPERABLE hydrogen igniter in one containment region, restore one hydrogen igniter in the affected containment region to OPERABLE status within 7 days,

ACTION C — or be in HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.4.3 Each train of the Distributed Ignition System shall be demonstrated OPERABLE:

SR 3.6.9.1 — a. Once per 92 [184] days by energizing the supply breakers and verifying that at least 34 of 35 igniters are energized. — LA.1, L.3

SR 3.6.9.2 — b. Once per 92 [184] days, by verifying at least one hydrogen igniter is OPERABLE in each containment region. — L.3, L.1

SR 3.6.9.3 — c. Once per 18 [24] months by verifying the temperature of each igniter is a minimum 1700°F. — L.2

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

DISTRIBUTED IGNITION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.9 — 3.6.4.3 Both trains of the Distributed Ignition System shall be OPERABLE. [Add second part of LCO 3.6.9] (L.1)

APPLICABILITY: MODES 1 and 2.

ACTION:

ACTION A — With one train of the Distributed Ignition System inoperable:

a. Restore the inoperable train to OPERABLE status within 7 days, or

b. Perform surveillance requirement 4.6.4.3a once per 7 days on the OPERABLE train until the inoperable train is restored to OPERABLE status. (A.2)

ACTION B / ACTION C — With no OPERABLE hydrogen igniter in one containment region, restore one hydrogen igniter in the affected containment region to OPERABLE status within 7 days or be in HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.6.4.3 Each train of the Distributed Ignition System shall be demonstrated OPERABLE:

SR 3.6.9.1 — a. Once per 92 [184] days by energizing the supply breakers and verifying that at least 34 of 35 igniters are energized. (LA.1) (L.3)

SR 3.6.9.2 — b. Once per 92 [184] days, by verifying at least one hydrogen igniter is OPERABLE in each containment region. (L.1)

SR 3.6.9.3 — c. Once per 18 [24] months by verifying the temperature of each igniter is a minimum 1700°F. (L.2)

DISCUSSION OF CHANGES
ITS 3.6.9, DISTRIBUTED IGNITION SYSTEM (DIS)

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.6.4.3 Action b requires the performance of the Surveillance Requirement 4.6.4.3.a once per 7 days on the OPERABLE train until the inoperable train is restored to OPERABLE status. ITS 3.6.9 Required Action A.2 requires the performance of SR 3.6.9.1 on the OPERABLE train once per 7 days under the same conditions. This changes the CTS by deleting the detail that the Surveillance Requirement must be performed until the inoperable train is restored to OPERABLE status.

The purpose of CTS 3.6.4.3 Action b is to ensure the Surveillance Requirement is performed once per 7 days as long as the unit is operating in the Actions. ITS LCO 3.0.2 states that if the LCO is met prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. Since the requirement of CTS 3.6.4.3 Action b is stated in ITS LCO 3.0.2 and it is applicable to ITS 3.6.9, the explicit statement in the Required Action is not necessary. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.6.4.3.a requires the energization of the supply breakers to each train of the Distributed Ignition System (DIS) and the verification that at least 34 of 35 ignitors are energized. ITS SR 3.6.9.1 does not specify the total numbers of ignitors (i.e., 35). This changes the CTS by moving details of the total number of ignitors to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate

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protection of public health and safety. The ITS still retains the requirement to energize each DIS train power supply breaker and verify ≥ 34 ignitors are energized in each train. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.6.4.3 requires both trains of the Distributed Ignition System (DIS) to be OPERABLE. CTS 4.6.4.3.b requires verification that each DIS train have at least one OPERABLE hydrogen ignitor in each region. Thus, this Surveillance Requirement effectively defines that OPERABILITY of a DIS train includes one hydrogen ignitor per containment region. ITS 3.6.9 requires both Distributed Ignition System trains to be OPERABLE and that each containment region shall have at least one OPERABLE hydrogen ignitor. ITS SR 3.6.9.2 also requires verification that at least one hydrogen ignitor is OPERABLE in each containment region. This changes the CTS by requiring only one OPERABLE hydrogen ignitor in each containment region, instead of the current requirement of one OPERABLE hydrogen ignitor per DIS train in each containment region.

The purpose of CTS 3.6.4.3 is to that the hydrogen in the containment can be burned in a controlled manner. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. When one DIS train does not have an OPERABLE hydrogen ignitor in a containment region, the other DIS train is still providing an OPERABLE hydrogen ignitor in the containment region. This remaining hydrogen ignitor is capable of burning the hydrogen in the associated containment region in a controlled manner. In addition, if during a DBA this remaining hydrogen ignitor fails, there would always be ignition capability in the adjacent containment regions that would provide redundant capability by flame propagation to the containment region with no OPERABLE hydrogen ignitors. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L.2 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.6.4.3.c requires verification that the temperature of each ignitor is a minimum of 1700°F every 18 months. ITS SR 3.6.9.3 requires the same verification every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

DISCUSSION OF CHANGES
ITS 3.6.9, DISTRIBUTED IGNITION SYSTEM (DIS)

The purpose of CTS 4.6.4.3.c is to ensure the surface temperature of each glow plug is measured to be greater than 1700°F to demonstrate that a temperature sufficient for ignition is achieved. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that these tests normally pass their Surveillances at the current Frequency. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the DIS temperature verification is acceptable because the DIS is verified to OPERABLE during the cycle by energizing the supply breakers and verifying at least 34 ignitors are energized. The DIS is a relatively simple, manually initiated system that does not interface or interact with other systems and is only dependent on power to operate. Thus, there are limited failure mechanisms that could impact the system. The primary operating element associated with the DIS is analogous to a glow plug that provides a localized ignition source for the hydrogen generated in the containment following certain accidents. Additional justification for extending the Surveillance test interval is that the DIS is designed to be single failure proof, therefore ensuring system availability in the event of a failure of one DIS train. Based on the inherent system and component simplicity and reliability, testing during the cycle, system redundancy, and results of the failure analysis evaluation, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.3 *(Category 9 – Surveillance Frequency Change Using GL 91-04 Guidelines, Non-24 Month Type Change)* CTS 4.6.4.3.a requires energizing the supply breakers and verifying at least 34 ignitors per train are energized (including continuity checks and verification of voltage regulator function) and CTS 4.6.4.3.b requires verifying at least one hydrogen ignitor per train is OPERABLE in each containment region. These tests are required every 92 days. ITS SR 3.6.9.1 and SR 3.6.9.2 require the performance of similar Surveillances (as modified by DOC L.1), but at a Frequency of 184 days. This changes the CTS by extending the Frequency of the Surveillances from 92 days (i.e., a maximum of 115 days accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 184 days (i.e., a maximum of 230 days accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2).

The purpose of CTS 4.6.4.3.a and b is to ensure the Distributed Ignition System will function as designed during an analyzed event. An evaluation of the surveillance interval extension was performed, based on the same approach described in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to

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DISCUSSION OF CHANGES
ITS 3.6.9, DISTRIBUTED IGNITION SYSTEM (DIS)

this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for these Surveillances is acceptable because the Distributed Ignition System is a relatively simple, manually initiated system that does not interface or interact with other systems and is only dependent on electrical power to operate. Thus there are limited failure mechanisms that could impact the system. The primary operating element associated with the Distributed Ignition System is analogous to a glow plug that provides a localized ignition source for the hydrogen generated in the containment following certain accidents. In addition, there are two independent and redundant trains, each of which is fully capable of performing the required safety function. The surveillance history was reviewed and did not indicate any failures that would impact the ability of the system to carry out its required safety function. Therefore, based on the inherent system and component simplicity and reliability, system redundancy, and the results of the failure analysis evaluation, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 184 day Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (230 days) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

HIS (Ice Condenser) 3.6.10

CTS

3.6 CONTAINMENT SYSTEMS

3.6.10 Hydrogen Ignition System (HIS) (Ice Condenser)

3.6.4.3 LCO 3.6.10 Two HIS trains shall be OPERABLE.

INSERT 1

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One HIS train inoperable.	A.1	Restore HIS train to OPERABLE status.	7 days
	OR		
	A.2	Perform SR 3.6.10.1 on the OPERABLE train.	Once per 7 days
B. One containment region with no OPERABLE hydrogen ignitor.	B.1	Restore one hydrogen ignitor in the affected containment region to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.10.1	Energize each HIS train power supply breaker and verify ≥ 32 ignitors are energized in each train.	92 days
SR 3.6.10.2	Verify at least one hydrogen ignitor is OPERABLE in each containment region.	92 days

(2) INSERT 1

AND

Each containment region shall have at least one OPERABLE hydrogen ignitor.

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(D) HIS (Ice Condenser) (1)
3.6.10 (9)

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY
4.6.4.3.c	SR 3.6.10.3 (9)	Energize each hydrogen ignitor and verify temperature is ≥ [1700]°F.	[18] months (1) 24 (3)

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9, DISTRIBUTED IGNITION SYSTEM (DIS)

1. The ISTS 3.6.10 title "Hydrogen Ignition System" has been changed to "Distributed Ignition System" consistent with the CNP site specific terminology. The headings for ISTS 3.6.10 include the parenthetical expression (Ice Condenser). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, the CNP design does not include the Hydrogen Mixing System. Therefore, ISTS 3.6.9 is not included in the ITS and ISTS 3.6.10 is renumbered as ITS 3.6.9.

2. The second part of the LCO has been added to ensure consistency between the LCO, ACTIONS, and Surveillance Requirements. The ISTS LCO, Actions, and Surveillances do not match up since there is no explicit statement in the LCO requiring at least one hydrogen ignitor to be OPERABLE in each containment region. LCO 3.0.1 requires LCOs to be met during the MODES or other specified conditions in the Applicability. LCO 3.0.2 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. Currently, if one ignitor is inoperable in each train and the inoperable ignitors are in the same containment region, the LCO is still met. Thus, ACTION B is not required to be entered since the LCO is still met. Therefore, the inclusion of the second portion of the LCO ensures consistency between the LCO, ACTIONS, and Surveillance Requirements.

3. The brackets are removed and the proper plant specific information/value is provided.

4. The Frequency of ITS SR 3.6.9.1 and SR 3.6.9.2 has been changed from 92 days to 184 days. The technical justification for this change is consistent with the guidelines of Generic Letter 91-04, and is discussed in ITS 3.6.9 DOC L.3.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.10 Hydrogen Ignition System (HIS) (Ice Condenser)

BASES

BACKGROUND

The HIS reduces the potential for breach of primary containment due to a hydrogen oxygen reaction in post accident environments. The HIS is required by 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1) and Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2) to reduce the hydrogen concentration in the primary containment following a degraded core accident. The HIS must be capable of handling an amount of hydrogen equivalent to that generated from a metal water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the plenum volume).

10 CFR 50.44 (Ref. 1) requires units with ice condenser containments to install suitable hydrogen control systems that would accommodate an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water. The HIS provides this required capability. This requirement was placed on ice condenser units because of their small containment volume and low design pressure (compared with pressurized water reactor dry containments). Calculations indicate that if hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water were to collect in the primary containment, the resulting hydrogen concentration would be far above the lower flammability limit such that, if ignited from a random ignition source, the resulting hydrogen burn would seriously challenge the containment and safety systems in the containment.

The HIS is based on the concept of controlled ignition using thermal ignitors, designed to be capable of functioning in a post accident environment, seismically supported, and capable of actuation from the control room. A total of 64 ignitors are distributed throughout the various regions of containment in which hydrogen could be released or to which it could flow in significant quantities. The ignitors are arranged in two independent trains such that each containment region has at least two ignitors, one from each train, controlled and powered redundantly so that ignition would occur in each region even if one train failed to energize.

When the HIS is initiated, the ignitor elements are energized and heat up to a surface temperature ≥ 1700°F. At this temperature, they ignite the hydrogen gas that is present in the airspace in the vicinity of the ignitor. The HIS depends on the dispersed location of the ignitors so that local

BASES

BACKGROUND (continued)

pockets of hydrogen at increased concentrations would burn before reaching a hydrogen concentration significantly higher than the lower flammability limit. Hydrogen ignition in the vicinity of the ignitors is assumed to occur when the local hydrogen concentration reaches 8.0 volume percent (v/o) and results in 85% of the hydrogen present being consumed.

APPLICABLE SAFETY ANALYSES

The HIS causes hydrogen in containment to burn in a controlled manner as it accumulates following a degraded core accident (Ref. 6). Burning occurs at the lower flammability concentration, where the resulting temperatures and pressures are relatively benign. Without the system, hydrogen could build up to higher concentrations that could result in a violent reaction if ignited by a random ignition source after such a buildup.

The hydrogen ignitors are not included for mitigation of a Design Basis Accident (DBA) because an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water is far in excess of the hydrogen calculated for the limiting DBA loss of coolant accident (LOCA). The hydrogen concentration resulting from a DBA can be maintained less than the flammability limit using the hydrogen recombiners. The hydrogen ignitors, however, have been shown by probabilistic risk analysis to be a significant contributor to limiting the severity of accident sequences that are commonly found to dominate risk for units with ice condenser containments. The hydrogen ignitors satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

Two HIS trains must be OPERABLE with power from two independent, safety related power supplies.

For this unit, an OPERABLE HIS train consists of 33 of 33 ignitors energized on the train.

Operation with at least one HIS train ensures that the hydrogen in containment can be burned in a controlled manner. Unavailability of both HIS trains could lead to hydrogen buildup to higher concentrations, which could result in a violent reaction if ignited. The reaction could take place fast enough to lead to high temperatures and overpressurization of containment and, as a result, breach containment or cause containment leakage rates above those assumed in the safety analyses. Damage to safety related equipment located in containment could also occur.

INSERT 1

(1) **INSERT 1**

Each containment region must contain at least one OPERABLE hydrogen ignitor. This ensures there is at least one OPERABLE hydrogen ignitor from one of the two DIS trains.

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BASES

APPLICABILITY

Requiring OPERABILITY in MODES 1 and 2 for the HIS ensures its immediate availability after safety injection and scram actuated on a LOCA initiation. In the post accident environment, the two HIS subsystems are required to control the hydrogen concentration within containment to near its flammability limit of 4.1 v/o assuming a worst case single failure. This prevents overpressurization of containment and damage to safety related equipment and instruments located within containment. ① ① ② 4.0

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen production after a LOCA would be significantly less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the HIS is low. Therefore, the HIS is not required in MODES 3 and 4. ①

In MODES 5 and 6, the probability and consequences of a LOCA are reduced due to the pressure and temperature limitations of these MODES. Therefore, the HIS is not required to be OPERABLE in MODES 5 and 6. ①

ACTIONS

A.1 and A.2

With one HIS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days or the OPERABLE train must be verified OPERABLE frequently by performance of SR 3.6.10.1. The 7 day Completion Time is based on the low probability of the occurrence of a degraded core event that would generate hydrogen in amounts equivalent to a metal water reaction of 75% of the core cladding, the length of time after the event that operator action would be required to prevent hydrogen accumulation from exceeding this limit, and the low probability of failure of the OPERABLE HIS train. Alternative Required Action A.2, by frequent surveillances, provides assurance that the OPERABLE train continues to be OPERABLE. ① ① ⑨ ① ⑤

B.1

Condition B is one containment region with no OPERABLE hydrogen ignitor. Thus, while in Condition B, or in Conditions A and B simultaneously, there would always be ignition capability in the adjacent containment regions that would provide redundant capability by flame propagation to the region with no OPERABLE ignitors.

BASES

ACTIONS (continued)

Required Action B.1 calls for the restoration of one hydrogen ignitor in each region to OPERABLE status within 7 days. The 7 day Completion Time is based on the same reasons given under Required Action A.1.

C.1

INSERT 2

The unit must be placed in a MODE in which the LCO does not apply if the HIS subsystem(s) cannot be restored to OPERABLE status within the associated Completion Time. This is done by placing the unit in at least MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.10.1

This SR confirms that ≥ [32] 34 of [33] 35 hydrogen ignitors can be successfully energized in each train. The ignitors are simple resistance elements. Therefore, energizing provides assurance of OPERABILITY. The allowance of one inoperable hydrogen ignitor is acceptable because, although one inoperable hydrogen ignitor in a region would compromise redundancy in that region, the containment regions are interconnected so that ignition in one region would cause burning to progress to the others (i.e., there is overlap in each hydrogen ignitor's effectiveness between regions). The Frequency of 92 184 days has been shown to be acceptable through operating experience.

SR 3.6.10.2

This SR confirms that the two inoperable hydrogen ignitors allowed by SR 3.6.10.1 (i.e., one in each train) are not in the same containment region. The Frequency of 92 184 days is acceptable based on the Frequency of SR 3.6.10.1, which provides the information for performing this SR.

SR 3.6.10.3

A more detailed functional test is performed every 18 24 months to verify system OPERABILITY. Each glow plug is visually examined to ensure that it is clean and that the electrical circuitry is energized. All ignitors (glow plugs), including normally inaccessible ignitors, are visually checked for a glow to verify that they are energized. Additionally, the surface temperature of each glow plug is measured to be ≥ [1700]°F to demonstrate that a temperature sufficient for ignition is achieved. The

(6) **INSERT 2**

If any Required Action and associated Completion Time is not met,

BASES

SURVEILLANCE REQUIREMENTS (continued) 24 ③

(18) month Frequency is based on the need to perform this 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. unit ④ 24 ③

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41. ②
3. FSAR, Section 6.2. 14.3.6.6 ④ ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9 BASES, DISTRIBUTED IGNITION SYSTEM (DIS)

1. Changes have been made to be consistent with changes made to the Specification.

2. CNP Units 1 and 2 were designed and under construction prior to the promulgation of 10 CFR 50, Appendix A. CNP Units 1 and 2 were designed and constructed to meet the intent of the proposed General Design Criteria, published in 1967. However, while the CNP UFSAR contains discussions of the Plant Specific Design Criteria (PSDCs) used in the design of CNP Units 1 and 2, there is no specific PSDC concerning containment atmosphere cleanup (hydrogen). Therefore, Bases references to the 10 CFR 50, Appendix A criteria have been deleted.

3. The brackets are removed and the proper plant specific information/value is provided.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. Typographical/grammatical error corrected.

6. The words in the ISTS do not convey the complete intent of the actual ISTS Condition and when the Condition should be entered. Therefore, to be consistent with the actual ISTS Condition words, the Bases have been modified.

7. Changes have been made to be consistent with the ISTS.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.9, DISTRIBUTED IGNITION SYSTEM (DIS)

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 10

ITS 3.6.10, CEQ System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT AIR RECIRCULATION SYSTEMS

LIMITING CONDITION FOR OPERATION

LCO 3.6.10 — 3.6.5.6 Two ~~independent~~ containment air recirculation systems shall be OPERABLE. (LA.1)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A — With one containment air recirculation system inoperable, restore the inoperable system to OPERABLE status within 72 hours or

ACTION B — be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.6 Each containment air recirculation system shall be demonstrated OPERABLE at least once per 3 months on a ~~STAGGERED TEST BASIS~~ by: (L.1)

SR 3.6.10.1, SR 3.6.10.4 — a. Verifying that the return air fan starts on an ~~auto-start~~ [actual or simulated] signal after a 120 ± 12 seconds delay, the motor operated valve in the suction line to the containment's lower compartment opens ~~when the return air fan starts~~ [actual or simulated signal], and the return air fan operates for at least 15 minutes (applicable in MODES 1, 2, and 3 only), (L.2) (LA.2) [actual] (L.2)

SR 3.6.10.2 — b. Verifying that with the return air fan discharge backdraft damper locked closed and the fan motor energized, the static pressure between the fan discharge and the backdraft damper is ≥ 4.0 inches, water gauge,

SR 3.6.10.3 — c. Verifying that with the fan off, the return air fan damper opens when a force of ≤ 11 lbs is applied to the counterweight, and

~~d. Verifying that the return air fan can be manually started from the control room, and the motor operated valve in the suction line to the containment's lower compartment opens when the return air fan starts.~~ (L.3)

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

CONTAINMENT AIR RECIRCULATION SYSTEMS

LIMITING CONDITION FOR OPERATION

LA.1

LCO 3.6.10 — 3.6.5.6 Two ~~independent~~ containment air recirculation systems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

72 — L.4

ACTION A — With one containment air recirculation system inoperable, restore the inoperable system to OPERABLE status within ~~48~~ hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the
ACTION B — following 30 hours.

SURVEILLANCE REQUIREMENTS

L.1

4.6.5.6 Each containment air recirculation system shall be demonstrated OPERABLE at least once per 92 days on a ~~STAGGERED TEST BASIS~~ by:

actual or simulated — L.2

SR 3.6.10.1, SR 3.6.10.4 — a. Verifying that the return air fan starts on an ~~auto-start~~ signal after a 120 ± 12 seconds delay, the motor operated valve in the suction line to the containment's lower compartment opens ~~when the return air fan starts~~, and the return air fan operates for at least 15 minutes (applicable in MODES 1, 2, and 3 only).

actual — LA.2

or simulated signal — L.2

SR 3.6.10.2 — b. Verifying that with the return air fan discharge backdraft damper locked closed and the fan motor energized, the static pressure between the fan discharge and the backdraft damper is ≥ 4.0 inches, water gauge.

SR 3.6.10.3 — c. Verifying that with the fan off, the return air fan damper opens when a force of ≤ 11 lbs is applied to the counterweight.

~~d. Verifying that the return air fan can be manually started from the control room, and the motor operated valve in the suction line to the containment's lower compartment opens when the return air fan starts.~~ — L.3

DISCUSSION OF CHANGES
ITS 3.6.10, CONTAINMENT AIR RECIRCULATION/HYDROGEN SKIMMER (CEQ) SYSTEM

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.5.6 requires two "independent" containment air recirculation systems (referred to as the Containment Air Recirculation/Hydrogen Skimmer (CEQ) System in the ITS) to be OPERABLE. ITS 3.6.10 requires two Containment Air Recirculation/Hydrogen Skimmer (CEQ) trains to be OPERABLE, but does not specify that the trains are "independent." This changes the CTS by moving the detail that the trains are "independent" to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that two Containment Air Recirculation/Hydrogen Skimmer (CEQ) trains shall be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.6.a requires verification that the motor operated valve in the suction line to the containment's lower compartment opens "when the return air fan starts." ITS SR 3.6.10.4 requires verification that the motor operated valve in the suction line to the containment lower compartment opens on an "actual" or simulated actuation signal. ITS SR 3.6.10.4 does not specify the name of the actual signal, but specifies an actual actuation signal. This changes the CTS by moving the type of actuation signal to the Bases. The change to allow a simulated signal is discussed in DOC L.2.

The removal of this detail for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that appropriate valves actuate on an actuation signal. Also, this change is acceptable because this type of procedural detail will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.6.5.6 states that each Containment Air Recirculation System shall be demonstrated OPERABLE at least once per 3 months "on a STAGGERED TEST BASIS." The Surveillance Frequency for ITS SR 3.6.10.1, SR 3.6.10.2, SR 3.6.10.3, and SR 3.6.10.4 is also 92 days, but does not include the "STAGGERED TEST BASIS" requirement. This changes the CTS by deleting the requirement to test on a STAGGERED TEST BASIS.

The purpose of CTS 4.6.5.6 is to demonstrate the OPERABILITY of the Containment Air Recirculation System. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The intent of a requirement for staggered testing is to increase reliability of the component/system being tested. A number of studies have been performed which have demonstrated that staggered testing has negligible impact on component reliability. These analytical and subjective analyses have determined that staggered testing 1) is operationally difficult, 2) has negligible impact on component reliability, 3) is not as significant as initially thought, 4) has no impact on failure frequency, 5) introduces additional stress on components such as DGs potentially causing increased component failures rates and component wearout, 6) results in reduced redundancy testing, and 7) increases likelihood of human error by increasing testing intervals. Therefore, the Containment Air Recirculation System staggered testing requirements have been deleted. This change is designated as less restrictive because the intervals between performances of the Surveillances for the two trains can be larger or smaller under the ITS than under the CTS.

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DISCUSSION OF CHANGES
ITS 3.6.10, CONTAINMENT AIR RECIRCULATION/HYDROGEN SKIMMER (CEQ) SYSTEM

L.2 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.6.a requires verification of the automatic actuation of the return air fan on an auto-start signal (i.e., simulated) and that the motor operated valve in the suction line to the containment's lower compartment opens when the return air fan starts (i.e., an actual signal). ITS SR 3.6.10.1 requires verification that each Containment Air Recirculation/Hydrogen Skimmer (CEQ) System fan starts on an "actual" or simulated actuation signal. ITS SR 3.6.10.4 requires verification that the motor operated valve in the suction line to the containment lower compartment opens on an actual or "simulated" actuation signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test. The change from "when the return air fans starts" to "actual" signal is discussed in DOC LA.2.

The purpose of CTS 4.6.5.6.a is to ensure that the CEQ System fan starts and the motor operated valve moves to the correct position upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual" or "simulated" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.3 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.6.5.6.d requires the return air fan to be manually started from the control room every 3 months, and to verify the motor operated valve in the suction line to the containment's lower compartment opens when the return air fan starts. ITS 3.6.10 does not include this requirement. This changes the CTS by deleting a Surveillance Requirement.

The purpose of CTS 4.6.5.6.d is to confirm that the CEQ System can be manually initiated from the control room. This change is acceptable because the deleted Surveillance Requirement is redundant to the ITS Table 3.3.2-1 Function 7.a requirement to perform ITS SR 3.3.2.9, a TADOT, every 24 months, which would be performed in the same manner as the CTS 4.6.5.6.d requirement. In addition, ITS SR 3.6.10.1 requires verification that each CEQ System fan starts on an actual or simulated actuation signal every 92 days, which would verify OPERABILITY of the majority of the components involved in manual initiation of the CEQ System, except for the control room switch. Therefore, the deleted Surveillance Requirement is not necessary to verify the equipment used to meet the LCO can perform its required safety function. Thus, the equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. The manual initiation test has been deleted. The CEQ System is assumed to initiate automatically in response to a containment high pressure signal. Manual initiation is not assumed. This change is designated as less restrictive because the Surveillance which is required in the CTS will not be required in the ITS.

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L.4 *(Category 3 – Relaxation of Completion Time)* (Unit 2 only) CTS 3.6.5.6 Action states that with one CEQ train inoperable, restore the inoperable train to OPERABLE status within 48 hours. ITS 3.6.10 Required Action A.1 states to restore the inoperable CEQ train to OPERABLE status within 72 hours under the same conditions. This changes the Unit 2 CTS by extending the Completion Time for restoration of an inoperable CEQ Train from 48 hours to 72 hours.

The purpose of the CTS 3.6.5.6 Action is to provide an adequate period of time to restore an inoperable CEQ Train to OPERABLE status. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. The Completion Time for restoration of an inoperable CEQ Train has been extended from 48 hours to 72 hours. This proposed time is also consistent with the time to restore an inoperable CEQ train in the Unit 1 Technical Specifications. This change is designated as less restrictive because additional time is allowed to restore parameters to within the LCO limits than was allowed in the Unit 2 CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CEQ System → ARS (Ice Condenser) 3.6.14 → 10 ①

CTS

3.6 CONTAINMENT SYSTEMS

3.6.14 Air Return System (ARS) (Ice Condenser) → Containment Air Recirculation / Hydrogen Skimmer (CEQ) System ①

② — 10

3.6.5.6 LCO 3.6.14 Two ARS [CEQ] trains shall be OPERABLE. ①

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

ACTIONS

CEQ ①

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Action	A. One ARS train inoperable.	A.1	Restore ARS train to OPERABLE status.	72 hours
Action	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS INSERT 1 ④

CEQ System ①

	SURVEILLANCE		FREQUENCY
4.6.5.6.a	SR 3.6.14.1 (10)	Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of ≥ [9.0] minutes [108 seconds] and ≤ [10.0] minutes [132 seconds], and operates for ≥ 15 minutes.	[92] days ②
4.6.5.6.b	SR 3.6.14.2 ① — ⑩	Verify, with the ARS fan dampers closed, each ARS fan motor current is ≥ [20.5] amps and ≤ [35.5] amps [when the fan speed is ≥ [840] rpm and ≤ [900] rpm].	92 days INSERT 2 ③
4.6.5.6.c	SR 3.6.14.3 ① — ⑩	Verify, with the ARS [CEQ System] fan not operating, each ARS fan damper opens when ≤ [11.0] lb is applied to the counterweight.	92 days ②

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(4) **INSERT 1**

-NOTE-
Only required to be met in MODES 1, 2, and 3.

---

(3) **INSERT 2**

Verify, with the return air fan discharge backdraft damper locked closed and the fan motor energized, the static pressure between the fan discharge and the backdraft damper is ≥ 4.0 inches water gauge.

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CEQ System
ARS (Ice Condenser) ①
3.6.14 ⑩

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.6.5.6.a SR 3.6.14.4	Verify each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position opens on an actual or simulated actuation signal after a delay of ≥ [9.0] minutes and ≤ [11.0] minutes.	92 days ②

(4) **INSERT 3**

-NOTE-
Only required to be met in MODES 1, 2, and 3.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.10, CONTAINMENT AIR RECIRCULATION/HYDROGEN SKIMMER (CEQ) SYSTEM

1. The ISTS 3.6.14 title "Air Return System (ARS)" has been changed to "Containment Air Recirculation/Hydrogen Skimmer (CEQ) System" consistent with the CNP site specific terminology. The headings for ISTS 3.6.14, include the parenthetical expression (Ice Condenser). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the CNP ITS due to design differences. Therefore, ISTS 3.6.14 is renumbered as ITS 3.6.10.

2. The brackets are removed and the proper plant specific information/value is provided.

3. ISTS SR 3.6.14.2 has been replaced with ITS SR 3.6.10.2. This proposed Surveillance is consistent with the current licensing basis. The purpose of ISTS SR 3.6.14.2 is to confirm the operating condition of the fans, which is indicative of overall fan motor performance. The proposed Surveillance performs the same function.

4. The Applicability of ISTS SR 3.6.14.1 and SR 3.6.14.4 (ITS SR 3.6.10.1 and SR 3.6.10.4) has been modified to only require the Surveillances to be met in MODES 1, 2, and 3. This allowance is consistent with the current licensing basis in CTS 4.6.5.6.a. Also, this is acceptable since ISTS 3.3.2 (ITS 3.3.2) does not require the automatic initiation Functions to be OPERABLE in MODE 4, and while ISTS 3.3.2 (ITS 3.3.2) requires the Manual Initiation Function to be OPERABLE in MODE 4, the performance of a TADOT every 24 months is required and this will ensure the Manual Initiation Function is OPERABLE in MODE 4.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

ARS (Ice Condenser) B 3.6.14

CEQ System 10 ①

B 3.6 CONTAINMENT SYSTEMS

B 3.6.14 Air Return System (ARS) (Ice Condenser)

Containment Air Recirculation/Hydrogen Skimmer (CEQ) System 10

BASES

CEQ System

BACKGROUND

The ARS is designed to assure the rapid return of air from the upper to the lower containment compartment after the initial blowdown following a Design Basis Accident (DBA). The return of this air to the lower compartment and subsequent recirculation back up through the ice condenser assists in cooling the containment atmosphere and limiting post accident pressure and temperature in containment to less than design values. Limiting pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA. ①

CEQ System / portion of the CEQ / two

The ARS provides post accident hydrogen mixing in selected areas of containment. The associated Hydrogen Skimmer System consists of hydrogen collection headers routed to potential hydrogen pockets in containment, terminating on the suction side of either of the two ARS fans at the header isolation valves. The minimum design flow from each potential hydrogen pocket is sufficient to limit the local concentration of hydrogen. ② ①

skimmer / CEQ System

CEQ System / two upper compartment headers

The ARS consists of two separate trains of equal capacity, each capable of meeting the design bases. Each train includes a 100% capacity air return fan, associated damper, and hydrogen collection headers with isolation valves. Each train is powered from a separate Engineered Safety Features (ESF) bus. ②

5 / an / a / skimmer

INSERT 1

The ARS fans are automatically started and the hydrogen collection header isolation valves are opened by the containment pressure High-High signal 10 minutes after the containment pressure reaches the pressure setpoint. The time delay ensures that no energy released during the initial phase of a DBA will bypass the ice bed through the ARS fans or Hydrogen Skimmer System. ② ②

INSERT 1A

After starting, the fans displace air from the upper compartment to the lower compartment, thereby returning the air that was displaced by the high energy line break blowdown from the lower compartment and equalizing pressures throughout containment. After discharge into the lower compartment, air flows with steam produced by residual heat through the ice condenser doors into the ice condenser compartment where the steam portion of the flow is condensed. The air flow returns to the upper compartment through the top deck doors in the upper portion of the ice condenser compartment. The ARS fans operate continuously

CEQ System

(2) **INSERT 1**

The CEQ fans are automatically started by the Containment Pressure - High signal in approximately 2 minutes after the containment pressure reaches the pressure setpoint. This also supports the required ice melt during a small break loss of coolant accident (LOCA) to ensure adequate containment recirculation sump inventory for initiation of the recirculation mode. The hydrogen skimmer header isolation valve opens when the CEQ System fan starts.

(2) **INSERT 1A**

the core reflood time assumed in the LOCA peak clad temperature analysis is met.

CEQ System

ARS (Ice Condenser) (1)
B 3.6.14 (10)

BASES

BACKGROUND (continued)

after actuation, circulating air through the containment volume and purging all potential hydrogen pockets in containment. When the containment pressure falls below a predetermined value, the ARS fans are automatically de-energized. Thereafter, the fans are automatically cycled on and off if necessary to control any additional containment pressure transients. (3)

CEQ System

The ARS also functions, after all the ice has melted, to circulate any steam still entering the lower compartment to the upper compartment where the Containment Spray System can cool it. (1)

CEQ System

The ARS is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained. The operation of the ARS, in conjunction with the ice bed, the Containment Spray System, and the Residual Heat Removal (RHR) System spray, provides the required heat removal capability to limit post accident conditions to less than the containment design values. (1) (2)

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train each of the Containment Spray System, RHR System, and ARS being inoperable (Ref. 1). The DBA analyses show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. (2) (1)

CEQ System

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The analysis for minimum internal containment pressure (i.e., maximum external differential containment pressure) assumes inadvertent simultaneous actuation of both the ARS and the Containment Spray (4)

CEQ System

ARS (Ice Condenser) ①
B 3.6.14 ⑩

BASES

APPLICABLE SAFETY ANALYSES (continued)

System. The containment vacuum relief valves are designed to accommodate inadvertent actuation of either or both systems. ④

The modeled ARS actuation from the containment analysis is based upon a response time associated with exceeding the containment pressure High-High signal setpoint to achieving full ARS air flow. A delayed response time initiation provides conservative analyses of peak calculated containment temperature and pressure responses. The ARS total response time of 600 seconds consists of the built in signal delay. ①

CEQ System Function 132 includes INSERT 2

The ARS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

In the event of a DBA, one train of the ARS with the Hydrogen Skimmer System is required to provide the minimum air recirculation for heat removal and hydrogen mixing assumed in the safety analyses. To ensure this requirement is met, two trains of the ARS with the Hydrogen Skimmer System must be OPERABLE. This will ensure that at least one train will operate, assuming the worst case single failure occurs which is in the ESF power supply. ① ②

CEQ System

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ARS. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4. ①

CEQ System

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ARS is not required to be OPERABLE in these MODES. ①

CEQ System

ACTIONS

A.1

If one of the required trains of the ARS is inoperable, it must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the flow and hydrogen skimming needs after an accident. The 72 hour Completion Time was developed taking into account the redundant flow and hydrogen skimming capability of the OPERABLE ARS train and the low probability of a DBA occurring in this period. ⑤ ① ①

CEQ System

(1) INSERT 2

The response time band ensures that containment temperature and pressure profiles are as assumed in the overall accident analyses (i.e., containment structural response and peak clad temperature analyses).

ARS (Ice Condenser)
B 3.6.14

BASES

ACTIONS (continued)

B.1 and B.2

If the ARS train cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.14.1

Verifying that each ARS fan starts on an actual or simulated actuation signal, after a delay ≥ 9.0 minutes and ≤ 11.0 minutes, and operates for ≥ 15 minutes is sufficient to ensure that all fans are OPERABLE and that all associated controls and time delays are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. The 92 day Frequency was developed considering the known reliability of fan motors and controls and the two train redundancy available.

SR 3.6.14.2

Verifying ARS fan motor current to be at rated speed with the return air dampers closed confirms one operating condition of the fan. This test is indicative of overall fan motor performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of 92 days conforms with the testing requirements for similar ESF equipment and considers the known reliability of fan motors and controls and the two train redundancy available.

SR 3.6.14.3

Verifying the OPERABILITY of the return air damper provides assurance that the proper flow path will exist when the fan is started. By applying the correct counterweight, the damper operation can be confirmed. The Frequency of 92 days was developed considering the importance of the dampers, their location, physical environment, and probability of failure. Operating experience has also shown this Frequency to be acceptable.

(1) INSERT 3

This SR has been modified by a Note that states that this Surveillance is only required to be met in MODES 1, 2, and 3. This allowance is necessary since the specified delay (i.e., ≥ 108 seconds and ≤ 132 seconds) is only applicable to the automatic actuation signal (i.e., Containment Pressure - High), which is only required to be OPERABLE in MODES 1, 2, and 3. In addition, LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," requires the CEQ System Manual Initiation Function to be OPERABLE in MODE 4 and requires the performance of a TADOT every 24 months. This requirement will ensure the Manual Initiation Function can actuate the required equipment in MODE 4.

(1) INSERT 4

Verifying, with the return air fan discharge backdraft damper locked closed and the fan motor energized, the static pressure between the fan discharge and the backdraft damper is ≥ 4.0 inches water gauge confirms one operating condition of the fan. This test is indicative of overall fan motor performance. Such tests confirm component OPERABLITY and detect incipient failures by indicating abnormal performance.

CEQ System

ARS (Ice Condenser)
B 3.6.14

10

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.14.4

Verifying the OPERABILITY of the motor operated valve in the Hydrogen Skimmer System hydrogen collection header to the lower containment compartment provides assurance that the proper flow path will exist when the valve receives an actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. This Surveillance also confirms that the time delay to open is within specified tolerances. The 92 day Frequency was developed considering the known reliability of the motor operated valves and controls and the two train redundancy available. Operating experience has also shown this Frequency to be acceptable.

INSERT 5

REFERENCES

1. FSAR, Section 6.2 14.34
2. 10 CFR 50, Appendix K.

(1) **INSERT 5**

This SR has been modified by a Note that states that this Surveillance is only required to be met in MODES 1, 2, and 3. This allowance is acceptable since, in MODE 4, automatic operation is not required. LCO 3.3.2 requires only the CEQ System Manual Initiation Function to be OPERABLE in MODE 4 and requires the performance of a TADOT every 24 months. This requirement will ensure the Manual Initiation Function can actuate the required equipment in MODE 4.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.10 BASES, CONTAINMENT AIR RECIRCULATION/HYDROGEN SKIMMER (CEQ) SYSTEM

1. Changes have been made to be consistent with changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The CEQ fans are not automatically de-energized, but must be manually stopped after an automatic actuation. In addition, there is no current predetermined pressure value at which the fans are secured, post accident. Long term operation of the fans would be at the discretion of the plant evaluation team. Therefore, these statements have been deleted.

4. The ISTS 3.614 (ITS 3.6.10) Bases ASA section discussion of the inadvertent actuation of both the ARS and the Containment Spray System has been deleted since this incident does not describe how the system mitigates DBAs and is outside of the CNP current licensing basis to consider.

5. The word "required" has been deleted because there are only two trains of the CEQ System and both are required. This is consistent with the use of the word "required" in the ISTS.

6. The brackets are removed and the proper plant specific information/value is provided.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.10, CONTAINMENT AIR RECIRCULATION/HYDROGEN SKIMMER (CEQ) SYSTEM

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 11

ITS 3.6.11, Ice Bed

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

LCO 3.6.11 3.6.5.1 The ice bed shall be OPERABLE with: [Add proposed boron concentration upper limit] (M.1)

SR 3.6.11.6 a. The stored ice having boron concentration of at least 1800 ppm (the boron being in the form of sodium tetraborate), and a pH of 9.0 to 9.5 at 25°C (LA.1)

SR 3.6.11.4 b. Flow channels through the ice condenser,

SR 3.6.11.1 c. A maximum ice bed temperature of ≤ 27°F,

SR 3.6.11.2 d. Ice baskets containing at least 1144 lbs of ice (end-of-cycle), and

e. 1944 ice baskets.

[Add proposed total mass and zone requirements] (L.1)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A — With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT
ACTION B — STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS (LA.2)

4.6.5.1 The ice condenser shall be determined OPERABLE:

SR 3.6.11.1 a. At least once per 12 hours by using the ice bed temperature monitoring system to verify that the maximum ice bed temperature is ≤ 27°F.

b. At least once per 18 months by: [54 for SR 3.6.11.6] (L.2)

SR 3.6.11.6 [Add proposed SR 3.6.11.6 Note] (L.3) 1. Chemical analyses which verify that at least 9 representative samples of stored ice have a boron concentration of at least 1800 ppm (the boron being in the form of sodium tetraborate), and a pH of 9.0 to 9.5 at 25°C (M.2) (LA.1)

SR 3.6.11.2 2. Weighing a representative sample of at least 144 ice baskets and verifying that each ice basket contains at least 1144 lbs of ice (end-of-cycle). The representative sample shall include 6 baskets from each of the 24 ice condenser bays and

[Add proposed boron concentration upper limit] (M.1)

[Add proposed total mass and zone requirements] (L.1)

ITS

(A.1)

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

Add proposed total mass and zone requirements (L.1)

SR 3.6.11.2 shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1144 pounds of ice (end-of-cycle), a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1144 pounds/basket (end-of-cycle) at a 95% level of confidence.

SR 3.6.11.3 The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1144 pounds/basket (end-of-cycle) at a 95% level of confidence.

Add proposed ice mass requirement (L.1)

SR 3.6.11.2 The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,222,000 pounds (end-of-cycle).

SR 3.6.11.4 3. Verifying, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on the top deck floor grating, on the intermediate deck and on flow passages between ice baskets and past lattice frames is restricted to a nominal thickness of 3/8 inches. If one flow passage per bay is found to have an accumulation of frost or ice greater than this thickness, a representative sample of 20 additional flow passages from the same bay shall be visually inspected. If these additional flow passages are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one restricted flow passage per bay is evidence of abnormal degradation of the ice condenser.

accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15% blockage of the total flow area for each safety analysis section (L.4) (L.1)

c. At least once per 18 months by verifying, by a visual inspection, each ice condenser bay, that the accumulation of frost or ice on the lower inlet plenum support structures and turning vanes is restricted to a nominal thickness of 3/8 inches. An accumulation of frost and ice greater than this thickness is evidence of abnormal degradation of the ice condenser. (L.4)

SR 3.6.11.5 d. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 12 feet for this inspection.

Add proposed ice basket wear/damage requirements (L.1)

Add proposed SR 3.6.11.7 (M.3)

A.1

ITS

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

Add proposed boron concentration upper limit — M.1

LCO 3.6.11 3.6.5.1 The ice bed shall be OPERABLE with:

SR 3.6.11.6 a. The stored ice having boron concentration of at least 1800 ppm (the boron being in the form of sodium tetraborate), and a pH of 9.0 to 9.5 at 25°C, — LA.1

SR 3.6.11.4 b. Flow channels through the ice condenser,

SR 3.6.11.1 c. A maximum ice bed temperature of ≤ 27°F,

SR 3.6.11.2 d. Ice baskets containing at least 1144 lbs of ice (end-of-cycle), and

e. 1944 ice baskets.

Add proposed total mass and zone requirements — L.1

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A / ACTION B — With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

SR 3.6.11.1 a. At least once per 12 hours by using the ice bed temperature monitoring system to verify that the maximum ice bed temperature is ≤ 27°F. — LA.2

b. At least once per 18 months by: — 54 for SR 3.6.11.6 — L.2

Add proposed SR 3.6.11.6 Note — L.3

SR 3.6.11.6 1. Chemical analyses which verify that at least 9 representative samples of stored ice have a boron concentration of at least 1800 ppm (the boron being in the form of sodium tetraborate), and a pH of 9.0 to 9.5 at 25°C, — M.2, LA.1

SR 3.6.11.2 2. Weighing a representative sample of at least 144 ice baskets and verifying that each ice basket contains at least 1144 lbs of ice (end-of-cycle). The representative sample shall include 6 baskets from each of the 24 ice condenser bays and

Add proposed boron concentration upper limit — M.1

Add proposed total mass and zone requirements — L.1

ITS 3.6.11

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

Add proposed total mass and zone requirements — L.1

SR 3.6.11.2

shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1144 pounds of ice (end-of-cycle), a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1144 pounds/basket (end-of-cycle) at a 95% level of confidence.

SR 3.6.11.3

The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1144 pounds/basket (end-of-cycle) at a 95% level of confidence.

Add proposed ice mass requirement — L.1

SR 3.6.11.2

The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,222,000 pounds (end-of-cycle).

SR 3.6.11.4

3. Verifying, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on the top deck floor grating, on the intermediate deck and on flow passages between ice baskets and past lattice frames is restricted to a nominal thickness of 3/8 inches. If one flow passage per bay is found to have an accumulation of frost or ice greater than this thickness, a representative sample of 20 additional flow passages from the same bay shall be visually inspected. If these additional flow passages are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one restricted flow passage per bay is evidence of abnormal degradation of the ice condenser.

accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15% blockage of the total flow area for each safety analysis section

L.4

L.1

c. At least once per 18 months by verifying, by a visual inspection, each ice condenser bay, that the accumulation of frost or ice on the lower plenum support structures and turning vanes is restricted to a nominal thickness of 3/8 inches. An accumulation of frost or ice greater than this thickness is evidence of abnormal degradation of the ice condenser. — L.4

SR 3.6.11.5

d. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each 1/3 of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 12 feet for this inspection.

Add proposed ice basket wear/damage requirements — L.1

Add proposed SR 3.6.11.7 — M.3

DISCUSSION OF CHANGES
ITS 3.6.11, ICE BED

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.6.5.1.a and CTS 4.6.5.1.b.1 specify a lower limit $\geq$ 1800 ppm for stored ice boron concentration. ITS SR 3.6.11.6 specifies an upper and lower limit ($\geq$ 1800 ppm and $\leq$ 2300 ppm) for stored boron concentration. This changes the CTS by adding an upper boron concentration limit for stored ice.

The purpose of the minimum boron concentration limit in CTS 3.6.5.1.a and CTS 4.6.5.1.b.1 is to assure reactor subcriticality in a post loss of coolant accident (LOCA) environment. The purpose of the new upper boron concentration limit is to assure the bounding value in the hot leg switchover timing calculation. This change is acceptable because the new limit will help assure the condenser ice boron concentration is within the limits assumed in the safety analysis. This change is designated as more restrictive, because it adds the upper limit to the ice condenser boron concentration requirements.

M.2 CTS 4.6.5.1.b.1 requires a chemical analyses to be performed on at least 9 representative samples of stored ice. ITS SR 3.6.11.6 requires a chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay. This changes the CTS to require 24 samples (at least one randomly selected ice basket from each ice condenser bay) instead of requiring 9 representative samples.

The purpose of CTS 4.6.5.1.b.1 is to assure the chemical analyses is performed on a sufficient number of representative samples of stored ice. This change is acceptable because the proposed sampling requirement provides a better representation of the overall ice bed (i.e., at least one ice basket from each condenser bay instead of 9 representative samples). The change has been designated as more restrictive because it is more explicit on the sampling requirements and requires an increased number of ice bed samples for chemical analyses.

M.3 CTS 4.6.5.1 does not contain an explicit verification, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of CTS 3.6.5.1.a. ITS SR 3.6.11.7 requires this SR to be conducted during each ice addition. This changes the CTS by adding the ITS requirement of SR 3.6.11.7.

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DISCUSSION OF CHANGES
ITS 3.6.11, ICE BED

The purpose of ITS SR 3.6.11.7 is to ensure the initial ice fill and any subsequent ice additions meet the boron concentration and pH requirements of SR 3.6.11.6. This SR is modified by a Note that allows the chemical analysis to be performed on either the liquid solution or on the resulting ice. If ice is obtained from offsite sources, the chemical analysis data must be obtained for the ice supplied. This change is acceptable because it provides additional assurance that the ice added is acceptable. This change is designated as more restrictive, because it adds a Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.5.1.a and 4.6.5.1.b.1 specify that the boron being used to meet the lower limit for stored ice boron concentration is in the form of sodium tetraborate and that the pH limit is normalized to 25°C. ITS SR 3.6.11.6 specifies an upper and lower limit (≥ 1800 ppm and ≤ 2300 ppm) for stored boron concentration, but does not include the form of the boron (i.e., sodium tetraborate). ITS SR 3.6.11.6 also specifies the pH limit, but does not state that it is normalized to 25°C. This changes the CTS by moving the details that the boron must be in the form of sodium tetraborate and that the pH is normalized to 25°C to the Bases. The addition of the boron concentration upper limit is discussed in DOC M.1.

The removal of these details, which are related to system design limits, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.6.11.6 still retains the requirement concerning the boron concentration limits and pH limits. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design limits is being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.1.a requires the verification that the maximum ice bed temperature is ≤ 27°F using the ice bed temperature monitoring system. ITS SR 3.6.11.1 requires the verification that the maximum ice bed temperature is ≤ 27°F. This changes the CTS by moving the detail concerning the system to be used to evaluate whether the ice bed temperature is ≤ 27°F to the Bases.

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DISCUSSION OF CHANGES
ITS 3.6.11, ICE BED

The removal of this detail for performing the Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the maximum ice bed temperature is ≤ 27°F. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 3.6.5.1.d and e requires that ice baskets contain at least 1144 lbs of ice and that there be 1944 ice baskets. CTS 4.6.5.1.b.2 requires weighing a sample of at least 144 ice baskets and verifying each ice basket contains 1144 lbs of ice (end of cycle). CTS 4.6.5.1.b.2 specifies the locations of the ice basket to be sampled and if any ice basket contains less than 1144 lbs of ice, additional ice baskets must be weighed. It also requires the weighed baskets to be divided into three sub-groups, with each sub-group averaging 1144 lbs of ice per ice basket. Furthermore, a total ice weight of the 1944 baskets (2,222,000 lbs end of cycle) is also required to a 95% confidence level, and includes a maintenance allowance for mass determination accuracy. CTS 4.6.5.1.b.3 requires a verification, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on the top deck floor grating, on the intermediate deck, and on flow passages between ice baskets and past lattice frames is restricted to a nominal thickness of 3/8 inches. If one flow passage per bay is found to have an accumulation of frost or ice greater than this thickness, a representative sample of 20 additional flow passages from the same bay shall be visually inspected. If these additional flow passages are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one restricted flow passage per bay is evidence of abnormal degradation of the ice condenser. CTS 4.6.5.1.d requires lifting (at least 12 feet) and visually inspecting the accessible portions of at least two ice baskets from each one-third of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. ITS SR 3.6.11.2 requires a verification of the total ice mass (2,200,000 lbs) by calculating the mass of stored ice in each of three radial zones by selecting, at random, 30 ice baskets in each zone. It also verifies each zone contains the required ice mass. ITS SR 3.6.11.3 requires a verification that each basket sampled in ITS SR 3.6.11.2 contains a minimum ice mass. ITS SR 3.6.11.4 requires a verification, by inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15% blockage of the total flow area for each safety analysis section. ITS SR 3.6.11.5 requires a visual inspection, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays (total of three groups). The Bases for ITS SR 3.6.11.5 includes clarifying guidance that indicates the intent of the inspection is to perform an inspection of the full-length of the basket. This changes the CTS in the following ways: for SR 3.6.11.2 - a) modifies the stored ice mass to 2,200,000 lbs by specifying the design basis value and removing the maintenance allowance for mass determination accuracy; and b) redefines the ice mass statistical sampling plan to include the entire ice bed (1944 baskets), divides the ice bed into three radial zones, and modifies the sample size to at least 30 baskets in each radial zone; for SR 3.6.11.3 - a) removes the reference to azimuthal distribution verification, and b) adds a new acceptance criteria value for minimum ice mass in each basket sampled by SR 3.6.11.2; and for SR 3.6.11.5 - a) removes the inherent reference to CTS 3.6.5.1.b.2 that provided the definition of azimuthal distribution, b) adds the current sampling distribution methodology directly to the SR for clarity, and c) removes the requirement to raise the ice basket at least 12 feet for the inspection.

The basic requirement for verification of ice condenser ice bed ice mass is to ensure a sufficient ice mass is available to provide a heat sink in the event of an energy release in containment from a loss-of-coolant accident (LOCA) or a steam line break (SLB). For these design basis accidents (DBAs), the ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The proposed change of the total stored ice mass (ITS SR 3.6.11.2) provides consistency with the design basis analysis. The acceptance criteria value is reduced by relocation of the mass determination accuracy to the Bases. The Bases state that the Surveillance is performed in the as-found condition (before ice bed maintenance and after ice bed sublimation). The current acceptance criteria value consists of the DBA analysis value and a one percent mass determination accuracy (weighing error) value, and the Surveillance is performed in the as-found condition (before ice bed maintenance and after ice bed sublimation for the cycle). The as-found performance of this Surveillance shows adequacy of total ice mass for the current operational cycle. As such, when the proposed SR change is coupled with the change to the SR Bases, there is no net change in total stored ice mass. Ice Condenser Utility Group (ICUG) operational history shows that sublimation rates vary within the ice bed requiring specific effort to maintain the ice bed mass inventory each outage. The ongoing process of monitoring the varying sublimation rates during the operating cycle and replenishing ice bed mass as needed is the basis for the Active Ice Mass Management (AIMM) concept. The maintenance effort (AIMM) restores the ice bed mass and distribution characteristics required for continued operation. Therefore, the proposed change provides a clear tie to the design basis while crediting plant specific AIMM maintenance practices.

The proposed statistical sampling plan change (ITS SR 3.6.11.2) increases the parent population to include all ice baskets contained within the ice bed, stratifies that population into three radial zones that contain rows of ice baskets exhibiting similar characteristics, and requires at least 30 random sample ice baskets for ice mass verification in each radial zone. The stratified sampling allows sub-populations to be defined that have similar mean mass characteristics resulting in better estimates of total ice mass. A 30-ice basket random sample from each

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DISCUSSION OF CHANGES
ITS 3.6.11, ICE BED

radial zone maintains a 95% confidence level for calculation of total stored ice. The modified sampling methodology provides the validation of total ice mass and verification of ice mass distribution within the ice bed, in lieu of a limited azimuthal row-group Surveillance. The proposed ice bed sub-populations (radial zones) and sample size directly applies ICUG ice bed historical operating experience, provides clear linkage to statistical sampling methodology provided in NUREG-1475, "Applying Statistics," and supports validation of total stored ice for the long-term/overall DBA analysis.

The proposed change to remove limited azimuthal row-group ice distribution verification is replaced by the change in statistical sampling (ITS SR 3.6.11.3). As stated above, the change in statistical sampling and crediting of AIMM processes provides inherent verification of ice mass distribution, making azimuthal row-group distribution verification redundant. A new minimum blowdown ice mass acceptance criteria value is added for each of the ice baskets sampled. The new acceptance criteria value (minimum blowdown ice mass for each basket sampled) ensures that an anomalous gross degradation of the ice bed does not exist, supports the DBA analysis during the blowdown phase, and directly applies the blowdown data from the original Westinghouse Waltz-Mill testing as described in the UFSAR.

The proposed change to the inspection of flow channels for accumulated ice (ITS SR 3.6.11.4) replaces the manner in which the inspection is performed and the acceptance criteria. The allowable 15% buildup of ice is based on the analysis of the sub-compartment response to a design basis LOCA with partial blockage of the ice condenser flow channels. The analysis did not perform detailed flow area modeling, but lumped the condenser bays into six sections ranging from 2.75 bays to 6.5 bays. Individual bays are acceptable with > 15% blockage, as long as 15% blockage is not exceeded for any analysis section. In addition, to provide a 95% confidence that flow blockage does not exceed the allowed 15%, the visual inspection must be made for at least 54 (33%) of the 162 flow channels per bay.

The proposed change to the ice basket wear/damage SR (ITS SR 3.6.11.5) only provides clarification of the sampling methodology. Currently the Surveillance implicitly references the ice mass verification Surveillance for sampling methodology. Because the ice mass verification sampling methodology is proposed to change, the implicit reference is being removed and the current sampling methodology is completely defined.

The change to an 18 month Frequency for both the ice mass verification and the ice distribution SRs does not result in an overall reduction in the end-of-cycle ice mass. The process of replenishing the ice bed mass and the monitoring of varying sublimation rates during the operating cycle is the basis for AIMM. AIMM restores the ice bed mass and distribution characteristics required for continued operation. This includes sublimation allowances and ice mass determination accuracy. ICUG historical operating experience has shown that the ice condenser can meet and even exceed its design function without performing these Surveillances on a 9-month frequency. Additionally, this change in Frequency places performance of these SRs within the current time frame of the unit refueling outages.

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DISCUSSION OF CHANGES
ITS 3.6.11, ICE BED

Overall, ice condenser OPERABILITY is assured by numerous means during operation of the plant. The ice bed temperature is monitored at least once every 12 hours to ensure temperatures are ≤ 27°F (ITS SR 3.6.11.1). There are alarms in the control room that will indicate to the operator if any recorded temperature monitoring point within the ice bed approaches 27°F. The CNP staff performs walkdowns of the refrigeration system (chillers, air handling units, and glycol circulation pumps) to evaluate its ability to function. Inspections are required of intermediate deck doors to ensure they are not impaired. This activity ensures that no abnormal degradation of the ice condenser is occurring due to condensation or frozen drain lines in localized areas.

L.2 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.6.5.1.b.1 requires the chemical analyses on the stored ice to be performed once every 18 months. ITS SR 3.6.11.6 requires the chemical analyses on the stored ice to be performed once every 54 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months to 54 months.

The purpose of CTS 4.6.5.1.b.1 is to ensure the boron concentration and pH of the stored ice is within the appropriate limits. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. This change extends the test from 18 months to 54 months. The change to 54 months is acceptable since the sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. In addition, the change is acceptable since a new Surveillance has been added (SR 3.6.11.7) that requires a chemical analysis of any new ice added to the ice bed and a verification that the ice meets the boron concentration and pH limits of SR 3.6.11.6. The addition of this new Surveillance is discussed in DOC M.3. This change is designated as less restrictive because Surveillance will be performed less frequently under the ITS than under the CTS.

L.3 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.1.b.1 requires a verification by chemical analyses that the 9 representative samples of stored ice have a boron concentration of at least 1800 ppm and a pH of 9.0 to 9.5 at 25°C. ITS SR 3.6.11.6 requires the verification, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed boron concentration is ≥ 1800 ppm and ≤ 2300 ppm and pH is ≥ 9.0 and ≤ 9.5. In addition, a Note is included that allows the boron concentration and pH values obtained from the individual samples to be averaged. This changes the CTS by allowing the chemical analysis to average the boron concentration and pH values of the samples instead of requiring each sample to meet the requirements. Other changes to CTS 4.6.5.1.b.1 are discussed in DOCs M.1, M.2, and LA.1.

The purpose of CTS 4.6.5.1.b.1 is to ensure the ice contains the appropriate boron concentration and pH so that when it melts after a DBA it meets the requirement for borated water for the ECCS recirculation mode of operation and for the Containment Spray mode. This change is acceptable because it has been

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DISCUSSION OF CHANGES
ITS 3.6.11, ICE BED

determined that the relaxed Surveillance Requirement acceptance criteria continues to ensure the ice bed can perform its required function. This change allows the chemical analysis results to be averaged in determining whether the boron concentration and pH limits are satisfied instead of evaluating each sample individually. The allowance to average the values is acceptable since during a DBA the ice would melt and mix with the reactor coolant to form a suction source in the containment recirculation sump. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L.4 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.6.5.1.c requires a visual inspection every 18 months, of each ice condenser bay, to ensure the accumulation of frost or ice on the lower inlet plenum support structures and turning vanes is restricted to the specified thickness. CTS 4.6.5.1.b.3 requires the inspection of the top deck floor grating, on the intermediate deck and on flow passages between ice baskets and past lattice frames for accumulation of frost or ice. The ITS does not include these Surveillance Requirements; it only requires this inspection of the "flow channels," which includes the area between ice baskets, past lattice frames, and wall panels, as indicated in the Bases for ITS SR 3.6.11.4. This changes the CTS by deleting the requirement to inspect the top deck floor grating, the intermediate deck, and the lower support structures and turning vanes for accumulation of frost or ice.

The purpose of CTS 4.6.5.1.c and CTS 4.6.5.1.b.3 is to ensure the flow area for the steam air mixture through the ice bed is sufficient to ensure the appropriate flow. This change is acceptable because the deleted Surveillance Requirements are not necessary to verify that the blockage criteria assumed in the safety analysis are met. Thus, appropriate portions of the flow path (i.e., flow channel) will continue to be tested in a manner and at a Frequency necessary to give confidence that the assumptions in the safety analysis are protected. Due to significantly larger flow area in the regions of the top deck floor grating, the lower inlet plenum support structures, and turning vanes, a significant amount of buildup of ice on these structures would be required to degrade air and steam flow. Therefore, these structures are excluded as part of a flow channel for application of the 15% blockage criteria. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.15 ⑪ Ice Bed (Ice Condenser) ①

LCO 3.6.5.1 — LCO 3.6.15 ⑪ The ice bed shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Action	A. Ice bed inoperable.	A.1	Restore ice bed to OPERABLE status.	48 hours
Action	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		AND		
		B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS ①

		SURVEILLANCE	FREQUENCY
LCO 3.6.5.1.c, 4.6.5.1.a	SR 3.6.15.1 ⑪	Verify maximum ice bed temperature is ≤ [27]°F. ②	12 hours ⑱
LCO 3.6.5.1.d, 4.6.5.1.b.2	SR 3.6.15.2 ⑪	Verify total weight of stored ice is ≥ [2,721,600] lb by: a. Weighing a representative sample of ≥ 144 ice baskets and verifying each basket contains ≥ [1400] lb of ice and b. Calculating total weight of stored ice, at a 95% confidence level, using all ice basket weights determined in SR 3.6.15.2.a. INSERT 1 (TSTF 429)	9 months TSTF 429

①

3.6.11

TSTF-429

INSERT 1

2

Verify total mass of stored ice is ≥ [2,200,000] lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of ≥ 30 ice baskets in each Radial Zone, and

3

Verify:

a → [1] Zone A ([radial rows 7, 8, and 9]) has a total mass ≥ [733,400] lbs ← ;

b → [2] Zone B ([radial rows 4, 5, and 6]) has a total mass ≥ [733,400] lbs ← ; and

c → [3] Zone C ([radial rows 1, 2, and 3]) has a total mass ≥ [733,400] lbs.

3 2

Ice Bed (Ice Condenser) 3.6.15 (11) (1)

CTS

SURVEILLANCE REQUIREMENTS (continued)

CTS		SURVEILLANCE	FREQUENCY
4.6.5.1.b.2	SR 3.6.15.3 (11)	Verify azimuthal distribution of ice at a 95% confidence level by subdividing weights, as determined by SR 3.6.15.2.a, into the following groups: a. Group 1 - bays 1 through 8, b. Group 2 - bays 9 through 16, and c. Group 3 - bays 17 through 24. The average ice weight of the sample baskets in each group from radial rows 1, 2, 4, 6, 8, and 9 shall be ≥ [1400] lb. INSERT 2 (TSTF-429)	9 months (18) (TSTF-429) (1) (1) (2)
LCO 3.6.5.1.b, 4.6.5.1.b.3	SR 3.6.15.4 (11)	Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.	18 months
LCO 3.6.5.1.a, 4.6.5.1.b.1	SR 3.6.15.5 (11) (6)	- NOTE - The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below. Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed: a. Boron concentration is a ≥ [1800] ppm and ≤ (2000) 2300 ppm; and b. pH is ≥ [9.0] and ≤ [9.5].	54 months (1) (2) (2)
4.6.5.1.d	SR 3.6.15.6 (11) (5)	Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each azimuthal group of bays. See SR 3.6.15.3. INSERT 3 (TSTF-429)	40 months (1)

3.6.11

TSTF-429

INSERT 2

Verify that the ice mass of each basket sampled in SR 3.6.15.2 is ≥ 600 lbs.

11

1

TSTF-429

INSERT 3

as defined below:

a. Group 1 - bays 1 through 8;

b. Group 2 - bays 9 through 16; and

c. Group 3 - bays 17 through 24.

CTS

Ice Bed (Ice Condenser) (1)
3.6.12 (11)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.15.7 (11)	- NOTE - The chemical analysis may be performed on either the liquid solution or on the resulting ice. Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.15.5. (6) (11)	Each ice addition

DOC M.3

(1) (1)

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JUSTIFICATION FOR DEVIATIONS
ITS 3.6.11, ICE BED

1. The headings for ISTS 3.6.15 include the parenthetical expression (Ice Condenser). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the CNP ITS due to design differences. Therefore, ISTS 3.6.15 is renumbered as ITS 3.6.11. In addition, the SRs have been put in the proper order, based on the Frequency.

2. The brackets are removed and the proper plant specific information/value is provided.

3. Minor editorial corrections have been made to the changes made by approved TSTF-429, Rev. 3 to be consistent with the format of the ITS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.15 Ice Bed (Ice Condenser) ① ⑪

BASES TSTF-429 ⑥

BACKGROUND

The ice bed consists of over a minimum of 2,721,600 2,200,000 lb of ice stored in 1944 baskets within the ice condenser. Its The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a Design Basis Accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The ice condenser is an annular compartment enclosing approximately 300° of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The lower portion has a series of hinged doors exposed to the atmosphere of the lower containment compartment, which, for normal unit operation, are designed to remain closed. At the top of the ice condenser is another set of doors exposed to the atmosphere of the upper compartment, which also remain closed during normal unit operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. These doors also remain closed during normal unit operation. The upper plenum area is used to facilitate surveillance and maintenance of the ice bed.

The ice baskets contain the ice within the ice condenser. The ice bed is considered to consist of the total volume from the bottom elevation of the ice baskets to the top elevation of the ice baskets. The ice baskets position the ice within the ice bed in an arrangement to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment. A divider barrier (i.e., operating deck and extensions thereof) TSTF-429

BASES

BACKGROUND (continued)

separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

The ice, together with the containment spray, is adequate to absorb [at least twice] the initial blowdown of steam and water from a DBA and the additional heat loads that would enter containment during several hours following the initial blowdown. [INSERT 1] The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) [Containment Air Recirculation/Hydrogen Skimmer (CEQ) System.] returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam from the lower compartment through the ice condenser where the heat is removed by the remaining ice. ② ②

As ice melts, the water passes through the ice condenser floor drains into the lower compartment. Thus, a second function of the ice bed is to be a large source of borated water (via the containment sump) for long term Emergency Core Cooling System (ECCS) and Containment Spray System heat removal functions in the recirculation mode.

A third function of the ice bed and melted ice is to remove fission product iodine that may be released from the core during a DBA. Iodine removal occurs during the ice melt phase of the accident and continues as the melted ice is sprayed into the containment atmosphere by the Containment Spray System. The ice is adjusted to an alkaline pH that facilitates removal of radioactive iodine from the containment atmosphere. [INSERT 1A] The alkaline pH also minimizes the occurrence of the chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. ②

It is important for the ice to be uniformly [exist in the ice baskets, the ice to be appropriately] distributed around the 24 ice condenser bays and for open flow paths to exist around ice baskets. This is especially important during the initial blowdown so that the steam and water mixture entering the lower compartment do not pass through only part of the ice condenser, depleting the ice there while bypassing the ice in other bays. [TSTF-429]

Two phenomena that can degrade the ice bed during the long service period are: ③

a. Loss of ice by melting or sublimation[;] and

(2) **INSERT 1**

loss of coolant accident (LOCA) or at least twice the energy released from a feedwater or main steam line break. The excess capacity is necessary to absorb

(2) **INSERT 1A**

using sodium tetraborate, to assist in minimizing evolution of iodine from the containment sump

BASES

BACKGROUND (continued)

b. Obstruction of flow passages through the ice bed due to buildup of frost or ice. Both of these degrading phenomena are reduced by minimizing air leakage into and out of the ice condenser. TSTF-429

The ice bed limits the temperature and pressure that could be expected following a DBA, thus limiting leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are not assumed to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS (CEQ System) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed in regards to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train each of the Containment Spray System and ARS being inoperable. (2)

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of the transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2). The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." (4)

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and

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BASES

APPLICABLE SAFETY ANALYSES (continued)

structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The ice bed satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The ice bed LCO requires the existence of the required quantity of stored ice, appropriate distribution of the ice and the ice bed, open flow paths through the ice bed, and appropriate chemical content and pH of the stored ice. The stored ice functions to absorb heat during a DBA, thereby limiting containment air temperature and pressure. The chemical content and pH of the ice provides core SDM (boron content) and removes radioactive iodine from the containment atmosphere when the melted ice is recirculated through the ECCS and the Containment Spray System, respectively.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice bed. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice bed is not required to be OPERABLE in these MODES.

ACTIONS

A.1

If the ice bed is inoperable, it must be restored to OPERABLE status within 48 hours. The Completion Time was developed based on operating experience, which confirms that due to the very large mass of stored ice, the parameters comprising OPERABILITY do not change appreciably in this time period. Because of this fact, the Surveillance Frequencies are long (months), except for the ice bed temperature, which is checked every 12 hours. If a degraded condition is identified, even for temperature, with such a large mass of ice it is not possible for the degraded condition to significantly degrade further in a 48 hour period. Therefore, 48 hours is a reasonable amount of time to correct a degraded condition before initiating a shutdown.

B.1 and B.2

If the ice bed cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the

BASES

ACTIONS (continued)

LCO does not apply. To achieve this status, the plant (unit) must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant (unit) conditions from full power conditions in an orderly manner and without challenging plant (unit) systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.6.15.1 ⑪ ①

Verifying that the maximum temperature of the ice bed is ≤ [27]°F ⑥ ensures that the ice is kept well below the melting point. The 12 hour ② Frequency was based on operating experience, which confirmed that, due to the large mass of stored ice, it is not possible for the ice bed temperature to degrade significantly within a 12 hour period and was also based on assessing the proximity of the LCO limit to the melting temperature.

Furthermore, the 12 hour Frequency is considered adequate in view of indications in the control room, including the alarm, to alert the operator to an abnormal ice bed temperature condition. This SR may be satisfied by use of the Ice Bed Temperature Monitoring System.

SR 3.6.15.2 ⑪ ①

INSERT 2 (TSTF-429)

The weighing program is designed to obtain a representative sample of the ice baskets. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall consist of one basket from radial rows 1, 2, 4, 6, 8, and 9. If no basket from a designated row can be obtained for weighing, a basket from the same row of an adjacent bay shall be weighed.

The rows chosen include the rows nearest the inside and outside walls of the ice condenser (rows 1 and 2, and 8 and 9, respectively), where heat transfer into the ice condenser is most likely to influence melting or sublimation. Verifying the total weight of ice ensures that there is adequate ice to absorb the required amount of energy to mitigate the DBAs.

If a basket is found to contain < [1400] lb of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The average weight of ice in these 21 baskets (the discrepant basket and the 20 additional baskets) shall be ≥ [1400] lb at a 95% confidence level.

TSTF-429

INSERT 2

Ice mass determination methodology is designed to verify the total as-found (pre-maintenance) mass of ice in the ice bed, and the appropriate distribution of that mass, using a random sampling of individual baskets. The random sample will include at least 30 baskets from each of three defined Radial Zones (at least 90 baskets total). Radial Zone A consists of baskets located in rows [7, 8, and 9] (innermost rows adjacent to the Crane Wall), Radial Zone B consists of baskets located in rows [4, 5, and 6] (middle rows of the ice bed), and Radial Zone C consists of baskets located in rows [1, 2, and 3] (outermost rows adjacent to the Containment Vessel). radial structure 8 6 2

The Radial Zones chosen include the row groupings nearest the inside and outside walls of the ice bed and the middle rows of the ice bed. These groupings facilitate the statistical sampling plan by creating sub-populations of ice baskets that have similar mean mass and sublimation characteristics. 8

discussed in Reference 2, except visual estimation which is precluded by Reference 3. 9

Methodology for determining sample ice basket mass will be either by direct lifting or by alternative techniques. Any method chosen will include procedural allowances for the accuracy of the method used. [The number of sample baskets in any Radial Zone may be increased once by adding 20 or more randomly selected baskets to verify the total mass of that Radial Zone.] 8

(Ref. 3) 9

In the event the mass of a selected basket in a sample population (initial or expanded) cannot be determined by any available means (e.g., due to surface ice accumulation or obstruction), a randomly selected representative alternate basket may be used to replace the original selection in that sample population. If employed, the representative alternate must meet the following criteria:

a. Alternate selection must be from the same bay-Zone (i.e., same bay, same Radial Zone) as the original selection, and 8 ; 3

b. Alternate selection cannot be a repeated selection (original or alternate) in the current Surveillance, and cannot have been used as an analyzed alternate selection in the three most recent Surveillances.

The complete basis for the methodology used in establishing the 95% confidence level in the total ice bed mass is documented in Reference [4] and approved in Reference [6]. 2 3 2

The total ice mass and individual Radial Zone ice mass requirements defined in this Surveillance, and the minimum ice mass per basket requirement defined by SR 3.6.[15].3, are the minimum requirements for OPERABILITY. Additional ice mass beyond the SRs is maintained to address sublimation. This sublimation allowance is generally applied to baskets in each Radial Zone, as appropriate, at the beginning of an operating cycle to ensure sufficient ice is available at the end of the operating cycle for the ice condenser to perform its intended design function. 8 11 1 8

The Frequency of 18 months was based on ice storage tests, and the typical sublimation allowance maintained in the ice mass over and above the minimum ice mass assumed in the safety analyses. Operating and maintenance experience has verified that, with

TSTF-429

INSERT 2
(continued)

the 18 month Frequency, the minimum mass and distribution requirements in the ice bed are maintained.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

Weighing 20 additional baskets from the same bay in the event a Surveillance reveals that a single basket contains < [1400] lb ensures that no local zone exists that is grossly deficient in ice. Such a zone could experience early melt out during a DBA transient, creating a path for steam to pass through the ice bed without being condensed. The Frequency of 9 months was based on ice storage tests and the allowance built into the required ice mass over and above the mass assumed in the safety analyses. Operating experience has verified that, with the 9 month Frequency, the weight requirements are maintained with no significant degradation between surveillances. TSTF-429

SR 3.6.15.3 ⑪

INSERT 3

This SR ensures that the azimuthal distribution of ice is reasonably uniform, by verifying that the average ice weight in each of three azimuthal groups of ice condenser bays is within the limit. The Frequency of 9 months was based on ice storage tests and the allowance built into the required ice mass over and above the mass assumed in the safety analyses. Operating experience has verified that, with the 9 month Frequency, the weight requirements are maintained with no significant degradation between surveillances. TSTF-429

SR 3.6.15.4 ⑪ ①

This SR ensures that the flow channels through the ice bed have not accumulated ice blockage that exceeds 15 percent of the total flow area through the ice bed region. The allowable 15 percent buildup of ice is based on the analysis of the sub-compartment response to a design basis LOCA with partial blockage of the ice condenser flow channels. The analysis did not perform detailed flow area modeling, but lumped the ice condenser bays into six sections ranging from 2.75 bays to 6.5 bays. Individual bays are acceptable with greater than 15 percent blockage, as long as 15 percent blockage is not exceeded for any analysis section.

To provide a 95 percent confidence that flow blockage does not exceed the allowed 15 percent, the visual inspection must be made for at least 54 (33 percent) of the 162 flow channels per ice condenser bay. The visual inspection of the ice bed flow channels is to inspect the flow area, by looking down from the top of the ice bed, and where view is achievable up from the bottom of the ice bed. Flow channels to be inspected are determined by random sample. As the most restrictive ice bed flow passage is found at a lattice frame elevation, the 15 percent blockage criteria only applies to "flow channels" that comprise the area:

TSTF-429

INSERT 3

11

Verifying that each selected sample basket from SR 3.6.[15].2 contains at least 600 lbs of ice in the as-found (pre-maintenance) condition ensures that a significant localized *degraded mass condition is avoided.* 1

8 Reference 2

This SR establishes a per basket limit to ensure any ice mass degradation is consistent with the initial conditions of the DBA by not significantly affecting the containment pressure response. [Ref. 4] provides insights through sensitivity runs that demonstrate that the containment peak pressure during a DBA is not significantly affected by the ice mass in a large localized region of baskets being degraded below the required safety analysis mean, when the Radial Zone and total ice mass requirements of SR 3.6.[15].2 are satisfied. Any basket identified as containing less than 600 lbs of ice requires appropriately entering the TS Required Action for an inoperable ice bed due to the potential that it may represent a significant condition adverse to quality. 2 11 8 1 8

2 A

As documented in [Ref. 4] maintenance practices actively manage individual ice basket mass above the required safety analysis mean for each Radial Zone. Specifically, each basket is serviced to keep its ice mass above [1132] lbs for Radial Zone A, [1132] lbs for Radial Zone B, and [1132] lbs for Radial Zone C. If a basket sublimates below the safety analysis mean value, this instance is identified within the plant's corrective action program, including evaluating maintenance practices to identify the cause and correct any deficiencies. These maintenance practices provide defense in depth beyond compliance with the ice bed surveillance requirements by limiting the occurrence of individual baskets with ice mass less than the required safety analysis mean. 8 2 8 6 8 CNP 2 8

BASES

SURVEILLANCE REQUIREMENTS (continued)

a. between ice baskets, and

b. past lattice frames and wall panels.

Due to significantly larger flow area in the regions of the upper deck grating and the lower inlet plenum support structures and turning vanes, a gross buildup of ice on these structures would be required to degrade air and steam flow. Therefore, these structures are excluded as part of a flow channel for application of the 15 percent blockage criteria. Industry experience has shown that removal of ice from the excluded structures during the refueling outage is sufficient to ensure they remain operable throughout the operating cycle. Removal of any gross ice buildup on the excluded structures is performed following outage maintenance activities.

Operating experience has demonstrated that the ice bed is the region that is the most flow restrictive, due to the normal presence of ice accumulation on lattice frames and wall panels. The flow area through the ice basket support platform is not a more restrictive flow area because it is easily accessible from the lower plenum and is maintained clear of ice accumulation. There is no mechanistically credible method for ice to accumulate on the ice basket support platform during plant operation. Plant and industry experience has shown that the vertical flow area through the ice basket support platform remains clear of ice accumulation that could produce blockage. Normally only a glaze may develop or exist on the ice basket support platform which is not significant to blockage of flow area. Additionally, outage maintenance practices provide measures to clear the ice basket support platform following maintenance activities of any accumulation of ice that could block flow areas.

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, an can be brushed off with the open hand.

SR 3.6.15.6

Verifying the chemical composition of the stored ice ensures that the stored ice has a boron concentration ≥ [1800] ppm and ≤ [2000] ppm as sodium tetraborate and a high pH, ≥ [9.0] and ≤ [9.5], in order to meet the requirement for borated water when the melted ice is used in the ECCS recirculation mode of operation. Additionally, the minimum boron concentration setpoint is used to assure reactor subcriticality in a post

BASES

SURVEILLANCE REQUIREMENTS (continued)

LOCA environment, while the maximum boron concentration is used as the bounding value in the hot leg switchover timing calculation (Ref. 4). This is accomplished by obtaining at least 24 ice samples. Each sample is taken approximately one foot from the top of the ice of each randomly selected ice basket in each ice condenser bay. The SR is modified by a NOTE that allows the boron concentration and pH value obtained from averaging the individual samples' analysis results to satisfy the requirements of the SR. If either the average boron concentration or average pH value is outside their prescribed limit, then entry into ACTION Condition A is required. Sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. The high pH is required to enhance the effectiveness of the ice and the melted ice in removing iodine from the containment atmosphere. This pH range also minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. The Frequency of 54 months is intended to be consistent with the expected length of three fuel cycles, and was developed considering these facts:

a. Long term ice storage tests have determined that the chemical composition of the stored ice is extremely stable.

b. There are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0-9.5 range when boron concentrations are above approximately 1200 ppm.

c. Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem, and

d. Someone would have to enter the containment to take the sample, and, if the unit is at power, that person would receive a radiation dose.

SR 3.6.15.6

This SR ensures that a representative sampling of ice baskets, which are relatively thin walled, perforated cylinders, have not been degraded by wear, cracks, corrosion, or other damage. Each ice basket must be raised at least 12 feet for this inspection. The Frequency of 40 months for a visual inspection of the structural soundness of the ice baskets is

(2) **INSERT 4**

, although the removal of iodine from the containment atmosphere by the sodium tetraborate is not assumed in the accident analysis

(TSTF-429) **INSERT 4A**

The SR is designed around a full-length inspection of a sample of baskets, and is intended to monitor the effect of the ice condenser environment on ice baskets. The groupings defined in the SR (two baskets in each azimuthal third of the ice bed) ensure that the sampling of baskets is reasonably distributed.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

INSERT A from pages B 3.6.15-7 and 8

based on engineering judgment and considers such factors as the thickness of the basket walls relative to corrosion rates expected in their service environment and the results of the long term ice storage testing.

SR 3.6.15.7

This SR ensures that initial ice fill and any subsequent ice additions meet the boron concentration and pH requirements of SR 3.6.15.6. The SR is modified by a NOTE that allows the chemical analysis to be performed on either the liquid or resulting ice of each sodium tetraborate solution prepared. If ice is obtained from offsite sources, then chemical analysis data must be obtained for the ice supplied.

REFERENCES

1. UFSAR, Section 6.2. 14.3.4
2. 10 CFR 50, Appendix K. INSERT 5
3. [Westinghouse letter, WAT-D-10686, "Upper Limit Ice Boron Concentration In Safety Analysis"] INSERT 7

INSERT 6

TSTF-429 **INSERT 5**

2. Topical Report ICUG-001, "Application of the Active Ice Mass Management (AIMM) Concept to the Ice Condenser Ice Mass Technical Specifications," Rev. 3, September 2003.

TSTF-429 **INSERT 6**

3. NRC Letter dated September 11, 2003, "Safety Evaluation for Ice Condenser Utility Group Topical Report No. ICUG-001, Revision 2, RE: Application of the Active Ice Mass Management Concept to the Ice Condenser Ice Mass Technical Specification (TAC No. MB3379)."

6 **INSERT 7**

UFSAR, Tables 5.3-1 and 5.3.2-1.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.11 BASES, ICE BED

1. Changes have been made to be consistent with changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

4. The ISTS 3.6.15 (ITS 3.6.11) Bases ASA section includes a discussion concerning the ECCS cooling effectiveness during the core reflood phase of a LOCA analysis. This discussion does not relate to how the ice bed is credited in the analysis for the mitigation of DBAs. Therefore, the discussion is deleted.

5. The discussion concerning Surveillance Frequencies is not appropriate in the ACTIONS Bases. It is adequately addressed in the Surveillance Requirement Bases. Therefore, the discussion has been deleted.

6. The brackets are removed and the proper plant specific information/value is provided.

7. Typographical/grammatical error corrected.

8. Minor editorial corrections have been made to the changes made by approved TSTF-429, Rev. 3 to be consistent with the format of the ITS.

9. These changes to the Bases are a result of the NRC SER (dated 9/11/03) accepting ICUG-001, Rev. 2.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.11, ICE BED

There are no specific NSHC discussions for this Specification.

ATTACHMENT 12

ITS 3.6.12, Ice Condenser Doors

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.6.12

(A.1)

ITS

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

LCO 3.6.12 3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTIONS Note 1 — L.1

Add proposed ACTIONS Note 2 — L.2

ACTION:

Add proposed ACTION A — M.1

ACTION B: With one or more ice condenser doors open or otherwise inoperable, POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F;

ACTION C: otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours

ACTION D: or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

SR 3.6.12.1 a. ~~Continuously monitored~~ [Once per 12 hours — L.3] and determined closed ~~by the inlet door position monitoring system~~ [LA.1], and

b. Demonstrated OPERABLE ~~during shutdown~~ [L.4] at least once per 18 months by:

SR 3.6.12.5 1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

SR 3.6.12.4 2. Verifying that opening of each door is not impaired by ice, frost or debris.

SR 3.6.12.6 3. ~~Testing~~ [Perform a torque test — LA.2] each one of the doors ~~and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.~~ [LA.2]

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A.1

ITS

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Testing each of the doors and verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component.

5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be less than or equal to 40 inch-pounds.

LA.2

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

SR 3.6.12.2 a. Verified closed and that opening of each door is not impaired by ice, frost or debris by a visual inspection at least once per 7 days, and

SR 3.6.12.7 b. Demonstrated OPERABLE at least once per 18 months by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the applicable force shown below.

Door	Lifting Force
1. Adjacent to Crane Wall	Less than or equal to 37.4 lbs.
2. Paired with Door Adjacent to Crane Wall	Less than or equal to 33.8 lbs.
3. Adjacent to Containment Wall	Less than or equal to 31.8 lbs.
4. Paired with Door Adjacent to Containment Wall	Less than or equal to 31.0 lbs.

LA.3

ITS

A.1

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.12.3

4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE at least once per 92 days by visually verifying:

a. That the doors are in place, and

b. That no condensation, frost, or ice has formed on the doors or blankets which would restrict their lifting and opening if required.

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ITS

(A.1)

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

LCO 3.6.12 — 3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS Note 1 (L.1)

Add proposed ACTIONS Note 2 (L.2)

Add proposed ACTION A (M.1)

ACTION B — With one or more ice condenser doors open or otherwise inoperable, POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F;

ACTION C — otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours or be in at

ACTION D — least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

SR 3.6.12.1 — a. Continuously monitored [Once per 12 hours (L.3)] and determined closed by the inlet door position monitoring system, and (LA.1)

b. Demonstrated OPERABLE during shutdown (L.4) at least once per 18 months by:

SR 3.6.12.5 — 1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

SR 3.6.12.4 — 2. Verifying that opening of each door is not impaired by ice, frost or debris.

SR 3.6.12.6 — 3. Testing [Perform a torque test] each one of the doors and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. (LA.2)

ITS 3.6.12

A.1

ITS

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

4. Testing each one of the doors and verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component.

5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be less than or equal to 40 inch-pounds.

LA.2

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

SR 3.6.12.2 a. Verified closed and that opening of each door is not impaired by ice, frost or debris by a visual inspection at least once per 7 days, and

SR 3.6.12.7 b. Demonstrated OPERABLE at least once per 18 months by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the applicable force shown below.

Door	Lifting Force
1. Adjacent to Crane Wall	Less than or equal to 37.4 lbs.
2. Paired with Door Adjacent to Crane Wall	Less than or equal to 33.8 lbs.
3. Adjacent to Containment Wall	Less than or equal to 31.8 lbs.
4. Paired with Door Adjacent to Containment Wall	Less than or equal to 31.0 lbs.

LA.3

SR 3.6.12.3 4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE at least once per 92 days by visually verifying:

A.1

ITS

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.12.3

a. That the doors are in place, and

b. That no condensation, frost, or ice has formed on the doors or blankets which would restrict their lifting and opening if required.

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DISCUSSION OF CHANGES
ITS 3.6.12, ICE CONDENSER DOORS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 The CTS 3.6.5.3 Action provides compensatory actions for one or more ice condenser doors open or otherwise inoperable. Power operation may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F. A new requirement has been added (ITS 3.6.12 ACTION A) that addresses inoperabilities associated with one or more ice condenser inlet doors that are physically restrained from opening. The new requirement only allows one hour to restore the inlet door to OPERABLE status. This changes the CTS by adding a more restrictive ACTION for inlet doors which are physically restrained from opening.

The purpose of the CTS Action is to provide adequate compensatory actions for all inoperabilities associated with inlet doors. The CTS 3.6.5.3 Action allows 14 days with an inoperable condenser inlet door. This change is acceptable because the new action provides a short period of time to restore the inoperable ice condenser inlet door to OPERABLE status when it is not able to perform it safety function (i.e., open) because it is physically restrained. The ITS ACTION is necessary to return operation to within the bounds of the safety analysis. The one hour Completion Time is consistent with the ACTIONS for the Containment in ITS LCO 3.6.1. This change is designated as more restrictive as it allows less time to restore the inoperability than in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.3.1.a requires the inlet doors to be verified closed "by the inlet door position monitoring system." ITS SR 3.6.12.1 requires the same verification, however the detail on the method to perform the verification is not specified. This changes the CTS by moving the detail on the method to verify the inlet doors are closed to the Bases.

DISCUSSION OF CHANGES
ITS 3.6.12, ICE CONDENSER DOORS

The removal of this detail for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the ice condenser inlet doors are closed. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.2 *(Type 3 – Removing Procedural Details for meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.3.1.b.3 requires testing of each one of the inlet doors and verifying that the torque required to open each door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. CTS 4.6.5.3.1.b.4 requires testing of each one of the inlet doors and verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque plus a frictional torque component. CTS 4.6.5.3.1.b.5 requires a calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be less than or equal to 40 inch-pounds. ITS SR 3.6.12.6 requires the performance of a torque test on each inlet door. This changes the CTS by moving the torque design limits and definitions to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform a torque test on the inlet doors. Also, this change is acceptable because the removed information will be adequately controlled in ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA.3 *(Type 3 – Removing Procedural Details for meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.3.2.b requires an inspection of each ice condenser intermediate deck door by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the applicable force shown. CTS 4.6.5.3.2.b also lists the required lifting force for various doors. ITS SR 3.6.12.7 requires the same inspections, however the locations of the doors and associated lifting forces are not listed. This changes the CTS by moving the locations of the doors and associated lifting forces to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify free movement of each intermediate door. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L.1 *(Category 4 – Relaxation of Required Action)* CTS 3.6.5.3 provides an Action for one or more inoperable ice condenser doors. ITS 3.6.12 provides similar ACTIONS, however a Note is added to the CTS Action (ITS 3.6.12 ACTIONS Note 1) that states "Separate Condition entry is allowed for each ice condenser door." This modifies the CTS by providing a specific allowance to enter the Action for each ice condenser door separately.

The purpose of the CTS 3.6.5.3 Action is to minimize the time the unit is operating with inoperable ice condenser doors. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. ITS 3.6.12 ACTION A has been added (as discussed in DOC M.1) to minimize the time one or more ice condenser inlet doors are inoperable due to being physically restrained from opening. The Completion Time for restoration is one hour. ITS 3.6.12 ACTION B covers the condition of one or more ice condenser doors inoperable for reasons other than Condition A (i.e., the doors physically will not open) or not closed. The Completion Time to restore a door in this condition is 14 days. In addition, during this 14 day period, the ice bed temperature must be verified to be ≤ 27°F once every 4 hours. The addition of ITS 3.6.12 ACTION A minimizes the time the ice condenser doors are inoperable by being physically restrained from opening and therefore minimizes the time allowed to be outside the containment analysis assumptions. When operating in ITS 3.6.12 ACTION B, the verification of the ice bed is OPERABLE is ensured by verifying the ice bed temperature is ≤ 27°F. Therefore, the Completion Time of 14 days is appropriate. The addition of the ITS 3.6.12 ACTIONS Note 1 is acceptable since the proposed compensatory

DISCUSSION OF CHANGES
ITS 3.6.12, ICE CONDENSER DOORS

actions minimize risk associated with continued operation while providing time to repair inoperable features. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.2 *(Category 4 – Relaxation of Required Action)* The CTS 3.6.5.3 Action provides specific actions to be taken if an ice condenser intermediate deck or top deck door is open or inoperable. ITS 3.6.12 ACTIONS Note 2 states that when an ice condenser intermediate deck or top deck door is inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, entry into associated Conditions and Required Actions is not required. This changes the CTS by allowing an intermediate deck or top deck door to be inoperable for a short duration to perform routine evolutions without requiring entry into the associated Actions.

The purpose of the CTS 3.6.5.3 Action is to minimize the time the unit is operating with inoperable ice condenser doors. This change is acceptable because the doors are inoperable only for short durations, and the reason for the inoperability is to either perform required Surveillances, perform preventative maintenance to improve reliability of the doors or ensure the doors do not become inoperable, or simply to be walking on or opening the doors for inspections. In addition, during this short duration, the ice bed temperature is normally continuously monitored (as described in the Bases). This helps to ensure that an ice bed temperature change due to an open door will be detected and appropriate actions taken (as required by ITS 3.6.11). Also, the number of doors walked on simultaneously (and therefore, potentially incapable of opening) is small when compared to the total number of doors. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L.3 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.6.5.3.1.a requires the inlet doors of the ice condenser to be "continuously monitored" and determined to be closed by the Inlet Door Position Monitoring System. ITS SR 3.6.12.1 requires the verification that all inlet doors are closed every 12 hours. This changes the CTS by allowing the ice condenser inlet doors to be monitored less frequently. The change to the method of verifying the ice doors are closed is discussed in DOC LA.1.

The purpose of CTS 4.6.5.3.1.a is to ensure the ice condenser inlet doors are closed. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The inlet doors will open when there is significant pressure buildup in the containment lower compartment. During an accident this pressure buildup is generated by the energy introduced by the Reactor Coolant System blowdown or by operation of the Containment Air Recirculation/Hydrogen Skimmer System. During normal operation these conditions are not expected and the doors should remain closed. Therefore the 12 hour Frequency is considered sufficient. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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DISCUSSION OF CHANGES
ITS 3.6.12, ICE CONDENSER DOORS

L.4 *(Category 12 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.6.5.3.1.b requires verification that each ice condenser inlet door is OPERABLE every 18 months during shutdown. Testing includes verification of the torque required to initially open each door, verification that the opening of each door is not impaired by ice, frost, or debris, and verification of the opening and closing torques when the door is 40 degrees open. ITS SR 3.6.12.4, SR 3.6.12.5, and SR 3.6.12.6 require the same testing every 18 months, with no restriction as to when (i.e., during shutdown) the test can be performed. This changes the CTS by deleting the requirement to perform the Surveillances during shutdown.

The purpose of CTS 4.6.5.3.1.b is to ensure the ice condenser inlet doors are OPERABLE. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions. The control of the unit conditions appropriate to perform the test is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive because the Surveillance may be performed at plant conditions other than shutdown.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

CTS

3.6.16 Ice Condenser Doors (Ice Condenser) (12) (1)

LCO 3.6.5.3

LCO 3.6.16 The ice condenser inlet doors, intermediate deck doors, and top deck (doors) shall be OPERABLE and closed. (2)

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

ACTIONS

- NOTE - (5)

DOC L.1 Separate Condition entry is allowed for each ice condenser door. INSERT 1 (3)

CONDITION	REQUIRED ACTION	COMPLETION TIME
Doc M1 — A. One or more ice condenser inlet doors inoperable due to being physically restrained from opening.	A.1 Restore inlet door to OPERABLE status.	1 hour
Action — B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.	B.1 Verify maximum ice bed temperature is ≤ [27]°F.	Once per 4 hours (2)
	AND	
	B.2 Restore ice condenser door to OPERABLE status and closed positions.	14 days (6)
Action — C. Required Action and associated Completion Time of Condition B not met.	C.1 Restore ice condenser door to OPERABLE status and closed positions.	48 hours (6)
Action — D. Required Action and associated Completion Time of Condition A or C not met.	D.1 Be in MODE 3.	6 hours
	AND	
	D.2 Be in MODE 5.	36 hours

CTS

(3) **INSERT 1**

DOC L.2 2. When an ice condenser intermediate deck or top deck door is inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, entry into associated Conditions and Required Actions is not required.

Ice Condenser Doors (Ice Condenser)
3.6.16

CTS

SURVEILLANCE REQUIREMENTS

CTS		SURVEILLANCE	FREQUENCY
4.6.5.3.1.a	SR 3.6.16.1	Verify all inlet doors indicate closed by the Inlet Door Position Monitoring System.	12 hours
4.6.5.3.2.a	SR 3.6.16.2	Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	7 days
4.6.5.3.1.b.2	SR 3.6.16.3	Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris.	[3 months during first year after receipt of license] AND 18 months
4.6.5.3.1.b.1	SR 3.6.16.4	Verify torque required to cause each inlet door to begin to open is ≤ [675] in-lb.	[3 months during first year after receipt of license] AND 18 months
4.6.5.3.1.b.3	SR 3.6.16.5	Perform a torque test on [a sampling of ≥ 25% of the] inlet doors.	[3 months during first year after receipt of license] AND 18 months
4.6.5.3.2.b	SR 3.6.16.6	Verify for each intermediate deck door: a. No visual evidence of structural deterioration; b. Free movement of the vent assemblies; and c. Free movement of the door.	[3 months during first year after receipt of license] AND 18 months

INSERT 2 from next page

Ice Condenser Doors (Ice Condenser) ①
3.6.16 ⑫

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
4.6.5.3.3	SR 3.6.16.2 ⑫ ① ③ Verify, by visual inspection, each top deck door: ② a. Is in place; and b. Has no condensation, frost, or ice formed on the door that would restrict its opening. ②	92 days ① ⑤

move to previous page as INSERT 2 ⑤

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.12, ICE CONDENSER DOORS

1. The headings for ISTS 3.6.16 include the parenthetical expression (Ice Condenser). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the CNP ITS due to design differences. Therefore, ISTS 3.6.16 is renumbered as ITS 3.6.12.

2. The brackets are removed and the proper plant specific information/value is provided.

3. The ISTS Bases for ACTIONS B.1 and B.2 (last sentence) state that entry into Condition B is not required due to personnel standing on or opening an intermediate deck or top deck door for short durations to perform required Surveillance, minor maintenance such as ice removal, or routine tasks such as system walkdowns. As documented in Part 9900 of the NRC Inspection Manual, Technical Guidance - Licensee Technical Specifications Interpretations, and in the ITS Bases Control Program (ITS 5.5.12), neither the Technical Specifications Bases nor Licensee generated interpretations can be used to change the Technical Specification requirements. Thus, since the ISTS do not provide for this option, the Bases cannot change the Technical Specifications requirement. To preclude this problem, a Note has been added to the ITS (ACTIONS Note 2) to allow an intermediate deck or top deck door to be inoperable (i.e., open or incapable of opening) for short durations during the ISTS Bases specified evolutions. During this time, the ice bed temperature should be continuously monitored to ensure the open door does not result in ice bed temperature greater than the limit. This new Note maintains the intent of the ISTS Bases allowance.

4. The requirement in ISTS SR 3.6.16.1 (ITS SR 3.6.12.1) to use the Inlet Door Position Monitoring System has been deleted. The Bases for this Surveillance has been revised to state that the verification of the inlet doors is normally performed using the Inlet Door Monitoring System. This change is made because if the Inlet Door Position Monitoring System is inoperable, then the Surveillance requiring verification that all inlet doors are closed will not be met. However, no inlet doors may actually be open. The requirements of the Inlet Door Position Monitoring System in CTS 3/4.6.5.4 have been relocated to the Technical Requirements Manual as documented in CTS 3/4.6.5.4 DOC R.1 and the Split Report. This relocation is consistent with the analysis documented in WCAP-11618, "Methodically Engineered Restructured and Improved Technical Specifications, MERITS Program - Phase II Task 5, Criteria Application," including Addendum 1, and the NRC Staff Review of NSSS Vendor Owners Groups Application of The Commission's Interim Policy Statement Criteria To Standard Technical Specifications, Wilgus/Murley letter dated May 9. In addition, this change is consistent with other Surveillance Requirements that require verification of certain parameters and do not include in the Surveillance Requirement the specific instrumentation used to perform the verification.

5. The bracketed first Frequency (3 months during first year after receipt of license) in ISTS SR 3.6.16.3, SR 3.6.16.4, SR 3.6.16.5, and SR 3.6.16.6 has been deleted since it no longer applies to CNP Units 1 and 2. Both units are more than 3 months

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.12, ICE CONDENSER DOORS

from the receipt of the license. The SRs have been put in the proper order, based on the Frequency.

6. Typographical/grammatical error corrected.

7. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.16 Ice Condenser Doors (Ice Condenser) ①
⑫

BASES

BACKGROUND

The ice condenser doors consist of the inlet doors, the intermediate deck doors, and the top deck doors. The functions of the doors are to:

a. Seal the ice condenser from air leakage during the lifetime of the unit; and ②

b. Open in the event of a Design Basis Accident (DBA) to direct the hot steam air mixture from the DBA into the ice bed, where the ice would absorb energy and limit containment peak pressure and temperature during the accident transient.

Limiting the pressure and temperature following a DBA reduces the release of fission product radioactivity from containment to the environment.

The ice condenser is an annular compartment enclosing approximately 300° of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The inlet doors separate the atmosphere of the lower compartment from the ice bed inside the ice condenser. The top deck doors are above the ice bed and exposed to the atmosphere of the upper compartment. The intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. This plenum area is used to facilitate surveillance and maintenance of the ice bed.

The ice baskets held in the ice bed within the ice condenser are arranged to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condensers limits the pressure and temperature buildup in containment. A divider barrier

BASES

BACKGROUND (continued)

separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

INSERT 1

The ice, together with the containment spray, serves as a containment heat removal system and is adequate to absorb (at least twice) the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment during the several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) (Containment Air Recirculation/Hydrogen Skimmer (CEQ) System) returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. (3)

The water from the melted ice drains into the lower compartment where it serves as a source of borated water (via the containment sump) for the Emergency Core Cooling System (ECCS) and the Containment Spray System heat removal functions in the recirculation mode. The ice (via the Containment Spray System) and the recirculated ice melt also serve to clean up the containment atmosphere.

The ice condenser doors ensure that the ice stored in the ice bed is preserved during normal operation (doors closed) and that the ice condenser functions as designed if called upon to act as a passive heat sink following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment pressure and temperature are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and ARS (CEQ System) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed with respect to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train each of the Containment Spray System and the ARS (CEQ System) being rendered inoperable. (3)

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3

INSERT 1

loss of coolant accident (LOCA) or at least twice the energy released from a feedwater or main steam line break. The excess capacity is necessary to absorb

BASES

APPLICABLE SAFETY ANALYSES (continued)

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2). (4)

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." (1)

An additional design requirement was imposed on the ice condenser door design for a small break accident in which the flow of heated air and steam is not sufficient to fully open the doors.

For this situation, the doors are designed so that all of the doors would partially open by approximately the same amount. Thus, the partially opened doors would modulate the flow so that each ice bay would receive an approximately equal fraction of the total flow.

This design feature ensures that the heated air and steam will not flow preferentially to some ice bays and deplete the ice there without utilizing the ice in the other bays.

In addition to calculating the overall peak containment pressures, the DBA analyses include the calculation of the transient differential pressures that would occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand the local transient pressure differentials for the limiting DBAs.

The ice condenser doors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). (3)

LCO

This LCO establishes the minimum equipment requirements to assure that the ice condenser doors perform their safety function. The ice condenser inlet doors, intermediate deck doors, and top deck doors must be closed to minimize air leakage into and out of the ice condenser, with its attendant leakage of heat into the ice condenser and loss of ice

BASES

LCO (continued)

through melting and sublimation. The doors must be OPERABLE to ensure the proper opening of the ice condenser in the event of a DBA. OPERABILITY includes being free of any obstructions that would limit their opening, and for the inlet doors, being adjusted such that the opening and closing torques are within limits. The ice condenser doors function with the ice condenser to limit the pressure and temperature that could be expected following a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice condenser doors. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice condenser doors are not required to be OPERABLE in these MODES.

ACTIONS

(Note 1) A Note provides clarification that, for this LCO, separate Condition entry is allowed for each ice condenser door. ← INSERT 2 ①

A.1

If (an) one or more ice condenser inlet doors (is) are inoperable due to being physically restrained from opening, the door(s) must be restored to OPERABLE status within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires containment to be restored to OPERABLE status within 1 hour. ⑤

B.1 and B.2

If (an) one or more ice condenser doors (is) are determined to be partially open or otherwise inoperable for reasons other than Condition A or if a door is found that is not closed, it is acceptable to continue unit operation for up to 14 days, provided the ice bed temperature instrumentation is monitored once per 4 hours to ensure that the open or inoperable door is not allowing enough air leakage to cause the maximum ice bed temperature to approach the melting point. The Frequency (Completion Time) of (once per) 4 hours is based on the fact that temperature changes cannot occur rapidly in the ice bed because of the large mass of ice involved. The 14 day Completion Time is based on long term ice storage tests that indicate ⑤

(1) **INSERT 2**

Note 2 has been added to allow an intermediate deck or top deck door to be inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, and not require entry into associated Conditions and Required Actions. This is acceptable since the ice bed temperature is normally continuously monitored using an alarm in the control room, which alarms on increasing ice bed temperature.

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BASES

ACTIONS (continued)

that if the temperature is maintained below [27]°F, there would not be a significant loss of ice from sublimation. If the maximum ice bed temperature is > [27]°F at any time, the situation reverts to Condition C and a Completion Time of 48 hours is allowed to restore the inoperable door to OPERABLE status or enter into Required Actions D.1 and D.2. Ice bed temperature must be verified to be within the specified Frequency as augmented by the provisions of SR 3.0.2. If this verification is not made, Required Actions D.1 and D.2, not Required Action C.1, must be taken. Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns. (6) (7) (1)

C.1

If Required Actions B.1 or B.2 are [and associated Completion Time is] not met, the doors must be restored to OPERABLE status and closed positions within 48 hours. The 48 hour Completion Time is based on the fact that, with the very large mass of ice involved, it would not be possible for the temperature to decrease [increase] to the melting point and a significant amount of ice to melt in a 48 hour period. Condition C is entered from Condition B only when the Completion Time of Required Action B.2 is not met or when the ice bed temperature has not been verified at the required frequency. (8) (9) (7) INSERT 2A

INSERT 3 (8)

D.1 and D.2

If the ice condenser doors cannot be restored to OPERABLE status within the required Completion Time, the plant [unit] must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant [unit] must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant [unit] conditions from full power conditions in an orderly manner and without challenging plant [unit] systems. (3)

SURVEILLANCE REQUIREMENTS

SR 3.6.16.1 (12) (1)

Verifying by means of the Inlet Door Position Monitoring System that the inlet doors are in their closed positions makes the operator aware of an inadvertent opening of one or more doors. The Frequency of 12 hours ensures that operators on each shift are aware of the status of the doors. INSERT 4 (1)

(7) **INSERT 2A**

The 48 hour Completion Time is also consistent with the ACTIONS of LCO 3.6.11, "Ice Bed."

(8) **INSERT 3**

With any Required Action and associated Completion Time of Condition A or C not met

(1) **INSERT 4**

The verification is normally performed using the Inlet Door Position Monitoring System.

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BASES

SURVEILLANCE REQUIREMENTS (continued) (1)

SR 3.6.16.2 (12)

Verifying, by visual inspection, that each intermediate deck door is closed and not impaired by ice, frost, or debris provides assurance that the intermediate deck doors (which form the floor of the upper plenum where frequent maintenance on the ice bed is performed) have not been left open or obstructed. The Frequency of 7 days is based on engineering judgment and takes into consideration such factors as the frequency of entry into the intermediate ice condenser deck, the time required for significant frost buildup, and the probability that a DBA will occur.

INSERT 4A from page B 3.6.16-8 (1)

SR 3.6.16.3 (12) (4) (1)

Verifying, by visual inspection, that the ice condenser inlet doors are not impaired by ice, frost, or debris provides assurance that the doors are free to open in the event of a DBA. For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on door design, which does not allow water condensation to freeze, and operating experience, which indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown. (3) (1) (6)

SR 3.6.16.4 (12) (5) (1)

Verifying the opening torque of the inlet doors provides assurance that no doors have become stuck in the closed position. The value of [675] in-lb is based on the design opening pressure on the doors of 1.0 lb/ft^2. For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors usually meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown. (6) (1) (6)

SR 3.6.16.5 (12) (6) (1)

The torque test Surveillance ensures that the inlet doors have not developed excessive friction and that the return springs are producing a door return torque within limits. The torque test consists of the following:

BASES

SURVEILLANCE REQUIREMENTS (continued)

1. Verify that the torque, T(OPEN), required to cause opening motion at the [40]° open position is ≤ [195] in-lb; (5) (2)

2. Verify that the torque, T(CLOSE), required to hold the door stationary (i.e., keep it from closing) at the [40]° open position is ≥ [78] in-lb, and (6) (2)

3. Calculate the frictional torque, T(FRICT) = 0.5 {T(OPEN) - T(CLOSE)}, and verify that the T(FRICT) is ≤ [40] in-lb. (6)

INSERT 5 (3)

The purpose of the friction and return torque Specifications is to ensure that, in the event of a small break LOCA or SLB, all of the 24 door pairs open uniformly. This assures that, during the initial blowdown phase, the steam and water mixture entering the lower compartment does not pass through part of the ice condenser, depleting the ice there, while bypassing the ice in other bays. The Frequency of [18] months (6) [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown. (1)

SR 3.6.16.6 (12) (7) (1)

Verifying the OPERABILITY of the intermediate deck doors provides assurance that the intermediate deck doors are free to open in the event of a DBA. The verification consists of visually inspecting the intermediate doors for structural deterioration, verifying free movement of the vent assemblies, and ascertaining free movement of each door when lifted with the applicable force shown below:

	Door	Lifting Force
a.	Adjacent to crane wall	≤ 37.4 lb
b.	Paired with door adjacent to crane wall	≤ 33.8 lb
c.	Adjacent to containment wall	≤ 31.8 lb

(3)

(2) **INSERT 5**

T (OPEN) is known as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. T(CLOSE) is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component.

BASES

SURVEILLANCE REQUIREMENTS (continued)

d. Paired with door adjacent to containment wall ≤ 31.0 lb

The 18 month Frequency (3 months during the first year after receipt of license) is based on the passive design of the intermediate deck doors, the frequency of personnel entry into the intermediate deck, and the fact that SR 3.6.16.2 confirms on a 7 day Frequency that the doors are not impaired by ice, frost, or debris, which are ways a door would fail the opening force test (i.e., by sticking or from increased door weight). (1) (12) (1)

SR 3.6.16.8 (12) (3) (1)

move to page B 3.6.16-6 a) INSERT 4A (1)

Verifying, by visual inspection, that the top deck doors are in place and not obstructed provides assurance that the doors are performing their function of keeping warm air out of the ice condenser during normal operation, and would not be obstructed if called upon to open in response to a DBA. The Frequency of 92 days is based on engineering judgment, which considered such factors as the following:

a. The relative inaccessibility and lack of traffic in the vicinity of the doors make it unlikely that a door would be inadvertently left open; (2)

b. Excessive air leakage would be detected by temperature monitoring in the ice condenser; and (2)

c. The light construction of the doors would ensure that, in the event of a DBA, air and gases passing through the ice condenser would find a flow path, even if a door were obstructed.

REFERENCES

1. UFSAR, Chapter [15]. Section 14.3.4 (6)

2. 10 CFR 50, Appendix K. (4)

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.12 BASES, ICE CONDENSER DOORS

1. Changes have been made to be consistent with changes made to the ITS.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. The ISTS 3.6.16 (ITS 3.6.12) Bases ASA section includes a discussion concerning the ECCS cooling effectiveness during the core reflood phase of a LOCA analysis. This discussion does not relate to how the Ice Condenser Doors are credited in the analysis for the mitigation of DBAs. Therefore, the discussion is deleted.

5. Changes have been made to be consistent with the Specification. In the specific case of changing the words "one or more" to "an" and "doors are" to "door is" in ACTIONS A.1 and B.1 and B.2 Bases, this was done since separate Condition entry is allowed for each inoperable door.

6. The brackets are removed and the proper plant specific information/value is provided.

7. The Bases wording in ACTIONS B.1 and B.2 is deleted because the Bases places additional restrictions than those specified in the Specification. In accordance with the Specification, if ACTION B is not met for any reason (Required Actions B.1 or B.2 not met), then the default ACTION is ACTION C, while the ISTS Bases requires Required Actions D.1 and D.2 to be applied if the temperature verification is not made. The Required Actions in the Specification are consistent with the current allowances in the CTS, therefore the change is appropriate. In addition, the last sentence in ACTIONS C.1 Bases is also deleted since it is duplicative of the first sentence of the ACTIONS C.1 Bases. In its place, the words "The 48 hour Completion Time is also consistent with the ACTIONS of LCO 3.6.11, "Ice Bed" have been added, consistent with similar words in the ITS 3.6.3 ACTIONS B.1 Bases.

8. The words in the ISTS do not convey the complete intent of the actual ISTS Condition and when the Condition should be entered. Therefore, to be consistent with the actual ISTS Condition words, the Bases have been modified.

9. Typographical/grammatical error corrected.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.12, ICE CONDENSER DOORS

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 13

ITS 3.6.13, Divider Barrier Integrity

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.6.13

A.1

ITS

CONTAINMENT SYSTEMS

DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

LIMITING CONDITION FOR OPERATION

LCO 3.6.13, SR 3.6.13.1 — 3.6.5.5 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed. — A.2

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: — Add proposed Condition A Note — A.3

ACTION A — With [A] (one or more) personnel access door or equipment hatch inoperable or open [except for personnel transit entry] (LCO 3.6.13 Note) and T_{avg} greater than 200°F, restore the door or hatch to OPERABLE status or to its closed position (as applicable) within 1 hour or be in at least HOT STANDBY within the next 6 hours and in

ACTION C — COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.13.1, SR 3.6.13.3 — 4.6.5.5.1 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined closed by a visual inspection prior to increasing the Reactor Coolant System T_{avg} above 200°F and after each personnel transit entry when the Reactor Coolant System T_{avg} is above 200°F.

SR 3.6.13.2 — 4.6.5.5.2 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined OPERABLE by visually inspecting the seals and sealing surfaces of these penetrations and verifying no detrimental misalignments, cracks or defects in the sealing surfaces, or apparent deterioration of the seal material:

a. Prior to final closure of the penetration each time it has been opened, and

b. At least once per 10 years for penetrations containing seals fabricated from resilient materials.

ITS

A.1

CONTAINMENT SYSTEMS

DIVIDER BARRIER SEAL

LIMITING CONDITION FOR OPERATION

LCO 3.6.13 — 3.6.5.9 The divider barrier seal shall be OPERABLE. — A.2

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: — Add proposed ACTIONS B and C — A.4

ACTIONS B and C — ~~With the divider barrier seal inoperable, restore the seal to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~

SURVEILLANCE REQUIREMENTS

4.6.5.9 The divider barrier seal shall be determined OPERABLE at least once per ~~18~~ 24 months ~~during shutdown~~ by: — L.2, L.1

SR 3.6.13.4 — a. Removing two divider barrier seal test coupons and verifying that the physical properties of the test coupons are within the acceptable range of values shown in Table 3.6-2.

SR 3.6.13.5 — b. Visually inspecting at least 95 percent of the seal's entire length and:

1. Verifying that the seal and seal mounting bolts are properly installed, and

2. Verifying that the seal material shows no visual evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearances.

TABLE 3.6-2

DIVIDER BARRIER SEAL
ACCEPTABLE PHYSICAL PROPERTIES

SR 3.6.13.4

Material	Tensile Strength	Elongation
Uniroyal 3807 or Equal*	120 psi	100%

LA.1

A.1

*Equal defined as meeting at least the requirements discussed in Question 5.98 of the Plant's FSAR.

LA.1

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ITS 3.6.13

ITS

A.1

CONTAINMENT SYSTEMS

DIVIDER BARRIER PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES

LIMITING CONDITION FOR OPERATION

LCO 3.6.13, SR 3.6.13.1 — 3.6.5.5 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed. — A.2

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: — Add proposed Condition A Note — A.3

one or more — A.3

ACTION A — With [a] personnel access door or equipment hatch inoperable or open except for personnel transit entry (LCO 3.6.13 Note) and T_{avg} > 200°F, restore the door or hatch to OPERABLE status or to its closed position (as applicable) within 1 hour

ACTION C — or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.13.1, SR 3.6.13.3 — 4.6.5.5.1 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined closed by a visual inspection prior to increasing the Reactor Coolant System T_{avg} above 200°F and after each personnel transit entry when the Reactor Coolant System T_{avg} is above 200°F.

SR 3.6.13.2 — 4.6.5.5.2 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined OPERABLE by visually inspecting the seals and sealing surfaces of these penetrations and verifying no detrimental misalignments, cracks or defects in the sealing surfaces, or apparent deterioration of the seal material:

a. Prior to final closure of the penetration each time it has been opened, and

b. At least once per 10 years for penetrations containing seals fabricated from resilient materials.

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ITS 3.6.13

ITS

A.1

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

DIVIDER BARRIER SEAL

LIMITING CONDITION FOR OPERATION

LCO 3.6.13 — 3.6.5.9 The divider barrier seal shall be OPERABLE. (A.2)

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION: (Add proposed ACTIONS B and C — A.4)

ACTIONS B and C — With the divider barrier seal inoperable, restore the seal to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.5.9 The divider barrier seal shall be determined OPERABLE at least once per 18 [24 — L.1] months during shutdown [L.2] by:

SR 3.6.13.4 — a. Removing two divider barrier seal test coupons and verifying that the physical properties of the test coupons are within the acceptable range of values shown in Table 3.6-2.

SR 3.6.13.5 — b. Visually inspecting at least 95 percent of the seal's entire length and:

1. Verifying that the seal and seal mounting bolts are properly installed, and

2. Verifying that the seal material shows no visual evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearances.

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SR 3.6.13.4

TABLE 3.6-2

DIVIDER BARRIER SEAL
ACCEPTABLE PHYSICAL PROPERTIES

Material	Tensile Strength	Elongation
Uniroyal 3807 or Equal*	120 psi	100%

LA.1

*Equal defined as meeting at least the requirements discussed in Question 5.98 of the plant's FSAR

LA.1

A.1

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DISCUSSION OF CHANGES
ITS 3.6.13, DIVIDER BARRIER INTEGRITY

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 CTS 3.6.5.5 requires the personnel access doors and equipment hatches between the containment's upper and lower compartments to be OPERABLE and closed. CTS 3.6.5.9 requires the divider barrier seal to be OPERABLE. ITS LCO 3.6.13 requires the divider barrier integrity to be maintained. This changes the CTS by combining the divider barrier requirements of CTS 3.6.5.5 and CTS 3.6.5.9 into one LCO statement.

The purpose of CTS 3/4.6.5.5 and CTS 3/4.6.5.9 is to provide requirements pertaining to containment divider integrity. This change is acceptable because moving these requirements to one LCO, ITS 3.6.13, centralizes the requirements. In addition, the requirement in CTS 3.6.5.5 for the personnel access doors and equipment hatches between the containment's upper and lower compartments to be closed is covered by CTS 4.6.5.5.1 (ITS SR 3.6.13.1), thus it is part of maintaining divider barrier integrity. This change is designated as administrative because it does not result in technical changes to the CTS.

A.3 CTS 3.6.5.5 Action provides the actions to take when a personnel access door or equipment hatch is inoperable. ITS 3.6.13 ACTION A provides an action for one or more personnel access doors or equipment hatches open or inoperable. In addition, ITS 3.6.13 Condition A includes a Note that allows separate Condition entry for each personnel access door or equipment hatch. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable personnel access door or equipment hatch.

This change is acceptable because it clearly states the current requirement. The CTS considers each personnel access door or equipment hatch to be separate and independent from the others. This change is designated as administrative because it does not result in technical changes to the CTS.

A.4 CTS 3.6.5.9 Action does not state what action to take if the divider barrier seal is inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the divider barrier seal be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Thus, entry into CTS 3.0.3 is required if CTS 3.6.5.9 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.6.13 ACTION B requires that if the divider barrier seal is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.13 ACTION C requires that if the Required Action and associated Completion Time are not met (i.e., the divider barrier seal is not restored to OPERABLE status in 1 hour), the unit must be in

DISCUSSION OF CHANGES
ITS 3.6.13, DIVIDER BARRIER INTEGRITY

MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by stating the ACTIONS within the Specification rather than deferring to CTS 3.0.3. In addition, it deletes the Action to restore the limits prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.5.9 is silent on these actions, deferring to CTS 3.0.3 for the actions to accomplish this. This change is acceptable because the ACTIONS specified in ITS 3.6.13 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Action of CTS 3.6.5.9 is acceptable because CTS 3.0.4 (ITS LCO 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.13. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.6-2 specifies the divider seal acceptable physical properties. The table includes the tensile strength and elongation property as well as the material type. The material must be Uniroyal 3807 or equal, defined as meeting at least the requirements discussed in Question 5.98 of the Plant's FSAR. ITS SR 3.6.13.4 only includes the tensile strength and elongation property requirements. This changes the CTS by moving the material type to the UFSAR.

The removal of this detail, which is related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to test for tensile strength and elongation. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59 or 10 CFR 50.71(e), which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.6.13, DIVIDER BARRIER INTEGRITY

LESS RESTRICTIVE CHANGES

L.1 *(Category 10 – 18 to 24 Month Surveillance Frequency Change, Non-Channel Calibration Type)* CTS 4.6.5.9 requires verification that each divider barrier seal is OPERABLE every 18 months during shutdown. CTS 4.6.5.9.a requires removal of two divider barrier seal test coupons and verifying that the physical properties of the test coupons are within the acceptable range. CTS 4.6.5.9.b requires a visual inspection of at least 95% of the seal's entire length, verification that the seal and seal mounting bolts are properly installed, and verification that the seal material shows no visual evidence of deterioration. ITS SR 3.6.13.4 and SR 3.6.13.5 require the same testing every 24 months. This changes the CTS by extending the Frequency of the Surveillance from 18 months (i.e., a maximum of 22.5 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2) to 24 months (i.e., a maximum of 30 months accounting for the allowable grace period specified in CTS 4.0.2 and ITS SR 3.0.2). The change to the requirement to perform the Surveillances during shutdown is discussed in DOC L.2.

The purpose of CTS 4.6.5.9 is to ensure the divider barrier seals are OPERABLE. This change was evaluated in accordance with the guidance provided in NRC Generic Letter No. 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," dated April 2, 1991. Reviews of historical surveillance data and maintenance data sufficient to determine failure modes have shown that any failures found during surveillance testing either involved situations in which the safety function was not impaired or was the result of an event-driven activity. Therefore there were no time-based failure mechanisms found. An evaluation has been performed using this data, and it has been determined that the effect on safety due to the extended Surveillance Frequency will be minimal. Extending the Surveillance test interval for the divider barrier seal is acceptable because there are not any time-based failure mechanisms that would be adversely affected by an increase in the surveillance interval to 24 months (30 months maximum). Based on the inherent system and component reliability, the impact, if any, from this change on system availability is minimal. The review of historical surveillance data also demonstrated that there are no failures that would invalidate this conclusion. In addition, the proposed 24 month Surveillance Frequency, if performed at the maximum interval allowed by ITS SR 3.0.2 (30 months) does not invalidate any assumptions in the plant licensing basis. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L.2 *(Category 12 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.6.5.9 requires verification that each divider barrier seal is OPERABLE every 18 months during shutdown. CTS 4.6.5.9.a requires the removal of two divider barrier seal test coupons and verifying that the physical properties of the test coupons are within the acceptable range. CTS 4.6.5.9.b requires a visual inspection of at least 95% of the seal's entire length, verification that the seal and seal mounting bolts are properly installed, and verification that the seal material shows no visual evidence of deterioration. ITS SR 3.6.13.4 and SR 3.6.13.5 require the same testing every 24 months, with no restriction as to when (i.e., during shutdown) the test can be performed. This changes the CTS

DISCUSSION OF CHANGES
ITS 3.6.13, DIVIDER BARRIER INTEGRITY

by deleting the requirement to perform the Surveillances during shutdown. The change to the Frequency of the Surveillance is discussed in DOC L.1.

The purpose of CTS 4.6.5.9 is to ensure the divider barrier seals are OPERABLE. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions. Portions of the divider barrier seal Surveillance Requirements could be performed in other than shutdown conditions, without jeopardizing safe plant operations. The control of the unit conditions appropriate to perform the test is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do no dictate unit conditions for the Surveillance. This change is designated as less restrictive because the Surveillance may be performed at plant conditions other than shutdown.

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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.17 Divider Barrier Integrity (Ice Condenser) ⑬ } ①

3.6.5.5, 3.6.5.9 LCO 3.6.17 Divider barrier integrity shall be maintained.

INSERT 1 ②

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.6.5.5 Action	A. ----- - NOTE - For this action, separate Condition entry is allowed for each personnel access door or equipment hatch. ----- One or more personnel access doors or equipment hatches open or inoperable, other than for personnel transit entry.	A.1	Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.	1 hour	③ ②
3.6.5.9 Action	B. Divider barrier seal inoperable.	B.1	Restore seal to OPERABLE status.	1 hour	
3.6.5.5 Action, 3.6.5.9 Action	C. Required Action and associated Completion Time not met.	C.1 AND C.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours	

2

INSERT 1

-NOTE-

The personnel access doors may be opened intermittently under administrative control for personnel transit.

Divider Barrier Integrity (Ice Condenser) (1)
3.6.17 (13)

CTS

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.6.5.5.1	SR 3.6.17.1 (13)	Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed.	Prior to entering MODE 4 from MODE 5	(1)
4.6.5.5.2	SR 3.6.17.2 (13)	Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have: a. No detrimental misalignments; b. No cracks or defects in the sealing surfaces; and c. No apparent deterioration of the seal material.	Prior to final closure after each opening AND - NOTE - Only required for seals made of resilient materials 10 years	(1) (5)
4.6.5.5.1	SR 3.6.17.3 (13)	Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed.	After each opening	(1)
4.6.5.9.a, Table 3.6-2	SR 3.6.17.4 (13)	Remove two divider barrier seal test coupons and verify: a. Both test coupons' tensile strength is ≥ [120] psi; and [b. Both test coupons' elongation is ≥ [100]%.] (13)	[18] months (24)	(1) (4) (5)
4.6.5.9 b	SR 3.6.17.5 (13)	Visually inspect ≥ [95]% of the divider barrier seal length, and verify: a. Seal and seal mounting bolts are properly installed and (5) b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.	[18] months (24)	(1) (4) (5)

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.13, DIVIDER BARRIER INTEGRITY

1. The headings for ISTS 3.6.17 include the parenthetical expression (Ice Condenser). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the CNP ITS due to design differences. Therefore, ISTS 3.6.17 is renumbered as ITS 3.6.13.

2. ISTS 3.6.17 Condition A covers one or more personnel access doors or equipment hatches open or inoperable, other than for personnel transit entry. There is no ACTION in ISTS 3.6.17 for when a door or hatch is open for personnel transit entry; therefore LCO 3.0.3 is required to be entered if this occurs. This is not the intent of the Specification. Therefore, a Note has been added to the LCO to identify that the personnel access doors may be opened intermittently under administrative control for personnel transit. In addition, the phrase "other than for personnel transit entry" has been deleted from Condition A, since it is not needed with the addition of the Note.

3. Changes have been made to be consistent with other similar Notes in the Specifications.

4. The brackets are removed and the proper plant specific information/value is provided.

5. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.17 ⑬ Divider Barrier Integrity (Ice Condenser) ①

BASES

INSERT 1

BACKGROUND

The divider barrier consists of the operating deck and associated seals, personnel access doors, and equipment hatches that separate the upper and lower containment compartments. Divider barrier integrity is necessary to minimize bypassing of the ice condenser by the hot steam and air mixture released into the lower compartment during a Design Basis Accident (DBA). This ensures that most of the gases pass through the ice bed, which condenses the steam and limits pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA. ② ⑤ INSERT 2

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the door panels at the top of the condenser to open, which allows the air to flow out of the ice condenser into the upper compartment. The ice condenses the steam as it enters, thus limiting the pressure and temperature buildup in containment. The divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser. The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment over several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to equalize pressures in containment and to continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. ②

Containment Air Recirculation / Hydrogen Skimmer (CEQ) System

Divider barrier integrity ensures that the high energy fluids released during a DBA would be directed through the ice condenser and that the ice condenser would function as designed if called upon to act as a passive heat sink following a DBA.

(2) **INSERT 1**

walls of the ice compartment, the operating deck, the compartments enclosing the upper portion of the steam generators and pressurizer, the bulkhead separating the reactor cavity from the refueling canal, the walls and floors of the east and west CEQ fan room area, and portions of the walls of the refueling canal. The operating deck includes hatches above the reactor coolant pumps. Other portions of the divider barrier are penetrated by hatches for general access and materials handling. The divider barrier

(2) **INSERT 2**

A flexible barrier seal is located between the ice condenser compartment and the containment cylinder wall. This barrier is also located between the containment liner and other structural elements that are part of the divider barrier.

BASES

APPLICABLE SAFETY ANALYSES

Divider barrier integrity ensures the functioning of the ice condenser to the limiting containment pressure and temperature that could be experienced following a DBA. The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. ⑤

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS (CEQ System) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed, with respect to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in the inoperability of one train in both the Containment Spray System and the ARS (CEQ System). ②

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." ①

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The divider barrier (Integrity) satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). ②

LCO

This LCO establishes the minimum equipment requirements to ensure that the divider barrier performs its safety function of ensuring that bypass leakage, in the event of a DBA, does not exceed the bypass leakage assumed in the accident analysis. Included are the requirements that the personnel access doors and equipment hatches in the divider barrier are OPERABLE and closed and that the divider barrier seal is properly installed and has not degraded with time. ~~An exception to the requirement that the doors be closed is made to allow personnel transit entry through the divider barrier. The basis of this exception is the assumption that, for personnel transit, the time during which a door is open will be short (i.e., shorter than the Completion Time of 1 hour for~~ (INSERT 3) ①

(1) **INSERT 3**

As Noted, the personnel access doors between containment upper and lower compartments may be opened intermittently under administrative control for personnel transit. Transit through the divider barrier may be required to perform Technical Specifications (TS) Surveillances and Required Actions, as well as other activities on equipment inside the containment that are required by TS or activities on equipment that support TS-required equipment. This Note is not intended to preclude performing other activities (i.e., non-TS-related activities) if the containment was entered. The required administrative controls consist of either stationing a dedicated individual at the applicable door to assure closure of the door or requiring the individual who accesses the door to ensure closure of the door. This allowance is acceptable since the door is only opened for a brief time interval.

BASES

LCO (continued)

(Condition A). The divider barrier functions with the ice condenser to limit the pressure and temperature that could be expected following a DBA. (1)

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the integrity of the divider barrier. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, divider barrier integrity is not required in these MODES.

ACTIONS

A.1

If one or more (a) personnel access doors or equipment hatches are (is) (3) inoperable or open, except for personnel transit entry, (1) 1 hour is allowed to restore the doors and (or) equipment hatches to OPERABLE status and (3) the closed position. The 1 hour Completion Time is consistent with LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

Condition A has been modified by a Note to provide clarification that, for this LCO, separate Condition entry is allowed for each personnel access door or equipment hatch. (1)

B.1

If the divider barrier seal is inoperable, 1 hour is allowed to restore the seal to OPERABLE status. The 1 hour Completion Time is consistent with LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

C.1 and C.2 (2)

If divider barrier integrity cannot be restored to OPERABLE status within the required Completion Time, the plant (unit) must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant (unit) must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant (unit) conditions from full power conditions in an orderly manner and without challenging plant (unit) systems. (2)

BASES (1)

SURVEILLANCE REQUIREMENTS

SR 3.6.(17).1 (13)

Verification, by visual inspection, that all personnel access doors and equipment hatches between the upper and lower containment compartments are closed provides assurance that divider barrier integrity is maintained prior to the reactor being taken from MODE 5 to MODE 4. This SR is necessary because many of the doors and hatches may have been opened for maintenance during the shutdown. (1)

SR 3.6.(17).2 (13)

Verification, by visual inspection, that the personnel access door and equipment hatch seals, sealing surfaces, and alignments are acceptable provides assurance that divider barrier integrity is maintained. This inspection cannot be made when the door or hatch is closed. Therefore, (13) SR 3.6.(17).2 is required for each door or hatch that has been opened, prior to the final closure. Some doors and hatches may not be opened for long periods of time. Those that use resilient materials in the seals must be opened and inspected at least once every 10 years to provide assurance that the seal material has not aged to the point of degraded performance. The Frequency of 10 years is based on the known resiliency of the materials used for seals, the fact that the openings have not been opened (to cause wear), and operating experience that confirms that the seals inspected at this Frequency have been found to be acceptable. (1)

SR 3.6.(17).3 (13)

Verification, by visual inspection, after each opening of a personnel access door or equipment hatch that it has been closed makes the operator aware of the importance of closing it and thereby provides additional assurance that divider barrier integrity is maintained while in applicable MODES. (1)

SR 3.6.(17).4 (13)

Conducting periodic physical property tests on divider barrier seal test coupons provides assurance that the seal material has not degraded in the containment environment, including the effects of irradiation with the reactor at power. The required tests include a tensile strength test ~~and a test for elongation~~. (4) The Frequency of (18) ~~months was developed~~ (24) considering such factors as the known resiliency of the seal material used, the inaccessibility of the seals and absence of traffic in their vicinity, and the unit conditions needed to perform the SR. Operating experience has shown that these components usually pass the Surveillance when

BASES

SURVEILLANCE REQUIREMENTS (continued)

performed at the 18 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.17.5 13

Visual inspection of the seal around the perimeter provides assurance that the seal is properly secured in place. The Frequency of 18 24 months was developed considering such factors as the inaccessibility of the seals and absence of traffic in their vicinity, the strength of the bolts and mechanisms used to secure the seal, and the unit conditions needed to perform the SR. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES 1. U FSAR, Section 6.2 14.3.4.1.3.1.3.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.13 BASES, DIVIDER BARRIER INTEGRITY

1. Changes have been made to be consistent with changes made to the Specification.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Changes have been made to be consistent with the Specification. Specifically, the words were changed since separate Condition entry is allowed for each inoperable door and hatch.

4. The brackets are removed and the proper plant specific information/value is provided.

5. Grammatical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.13, DIVIDER BARRIER INTEGRITY

There are no specific NSHC discussions for this Specification.

ATTACHMENT 14

ITS 3.6.14, Containment Recirculation Drains

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A.1

ITS

CONTAINMENT SYSTEMS

FLOOR DRAINS

LIMITING CONDITION FOR OPERATION

LCO 3.6.14 — 3.6.5.7 The ice condenser floor drains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTIONS A and C — With the ice condenser floor drain inoperable, restore the floor drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.

Add proposed ACTIONS A and C — A.2

SURVEILLANCE REQUIREMENTS

SR 3.6.14.3 — 4.6.5.7 Each ice condenser floor drain shall be demonstrated OPERABLE at least once per 18 months during shutdown by: (L.1)

a. Verifying that valve gate opening is not impaired by ice, frost or debris,

b. Verifying that the valve seat is not damaged,

c. Verifying that the valve gate opens when a force of ≤ 100 lbs is applied, and

d. Verifying that the 12 inch drain line from the ice condenser floor to the containment lower compartment is unrestricted. (LA.1)

ITS

A.1

CONTAINMENT SYSTEMS

REFUELING CANAL DRAINS

LIMITING CONDITION FOR OPERATION

Two — L.2

LCO 3.6.14 — 3.6.5.8 ~~The~~ refueling canal drains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTIONS B and C — ~~With a refueling canal drain inoperable, restore the drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~

Add proposed ACTIONS B and C — A.2

SURVEILLANCE REQUIREMENTS

required — L.2

SR 3.6.14.2 — 4.6.5.8 Each required refueling canal drain shall be demonstrated OPERABLE prior to increasing the Reactor Coolant System temperature above 200°F after each partial or complete filling of the canal with water by verifying that the blind flange is removed from the drain line and that the drain is not obstructed by debris.

Add SR 3.6.14.1 — M.1

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A.1

ITS

CONTAINMENT SYSTEMS

FLOOR DRAINS

LIMITING CONDITION FOR OPERATION

LCO 3.6.14

3.6.5.7 The ice condenser floor drains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTIONS A and C

With the ice condenser floor drain inoperable, restore the floor drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.

Add proposed ACTIONS A and C — A.2

SURVEILLANCE REQUIREMENTS

L.1

SR 3.6.14.3

4.6.5.7 Each ice condenser floor drain shall be demonstrated OPERABLE at least once per 18 months during shutdown by:

a. Verifying that valve gate opening is not impaired by ice, frost or debris.

b. Verifying that the valve seat is not damaged.

c. Verifying that the valve gate opens when a force of ≤ 100 lbs is applied.

d. Verifying that the drain line from the ice condenser floor to the containment lower compartment is unrestricted.

ITS

A.1

CONTAINMENT SYSTEMS

REFUELING CANAL DRAINS

LIMITING CONDITION FOR OPERATION

Two — L.2

LCO 3.6.14 — 3.6.5.8 ~~The~~ refueling canal drains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTIONS B and C — ~~With a refueling canal drain inoperable, restore the drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~

Add proposed ACTIONS B and C — A.2

SURVEILLANCE REQUIREMENTS

required — L.2

SR 3.6.14.2 — 4.6.5.8 Each required refueling canal drain shall be demonstrated OPERABLE prior to increasing the Reactor Coolant System temperature above 200°F after each partial or complete filling of the canal with water by verifying that the blind flange is removed from the drain line and that the drain is not obstructed by debris.

Add SR 3.6.14.1 — M.1

DISCUSSION OF CHANGES
ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

ADMINISTRATIVE CHANGES

A.1 In the conversion of the CNP Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 2, "Standard Technical Specifications-Westinghouse Plants" (ISTS).

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A.2 The CTS 3.6.5.7 Action does not state what action to take if the ice condenser floor drains are inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the ice condenser floor drains be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). The CTS 3.6.5.8 Action does not state what action to take if the refueling canal drains are inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the refueling canal drains be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Thus, entry into CTS 3.0.3 is required if CTS 3.6.5.7 or CTS 3.6.5.8 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.6.14 ACTION A requires that if one ice condenser floor drain is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.14 ACTION B requires that if one required refueling canal drain is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.14 ACTION C requires that if the Required Action and associated Completion Time are not met (i.e., the ice condenser or refueling canal drain is not restored to OPERABLE status in 1 hour), the unit must be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by stating the ACTIONS within the Specification rather than deferring to CTS 3.0.3. In addition, it deletes the Actions to restore the limits prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.5.7 and CTS 3.6.5.8 are silent on these actions, deferring to CTS 3.0.3 for the actions to accomplish this. This change is acceptable because the ACTIONS specified in ITS 3.6.14 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Actions of CTS 3.6.5.7 and CTS 3.6.5.8 is acceptable because CTS 3.0.4 (ITS LCO 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.14. This change is designated as administrative because it does not result in technical changes to the CTS.

DISCUSSION OF CHANGES
ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

MORE RESTRICTIVE CHANGES

M.1 CTS 4.6.5.8 requires the refueling canal drain be demonstrated OPERABLE prior to increasing the Reactor Coolant System temperature above 200°F after each partial or complete filling of the canal with water. ITS 3.6.14.1 adds a new Surveillance to verify by visual inspection, every 92 days and prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal, that there is no debris present in the upper compartment or refueling canal that could obstruct the required refueling canal drains. This changes the CTS by adding the additional Surveillance verification.

The purpose of the additional Surveillance of ITS SR 3.6.14.1 is to provide additional assurance the required refueling canal drains are OPERABLE. Prior to and during operation, the debris could be present in the upper containment or refueling canal that eventually may obstruct the refueling canal drain. This change is acceptable because it provides additional assurance that the refueling canal drain will be capable of performing its function. This change is designated as more restrictive because it adds a Surveillance verification to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* (Unit 1 only) CTS 4.6.5.7.d requires the verification that the 12 inch drain line from the ice condenser floor to the containment lower compartment is unrestricted. ITS SR 3.6.14.3 requires the verification that the drain line from the ice condenser floor to the lower compartment is unrestricted. This changes the Unit 1 CTS by moving the reference to the pipe size (12 inches) to the UFSAR.

The removal of this detail, which is related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify the drain line from the ice condenser floor to the containment lower compartment is unrestricted. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59 or 10 CFR 50.71(e), which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Unit 1 Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

LESS RESTRICTIVE CHANGES

L.1 *(Category 12 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.6.5.7 requires verification that each ice condenser floor drain is OPERABLE every 18 months during shutdown by verifying that valve gate opening is not impaired by ice, frost or debris, verifying that the valve seat is not damaged, verifying that the valve gate opens when a force of ≤ 100 lbs is applied, and verifying that the drain line from the ice condenser floor to the containment lower compartment is unrestricted. ITS SR 3.6.14.3 requires the same testing every 18 months, with no restriction as to when (i.e., during shutdown) the test can be performed. This changes the CTS by deleting the requirement to perform the Surveillance during shutdown.

The purpose of CTS 4.6.5.7 is to ensure the ice condenser floor drains are OPERABLE. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions. The control of the unit conditions appropriate to perform the test is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do no dictate unit conditions for the Surveillance. This change is designated as less restrictive because the Surveillance may be performed at plant conditions other than shutdown.

L.2 CTS 3.6.5.8 states that "The refueling canal drains shall be OPERABLE." In this case, since there are three installed refueling canal drains, all three must be OPERABLE. ITS LCO 3.6.14 states "two refueling canal drains shall be OPERABLE." This changes the CTS by only requiring two of the three refueling canal drains to be OPERABLE. In addition, due to this change, the word "required" has been added to the Actions and the Surveillance Requirements since not all installed refueling drains are required to be OPERABLE.

The purpose of CTS 3.6.5.8 is to ensure the refueling canal drains are OPERABLE so that they can meet their design function. The design function of the refueling canal drains is to provide a main return path to the lower containment compartment for Containment Spray System water sprayed into the upper containment compartment. This change is acceptable because any two of the three refueling canal drains provide a sufficient flow rate of water to meet the analysis assumptions for ensuring sufficient containment recirculation sump water inventory following any accident that requires Emergency Core Cooling System swapover from the refueling water storage tank to the containment recirculation sump. Calculations performed conclude that three refueling canal drains provide a flow capacity of 2.1 times the flow rate of 5002 gpm assumed in the containment recirculation sump water inventory analysis. The most limiting combination of two refueling canal drains were calculated to provide a flow capacity of 6750 gpm, or approximately 1.35 times the analytically assumed flow rate of 5002 gpm. Therefore, the analysis of containment recirculation sump water inventory is not affected by the proposed reduction of OPERABLE refueling canal drains from three to two. This change is designated as less

DISCUSSION OF CHANGES
ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.(18) (14) Containment Recirculation Drains (Ice Condenser) ①

3.6.5.7, 3.6.5.8 LCO 3.6.(18) The ice condenser floor drains and (the) two refueling canal drains shall be OPERABLE. ④

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
3.6.5.7 Action	A. One ice condenser floor drain inoperable.	A.1	Restore ice condenser floor drain to OPERABLE status.	1 hour
3.6.5.8 Action	B. One required refueling canal drain inoperable.	B.1	Restore required refueling canal drain to OPERABLE status.	1 hour
3.6.5.7 Action, 3.6.5.8 Action	C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
		AND		
		C.2	Be in MODE 5.	36 hours

④

CTS

INSERT 1 (5)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE REQUIREMENTS		FREQUENCY
4.6.5.8	SR 3.6.18.1 Verify, by visual inspection, that: a. Each refueling canal drain plug is removed; b. Each refueling canal drain is not obstructed by debris, and c. No debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.	92 days AND Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal
4.6.5.7	SR 3.6.18.2 Verify for each ice condenser floor drain that the: a. Valve opening is not impaired by ice, frost, or debris; b. Valve seat shows no evidence of damage; c. Valve opening force is ≤ 66 lb; and d. Drain line from the ice condenser floor to the lower compartment is unrestricted.	18 months

CTS

(5) INSERT 1

DOC M.1	SR 3.6.14.1	Verify, by visual inspection, that no debris is present in the upper containment or refueling canal that could obstruct the required refueling canal drains.	92 days AND Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

1. The headings for ISTS 3.6.18 include the parenthetical expression (Ice Condenser). This identifying information is not included in the CNP ITS. This information is provided in the NUREG to assist in identifying the appropriate specifications to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in the NUREG are not included in the CNP ITS due to design differences. Therefore, ISTS 3.6.18 is renumbered as ITS 3.6.14.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The brackets are removed and the proper plant specific information/value is provided.

4. The number of required refueling canal drains has been changed from all (which is three in the CNP design) to two. Any two of the three installed refueling canal drains provide sufficient flow capacity to meet the licensing basis analysis assumptions. In addition, since more refueling canal drains are installed than are required by the LCO, the word "required" has been added to the ACTIONS and Surveillance Requirements, consistent with the format of the ITS.

5. ISTS SR 3.6.18.1 requires that each refueling canal drain be verified unplugged and free of debris every 92 days and prior to transition to MODE 4 from MODE 5 after each partial or complete fill of the refueling canal. The SR also requires verification, at the same Frequencies, that no debris is present in the upper containment or refueling canal that could obstruct the refueling canal drains. ITS SR 3.6.14.1 will require verification that there is no debris present in the upper containment or refueling canal that could obstruct the required refueling canal drains every 92 days and prior to transition to MODE 4 from MODE 5 after each partial or complete fill of the canal. ITS SR 3.6.14.2 will require that each required refueling canal drain blind flange is removed and the drain is not obstructed by debris prior to transition to MODE 4 from MODE 5 after each partial or complete fill of the canal. The 92 day Frequency has not been included in the ITS for the verification that the required refueling canal drains are not plugged and are free of debris. This is acceptable since the refueling canal drains are difficult to access during power operation because of their location in the bottom of the lower refueling canal, and performance of this verification would result in significant dose with little added benefit. This assessment is based on the following factors:

   a. The most likely time for debris to be introduced into containment is in MODES 5 and 6 or while defueled during outage activities. The Surveillance to verify the refueling canal drains not plugged and free of debris and the Surveillance to verify the upper containment and refueling canal are free of debris will be performed after these activities prior to transition to MODE 4, as required by the ITS; and

   b. After entry into MODE 4 and during operation in MODES 1 through 4, the new requirement to verify the upper containment and refueling canal are free of debris will be performed every 92 days.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

Furthermore, the CTS does not require a 92 day Frequency for verification of refueling canal drains; only the transitional Frequency is required. Thus, the deletion of the 92 day Frequency is consistent with the current licensing basis.

6. The punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, NEI 01-03, Section 5.1.3.

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Improved Standard Technical Specifications (ISTS) Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS ①

B 3.6.18 (14) Containment Recirculation Drains (Ice Condenser)

BASES

BACKGROUND

The containment recirculation drains consist of the ice condenser drains and the refueling canal drains. The ice condenser is partitioned into 24 bays, each having a pair of inlet doors that open from the bottom plenum to allow the hot steam-air mixture from a Design Basis Accident (DBA) to enter the ice condenser. Twenty of the 24 bays have an ice condenser floor drain at the bottom to drain the melted ice into the lower compartment (in the 4 bays that do not have drains, the water drains through the floor drains in the adjacent bays). Each drain leads to a drain pipe that drops down several feet, then makes one or more 90° bends and exits into the lower compartment. A check (flapper) valve at the end of each pipe keeps warm air from entering during normal operation, but when the water exerts pressure, it opens to allow the water to spill into the lower compartment. This prevents water from backing up and interfering with the ice condenser inlet doors. The water delivered to the lower containment serves to cool the atmosphere as it falls through to the floor and provides a source of borated water at the containment sump for long term use by the Emergency Core Cooling System (ECCS) and the Containment Spray System during the recirculation mode of operation. ② ③ ②

The two refueling canal drains are at low points in the refueling canal. During a refueling, plugs are installed in the drains and the canal is flooded to facilitate the refueling process. The water acts to shield and cool the spent fuel as it is transferred from the reactor vessel to storage. After refueling, the canal is drained and the plugs removed. In the event of a DBA, the refueling canal drains are the main return path to the lower compartment for Containment Spray System water sprayed into the upper compartment. ② ① ①

The ice condenser drains and the refueling canal drains function with the ice bed, the Containment Spray System, and the ECCS to limit the pressure and temperature that could be expected following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment

BASES

APPLICABLE SAFETY ANALYSES (continued) Containment Air Recirculation Hydrogen Skimmer (CEQ) System ②

Spray System and the Air Return System (ARS) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the analysis of the postulated DBAs, with respect to Engineered Safety Feature (ESF) systems, assumes the loss of one ESF bus, which is the worst case single active failure and results in one train of the Containment Spray System and one train of the ARS being rendered inoperable. CEQ System ②

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The containment recirculation drains satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii). ②

LCO

This LCO establishes the minimum requirements to ensure that the containment recirculation drains perform their safety functions. The ice condenser floor drain valve disks must be closed to minimize air leakage into and out of the ice condenser during normal operation and must open in the event of a DBA when water begins to drain out. The refueling canal drains must have their plugs removed and remain clear to ensure the return of Containment Spray System water to the lower containment in the event of a DBA. The containment recirculation drains function with the ice condenser, ECCS, and Containment Spray System to limit the pressure and temperature that could be expected following a DBA. ② Two of the three ④ blind flanges ①

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature, which would require the operation of the containment recirculation drains. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES.

BASES

APPLICABILITY (continued)

As such, the containment recirculation drains are not required to be OPERABLE in these MODES.

ACTIONS

A.1

If one ice condenser floor drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1

If one refueling canal drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status in 1 hour.

C.1 and C.2

If the affected drain(s) cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.18.1

Verifying the OPERABILITY of the refueling canal drains ensures that they will be able to perform their functions in the event of a DBA. This Surveillance confirms that the refueling canal drain plugs have been removed and that the drains are clear of any obstructions that could impair their functioning. In addition to debris near the drains, attention must be given to any debris that is located where it could be moved to the drains in the event that the Containment Spray System is in operation and water is flowing to the drains. SR 3.6.18.1 must be performed before entering MODE 4 from MODE 5 after every filling of the canal to ensure

B 3.6.14

(1) **INSERT 1**

This verification is performed by SR 3.6.14.1, which requires verification that there is no debris present in the upper containment or refueling canal that could obstruct the required refueling canal drains.

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BASES

SURVEILLANCE REQUIREMENTS (continued) blind flanges ①

that the plugs have been removed and that no debris that could impair the drains was deposited during the time the canal was filled. The 92 day Frequency was developed considering such factors as the inaccessibility of the drains, the absence of traffic in the vicinity of the drains, and the redundancy of the drains. INSERT 2 ①

①

SR 3.6.18.2 (14) (3) ①

Verifying the OPERABILITY of the ice condenser floor drains ensures that they will be able to perform their functions in the event of a DBA. Inspecting the drain valve disk ensures that the valve is performing its function of sealing the drain line from warm air leakage into the ice condenser during normal operation, yet will open if melted ice fills the line following a DBA. Verifying that the drain lines are not obstructed ensures their readiness to drain water from the ice condenser. The [18] month Frequency was developed considering such factors as the inaccessibility of the drains during power operation; the design of the ice condenser, which precludes melting and refreezing of the ice; and operating experience that has confirmed that the drains are found to be acceptable when the Surveillance is performed at an [18] month Frequency. Because of high radiation in the vicinity of the drains during power operation, this Surveillance is normally done during a shutdown. ③ ③

REFERENCES 1. [U]FSAR, Section [6.2] 14.3.4 ③

(1) **INSERT 2**

In addition, SR 3.6.14.1 must be performed every 92 days.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.14 BASES, CONTAINMENT RECIRCULATION DRAINS

1. Changes have been made to be consistent with changes made to the ISTS.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The brackets are removed and the proper plant specific information/value is provided.

4. The Bases have been changed to be consistent with changes made to the Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS ITS 3.6.14, CONTAINMENT RECIRCULATION DRAINS

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGE L.2

CNP is converting to the Improved Technical Specifications (ITS) as outlined in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." The proposed change involves making the Current Technical Specifications (CTS) less restrictive. Below is the description of this less restrictive change and the determination of No Significant Hazards Considerations for conversion to NUREG-1431.

CTS 3.6.5.8 states that "The refueling canal drains shall be OPERABLE." In this case, since there are three installed refueling canal drains, all three must be OPERABLE. ITS LCO 3.6.14 states "two refueling canal drains shall be OPERABLE. This changes the CTS by only requiring two of the three refueling canal drains to be OPERABLE. In addition, due to this change, the word "required" has been added to the Actions and the Surveillance Requirements since not all installed refueling drains are required to be OPERABLE.

The purpose of CTS 3.6.5.8 is to ensure the refueling canal drains are OPERABLE so that they can meet their design function. The design function of the refueling canal drains is to provide a main return path to the lower containment compartment for Containment Spray System water sprayed into the upper containment compartment. This change is acceptable because any two of the three refueling canal drains provide a sufficient flow rate of water to meet the analysis assumptions for ensuring sufficient containment recirculation sump water inventory following any accident that requires Emergency Core Cooling System swapover from the refueling water storage tank to the containment recirculation sump. Calculations performed conclude that three refueling canal drains provide a flow capacity of 2.1 times the flow rate of 5002 gpm assumed in the containment recirculation sump water inventory analysis. The most limiting combination of two refueling canal drains were calculated to provide a flow capacity of 6750 gpm, or approximately 1.35 times the analytically assumed flow rate of 5002 gpm. Therefore, the analysis of containment recirculation sump water inventory is not affected by the proposed reduction of OPERABLE refueling canal drains from three to two. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with these proposed Technical Specification changes by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

   Response: No.

   The proposed change relaxes the requirement for all three of the installed refueling canal drains to be OPERABLE, requiring only two of the three refueling canal drains to be OPERABLE when in MODES 1 through 4. The refueling canal drains are not initiators of any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. Any two of the three installed refueling canal drains provide a sufficient flow path to allow Containment Spray System water sprayed into the upper containment compartment to be returned to the lower containment compartment in accordance with accident analysis assumptions, including margin. In addition, reducing the size of the flow path through the refueling canal drains potentially reduces the peak upper and lower containment compartment pressures following an accident by reducing the amount of steam and air that bypasses the ice condenser. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change potentially alters the physical configuration of the plant, but not the overall methods governing normal plant operation. Requiring only two of the three refueling canal drains to be OPERABLE when in MODES 1 through 4, and conversely allowing one of the three refueling canal drains to be plugged when in MODES 1 through 4, cannot initiate an accident. The refueling canal drains are passive internal containment components, and do not directly or indirectly interface with the Reactor Coolant System or ECCS, or any other safety-related structure, system, or component except for the refueling canal, during normal plant operation. In MODES 1 through 4, the refueling canal is fully drained, and only serves as a passive barrier between the upper and lower containment compartments. Consequently, the refueling canal drains cannot cause of failure of any of these structures, systems, or components during normal plant operation that could cause an accident. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No.

The margin of safety pertinent to the proposed change includes providing assurance that ECCS, containment cooling and pressure suppression, and Containment Spray System functional requirements will be met following a design basis accident, specifically for loss-of coolant accident (LOCA) or main steam line break (MSLB) events. The refueling canal drains perform a safety-related function following a LOCA or MSLB accident by providing a flow path for Containment Spray System water sprayed into the upper containment compartment to the lower containment compartment. Assurance of minimum required containment recirculation sump water inventory during and following switchover of suction for the ECCS and Containment Spray System pumps from the refueling water storage tank to the containment recirculation sump provides this assurance.

Calculations performed conclude that three refueling canal drains provide a flow capacity of 2.1 times the flow rate assumed in the containment recirculation sump water inventory analysis. The most limiting combination of two refueling canal drains were calculated to provide approximately 1.35 times the analytically assumed flow rate. Therefore, the analysis of containment recirculation sump water inventory is not affected by the proposed reduction of OPERABLE refueling canal drains from three to two, and margin still exists between the calculated and analytically assumed flow rate. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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

ATTACHMENT 15

Relocated/Deleted Current Technical Specifications (CTS)

CTS 3/4.6.5.2, Ice Bed Temperature Monitoring System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.2 The ice bed temperature monitoring system shall be OPERABLE with at least 2 OPERABLE RTD channels in the ice bed at elevations 652' 2-1/4", 672' 5-1/4" and 696' 2-1/4" for each one third of the ice condenser.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the ice bed temperature monitoring system inoperable, POWER OPERATION may continue for up to 30 days provided:

1. The ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed;.

2. The last recorded mean ice bed temperature was ≤ 20°F and steady; and

3. The ice condenser cooling system is OPERABLE with at least:

a) 21 OPERABLE air handling units,

b) 2 OPERABLE glycol circulating pumps, and

c) 3 OPERABLE refrigerant units;

otherwise, be in at least *HOT STANDBY* within 6 hours and in *COLD SHUTDOWN* within the following 30 hours.

b. With the ice bed temperature monitoring system inoperable and with the ice condenser cooling system not satisfying the minimum components OPERABILITY requirements of a.3 above, POWER OPERATION may continue for up to 6 days provided the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed and the last recorded mean ice bed temperature was ≤ 15°F and steady; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

R.1

CTS 3/4.6.5.2

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.5.2 The ice bed temperature monitoring system shall be determined OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours.

R.1

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CTS 3/4.6.5.2

CONTAINMENT SYSTEMS

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.2 The ice bed temperature monitoring system shall be OPERABLE with at least 2 OPERABLE RTD channels in the ice bed at elevations 652' 2 1/4", 672' 5 1/4" and 696' 2 1/4" for each one third of the ice condenser.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the ice bed temperature monitoring system inoperable, POWER OPERATION may continue for up to 30 days provided:

1. The ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed;

2. The last recorded mean ice bed temperature was ≤ 20°F and steady; and

3. The ice condenser cooling system is OPERABLE with at least:

a) 21 OPERABLE air handling units,

b) 2 OPERABLE glycol circulating pumps, and

c) 3 OPERABLE refrigerant units;

otherwise, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the ice bed temperature monitoring system inoperable and with the ice condenser cooling system not satisfying the minimum components OPERABILITY requirements of a.3 above, POWER OPERATION may continue for up to 6 days provided the ice compartment lower inlet doors, intermediate deck doors, and top deck doors are closed and the last recorded mean ice bed temperature was ≤ 15°F and steady; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

R.1

D. C. COOK - UNIT 2 3/4 6-37

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CTS 3/4.6.5.2

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.5.2 The ice bed temperature monitoring system shall be determined OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours.

R.1

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DISCUSSION OF CHANGES
CTS 3/4.6.5.2, ICE BED TEMPERATURE MONITORING SYSTEM

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.6.5.2 provides requirements on the Ice Bed Temperature Monitoring System. The Ice Bed Temperature Monitoring System monitors the temperature of the ice bed to ensure that the ice bed temperature does not increase above the required limits undetected. However, the Ice Bed Temperature Monitoring System is not required to ensure the ice bed temperature is maintained within limits. Another Technical Specification (that is being retained) will continue to ensure that temperature is maintained within the required limits. This Specification does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.6.5.4 does not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The Ice Bed Temperature Monitoring System is not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Ice Bed Temperature Monitoring System Specification does not satisfy criterion 1.

2. The Ice Bed Temperature Monitoring System is not a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Ice Bed Temperature Monitoring System Specification does not satisfy criterion 2.

3. The Ice Bed Temperature Monitoring System is not a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Ice Bed Temperature Monitoring System Specification does not satisfy criterion 3.

4. The Ice Bed Temperature Monitoring System is not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in Section 4.0 (Appendix A, page A-78) and summarized in Table 1 of WCAP-11618, the Ice Bed Temperature Monitoring System

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DISCUSSION OF CHANGES
CTS 3/4.6.5.2, ICE BED TEMPERATURE MONITORING SYSTEM

was found to be non-significant risk contributors to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2, and concurs with the assessment. The Ice Bed Temperature Monitoring System is not important for any scenarios modeled in the CNP site-specific PRAs. The Ice Bed Temperature Monitoring System Specification does not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Ice Bed Temperature Monitoring System LCO and associated Surveillances may be relocated out of the Technical Specifications. The Ice Bed Temperature Monitoring System Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as a relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.6.5.2, ICE BED TEMPERATURE MONITORING SYSTEM

There are no specific NSHC discussions for this Specification.

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CTS 3/4.6.5.4, Inlet Door Position Monitoring System

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CONTAINMENT SYSTEMS

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 The inlet door position monitoring system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the inlet door position monitoring system inoperable, POWER OPERATION may continue for up to 14 days, provided the ice bed temperature monitoring system is OPERABLE and the maximum ice bed temperature is less than or equal to 27°F when monitored at least once per 4 hours; otherwise, restore the inlet door position monitoring system to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.4 The inlet door position monitoring system shall be determined OPERABLE by:

a. Performing a CHANNEL CHECK at least once per 12 hours,

b. Performing a CHANNEL FUNCTIONAL TEST at least once per 18 months, and

c. Verifying that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Specification 4.6.5.3.1.

R.1

CONTAINMENT SYSTEMS

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 The inlet door position monitoring system shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the inlet door position monitoring system inoperable, POWER OPERATION may continue for up to 14 days, provided the ice bed temperature monitoring system is OPERABLE and the maximum ice bed temperature is ≤ 27°F when monitored at least once per 4 hours; otherwise, restore the inlet door position monitoring system to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

R.1

4.6.5.4 The inlet door position monitoring system shall be determined OPERABLE by:

a. Performing a CHANNEL CHECK at least once per 12 hours,

b. Performing a CHANNEL FUNCTIONAL TEST at least once per 18 months, and

c. Verifying that the monitoring system correctly indicates the status of each inlet door as the door is opened and reclosed during its testing per Specification 4.6.5.3.1.

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DISCUSSION OF CHANGES
CTS 3/4.6.5.4, INLET DOOR POSITION MONITORING SYSTEM

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R.1 CTS 3/4.6.5.4 provides requirements on the Inlet Door Position Monitoring System. The Inlet Door Position Monitoring System monitors the position of the ice bed inlet doors during normal operation to ensure that the ice bed inlet doors do not open (which could allow the ice bed temperature to increase above the required limits). However, the Inlet Door Position Monitoring System is not required to ensure the inlet doors remain closed and ice bed temperature is maintained within limits. Other Technical Specifications (that are being retained) will continue to ensure that the inlet doors remain closed and temperature is maintained within the required limits. This Specification does not meet the criteria for retention in the ITS; therefore, it will be retained in the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3/4.6.5.4 does not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The Inlet Door Position Monitoring System is not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary. The Inlet Door Position Monitoring System Specification does not satisfy criterion 1.

2. The Inlet Door Position Monitoring System is not a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Inlet Door Position Monitoring System Specification does not satisfy criterion 2.

3. The Inlet Door Position Monitoring System is not a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Inlet Door Position Monitoring System Specification does not satisfy criterion 3.

4. The Inlet Door Position Monitoring System is not a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. As discussed in

DISCUSSION OF CHANGES
CTS 3/4.6.5.4, INLET DOOR POSITION MONITORING SYSTEM

Section 4.0 (Appendix A, page A-78) and summarized in Table 1 of WCAP-11618, the Inlet Door Position Monitoring System was found to be non-significant risk contributors to core damage frequency and offsite releases. I&M has reviewed this evaluation, considers it applicable to CNP Units 1 and 2, and concurs with the assessment. The Inlet Door Position Monitoring System is not important for any scenarios modeled in the CNP site-specific PRAs. The Inlet Door Position Monitoring System Specification does not meet criterion 4.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Inlet Door Position Monitoring System LCO and associated Surveillances may be relocated out of the Technical Specifications. The Inlet Door Position Monitoring System Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as a relocation because the Specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.6.5.4, INLET DOOR POSITION MONITORING SYSTEM

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 16

Improved Standard Technical Specifications (ISTS) not adopted in the CNP ITS

ISTS 3.6.9, Hydrogen Mixing System (HMS)

ISTS 3.6.9 Markup and Justification for Deviations (JFDs)

(1)

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)

LCO 3.6.9 [Two] HMS trains shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION		REQUIRED ACTION	COMPLETION TIME
A. One HMS train inoperable.	A.1	- NOTE - LCO 3.0.4 is not applicable. Restore HMS train to OPERABLE status.	TSTF-359 change not shown 30 days
B. Two HMS trains inoperable.	B.1	Verify by administrative means that the hydrogen control function is maintained.	1 hour AND Once per 12 hours thereafter
	AND		
	B.2	Restore one HMS train to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Operate each HMS train for ≥ 15 minutes.	92 days
SR 3.6.9.2	Verify each HMS train flow rate on slow speed is ≥ [4000] cfm.	[18] months
SR 3.6.9.3	Verify each HMS train starts on an actual or simulated actuation signal.	[18] months

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.9, HYDROGEN MIXING SYSTEM (HMS)

1. The CNP design does not include the Hydrogen Mixing System. The hydrogen mixing function is performed by the Containment Air Recirculation/Hydrogen Skimmer System, which is controlled by ITS 3.6.10 (ISTS 3.6.14). Therefore, ISTS 3.6.9 is not included in the ITS.

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ISTS 3.6.9 Bases Markup and Justification for Deviations (JFDs)

 (1)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)

BASES

BACKGROUND

The HMS reduces the potential for breach of containment due to a hydrogen oxygen reaction by providing a uniformly mixed post accident containment atmosphere, thereby minimizing the potential for local hydrogen burns due to a pocket of hydrogen above the flammable concentration. Maintaining a uniformly mixed containment atmosphere also ensures that the hydrogen monitors will give an accurate measure of the bulk hydrogen concentration and give the operator the capability of preventing the occurrence of a bulk hydrogen burn inside containment per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and 10 CFR 50, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2).

The post accident HMS is an Engineered Safety Feature (ESF) and is designed to withstand a loss of coolant accident (LOCA) without loss of function. The System has two independent trains, each consisting of two fans with their own motors and controls. Each train is sized for [4000] cfm. The two trains are initiated automatically on a Phase A containment isolation signal. The automatic action is to start the nonoperating hydrogen mixing fans on slow speed and shift the operating hydrogen mixing fans (if any) to slow speed. Each train is powered from a separate emergency power supply. Since each train fan can provide 100% of the mixing requirements, the System will provide its design function with a limiting single active failure.

Air is drawn from the steam generator compartments by the locally mounted mixing fans and is discharged toward the upper regions of the containment. This complements the air patterns established by the containment air coolers, which take suction from the operating floor level and discharge to the lower regions of the containment, and the containment spray, which cools the air and causes it to drop to lower elevations. The systems work together such that potentially stagnant areas where hydrogen pockets could develop are eliminated.

When performing their post accident hydrogen mixing function, the hydrogen mixing fans operate on slow speed to prevent motor overload in a post accident high pressure environment. The design flow rate on slow speed is based on the minimum air distribution requirements to eliminate stagnant hydrogen pockets. Each train is redundant (full capacity) and is powered from an independent ESF bus. The hydrogen mixing fans may be operated on fast speed during normal operation when a containment

(1)

BASES

BACKGROUND (continued)

air cooler is taken out of service. As such, the design flow rate of the hydrogen mixing fans for high speed operation is based on air distribution requirements during such normal operation.

APPLICABLE SAFETY ANALYSES

The HMS provides the capability for reducing the local hydrogen concentration to approximately the bulk average concentration. The limiting DBA relative to hydrogen concentration is a LOCA.

Hydrogen may accumulate in containment following a LOCA as a result of:

a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant,

b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump,

c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space), or

d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.

To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 3 are used to maximize the amount of hydrogen calculated.

The HMS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two HMS trains must be OPERABLE, with power to each from an independent, safety related power supply. Each train typically consists of two fans with their own motors and controls and is automatically initiated by a Phase A containment isolation signal.

Operation with at least one HMS train provides the mixing necessary to ensure uniform hydrogen concentration throughout containment.

(1)

BASES

APPLICABILITY

In MODES 1 and 2, the two HMS trains ensure the capability to prevent localized hydrogen concentrations above the flammability limit of 4.1 volume percent in containment assuming a worst case single active failure.

In MODE 3 or 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the HMS is low. Therefore, the HMS is not required in MODE 3 or 4.

In MODES 5 and 6, the probability and consequences of a LOCA or steam line break (SLB) are reduced due to the pressure and temperature limitations in these MODES. Therefore, the HMS is not required in these MODES.

ACTIONS

A.1

With one HMS train inoperable, the inoperable train must be restored to OPERABLE status within 30 days. In this Condition, the remaining OPERABLE HMS train is adequate to perform the hydrogen mixing function. However, the overall reliability is reduced because a single failure in the OPERABLE train could result in reduced hydrogen mixing capability. The 30 day Completion Time is based on the availability of the other HMS train, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit, and the availability of the hydrogen recombiners, Containment Spray System, Hydrogen Purge System, and hydrogen monitors.

Required Action A.1 has been modified by a Note that states the provisions of LCO 3.0.4 are not applicable. As a result, a MODE change is allowed when one HMS train is inoperable. This allowance is based on the availability of the other HMS train, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit.

TSTF-359
Change not
shown

(1)

BASES

ACTIONS (continued)

B.1 and B.2

- REVIEWER'S NOTE -

This Condition is only allowed for units with an alternate hydrogen control system acceptable to the technical staff.

With two HMS trains inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by [the containment Hydrogen Purge System/ Hydrogen Recombiner/Hydrogen Ignitor System/ HMS/ Containment Air Dilution System/ Containment Inerting System]. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist.

- REVIEWER'S NOTE -

The following is to be used if a non-Technical Specification alternate hydrogen control function is used to justify this Condition: In addition, the alternate hydrogen control system capability must be verified once per 12 hours thereafter to ensure its continued availability.

[Both] the [initial] verification [and all subsequent verifications] may be performed as an administrative check, by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the Surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two HMS trains inoperable for up to 7 days. Seven days is a reasonable time to allow two HMS trains to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit.

C.1

If an inoperable HMS train cannot be restored to OPERABLE status within the required 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 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating

(1)

BASES

ACTIONS (continued)

experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

Operating each HMS train for ≥ 15 minutes ensures that each train is OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. The 92 day Frequency is consistent with Inservice Testing Program Surveillance Frequencies, operating experience, the known reliability of the fan motors and controls, and the two train redundancy available.

SR 3.6.9.2

Verifying that each HMS train flow rate on slow speed is ≥ [4000] cfm ensures that each train is capable of maintaining localized hydrogen concentrations below the flammability limit. The [18] month Frequency is based on the need to perform this 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 Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.9.3

This SR ensures that each HMS train responds properly to a containment cooling actuation signal. The Surveillance verifies that each fan starts on slow speed from the nonoperating condition and that each fan shifts to slow speed from fast operating condition. The [18] month Frequency is based on the need to perform this 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 these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

REFERENCES

1. 10 CFR 50.44.
2. 10 CFR 50, Appendix A, GDC 41.

(1)

BASES

REFERENCES (continued)

3. Regulatory Guide 1.7, Revision [1].

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.9 BASES, HYDROGEN MIXING SYSTEM (HMS)

1. Changes are made to be consistent with changes made to the Specification.

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ISTS 3.6.11 Iodine Cleanup System (ICS)

ISTS 3.6.11 Markup and Justification for Deviations (JFDs)

(1)

3.6 CONTAINMENT SYSTEMS

3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)

LCO 3.6.11 Two ICS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ICS train inoperable.	A.1 Restore ICS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.11.1	Operate each ICS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.6.11.2	Perform required ICS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.11.3	Verify each ICS train actuates on an actual or simulated actuation signal.	[18] months
SR 3.6.11.4	[Verify each ICS filter bypass damper can be opened.	[18] months]

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JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.11, IODINE CLEANUP SYSTEM (ICS)

1. The CNP design does not include the Iodine Cleanup System. Therefore, ISTS 3.6.11 is not included in the ITS.

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ISTS 3.6.11 Bases Markup and Justification for Deviations (JFDs)

1

B 3.6 CONTAINMENT SYSTEMS

B 3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)

BASES

BACKGROUND

The ICS is provided per GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems" (Ref. 1), to reduce the concentration of fission products released to the containment atmosphere following a postulated accident. The ICS would function together with the Containment Spray and Cooling systems following a Design Basis Accident (DBA) to reduce the potential release of radioactive material, principally iodine, from the containment to the environment.

The ICS consists of two 100% capacity, separate, independent, and redundant trains. Each train includes a heater, [cooling coils,] a prefilter, a demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The demisters function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure in sections of the main HEPA filter bank. The upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates filtered recirculation of the containment atmosphere following receipt of a safety injection signal. The system design is described in Reference 2.

The demister is included for moisture (free water) removal from the gas stream. Heaters are used to heat the gas stream, which lowers the relative humidity. Continuous operation of each train for at least 10 hours per month with the heaters on reduces moisture buildup on the HEPA filters and adsorbers. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.

The primary purpose of the heaters is to ensure that the relative humidity of the airstream entering the charcoal adsorbers is maintained below 70%, which is consistent with the assigned iodine and iodide removal efficiencies as per Regulatory Guide 1.52 (Ref. 3).

Two ICS trains are provided to meet the requirement for separation, independence, and redundancy. Each ICS train is powered from a separate Engineered Safety Features bus and is provided with a separate power panel and control panel. [Essential service water is required to supply cooling water to the cooling coils.]

1

BASES

BACKGROUND (continued)

During normal operation, the Containment Cooling System is aligned to bypass the ICS HEPA filters and charcoal adsorbers. For ICS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.

APPLICABLE SAFETY ANALYSES

The DBAs that result in a release of radioactive iodine within containment are a loss of coolant accident (LOCA) or a rod ejection accident (REA). In the analysis for each of these accidents, it is assumed that adequate containment leak tightness is intact at event initiation to limit potential leakage to the environment. Additionally, it is assumed that the amount of radioactive iodine released is limited by reducing the iodine concentration present in the containment atmosphere.

The ICS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 4) assume that only one train of the ICS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive iodine provided by the remaining one train of this filtration system.

The ICS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two separate, independent, and redundant trains of the ICS are required to ensure that at least one is available, assuming a single failure coincident with a loss of offsite power.

APPLICABILITY

In MODES 1, 2, 3, and 4, iodine is a fission product that can be released from the fuel to the reactor coolant as a result of a DBA. The DBAs that can cause a failure of the fuel cladding are a LOCA, SLB, and REA. Because these accidents are considered credible accidents in MODES 1, 2, 3, and 4, the ICS must be operable to ensure the reduction in iodine concentration assumed in the accident analyses.

In MODES 5 and 6, the probability and consequences of a LOCA are low due to the pressure and temperature limitations of these MODES. The ICS is not required in these MODES to remove iodine from the containment atmosphere.

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(1)

BASES

ACTIONS

A.1

With one ICS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as:

a. The availability of the OPERABLE redundant ICS train,

b. The fact that, even with no ICS train in operation, almost the same amount of iodine would be removed from the containment atmosphere through absorption by the Containment Spray System, and

c. The fact that the Completion Time is adequate to make most repairs.

B.1 and B.2

If the ICS train cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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 without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.11.1

Operating each ICS train for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing at operating units indicates that the 10 hour period is adequate for moisture elimination on the adsorbers and HEPA filters. The 31 day Frequency was developed considering the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System independent of the ICS.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.11.2

This SR verifies that the required ICS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.11.3

The automatic startup test verifies that both trains of equipment start upon receipt of an actual or simulated test signal. The [18] month Frequency is based on the need to perform this 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 Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. Furthermore, the Frequency was developed considering that the system equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.11.1.

[SR 3.6.11.4

The ICS filter bypass dampers are tested to verify OPERABILITY. The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters. The [18] month Frequency is considered to be acceptable based on the damper reliability and design, the mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.]

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41, GDC 42, and GDC 43.
2. FSAR, Section [6.5].
3. Regulatory Guide 1.52, Revision [2].
4. FSAR, Chapter [15].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.11 BASES, IODINE CLEANUP SYSTEM (ICS)

1. Changes are made to be consistent with changes made to the Specification.

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ISTS 3.6.12, Vaccuum Relief Valves

ISTS 3.6.12 Markup and Justification for Deviations (JFDs)

(1)

3.6 CONTAINMENT SYSTEMS

3.6.12 Vacuum Relief Valves (Atmospheric and Ice Condenser)

LCO 3.6.12 [Two] vacuum relief lines shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One vacuum relief line inoperable.	A.1	Restore vacuum relief line to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.12.1	Verify each vacuum relief line is OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.12, VACUUM RELIEF VALVES

1. The CNP design does not include the Vacuum Relief Valves. Therefore, ISTS 3.6.12 is not included in the ITS.

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ISTS 3.6.12 Bases Markup and Justification for Deviations (JFDs)

(1)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.12 Vacuum Relief Valves (Atmospheric and Ice Condenser)

BASES

BACKGROUND

The purpose of the vacuum relief lines is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems.

The containment pressure vessel contains two 100% vacuum relief lines that protect the containment from excessive external loading.

[For this facility, the characteristics of the vacuum relief valves and their locations in the containment pressure vessel are as follows:]

APPLICABLE SAFETY ANALYSES

Design of the vacuum relief lines involves calculating the effect of inadvertent actuation of containment cooling features, which can reduce the atmospheric temperature (and hence pressure) inside containment (Ref. 1). Conservative assumptions are used for all the relevant parameters in the calculation; for example, for the Containment Spray System, the minimum spray water temperature, maximum initial containment temperature, maximum spray flow, all spray trains operating, etc. The resulting containment pressure versus time is calculated, including the effect of the opening of the vacuum relief lines when their negative pressure setpoint is reached. It is also assumed that one valve fails to open.

The containment was designed for an external pressure load equivalent to [-2.5] psig. The inadvertent actuation of the containment cooling features was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was [-0.3] psig. This resulted in a minimum pressure inside containment of [-2.0] psig, which is less than the design load.

The vacuum relief valves must also perform the containment isolation function in a containment high pressure event. For this reason, the system is designed to take the full containment positive design pressure and the environmental conditions (temperature, pressure, humidity, radiation, chemical attack, etc.) associated with the containment DBA.

The vacuum relief valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

①

BASES

LCO	The LCO establishes the minimum equipment required to accomplish the vacuum relief function following the inadvertent actuation of containment cooling features. Two 100% vacuum relief lines are required to be OPERABLE to ensure that at least one is available, assuming one or both valves in the other line fail to open.
APPLICABILITY	In MODES 1, 2, 3, and 4, the containment cooling features, such as the Containment Spray System, are required to be OPERABLE to mitigate the effects of a DBA. Excessive negative pressure inside containment could occur whenever these systems are required to be OPERABLE due to inadvertent actuation of these systems. Therefore, the vacuum relief lines are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System, Quench Spray (QS) System, or Containment Cooling System. In MODES 5 and 6, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations of these MODES. The Containment Spray System, QS System, and Containment Cooling System are not required to be OPERABLE in MODES 5 and 6. Therefore, maintaining OPERABLE vacuum relief valves is not required in MODE 5 or 6.
ACTIONS	<u>A.1</u> When one of the required vacuum relief lines is inoperable, the inoperable line must be restored to OPERABLE status within 72 hours. The specified time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA. <u>B.1 and B.2</u> If the vacuum relief line cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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.

(1)

BASES

SURVEILLANCE REQUIREMENTS	SR 3.6.12.1 This SR cites the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME, Boiler and Pressure Vessel Code and applicable Addenda (Ref. 2). Therefore, SR Frequency is governed by the Inservice Testing Program.
REFERENCES	1. FSAR, Section [6.2]. 2. ASME, Boiler and Pressure Vessel Code, Section XI.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.12 BASES, VACUUM RELIEF VALVES

1. Changes are made to be consistent with changes made to the Specification.

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ISTS 3.6.13, Shield Building Air Cleanup System (SBACS)

ISTS 3.6.13 Markup and Justification for Deviations (JFDs)

(1)

3.6 CONTAINMENT SYSTEMS

3.6.13 Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)

LCO 3.6.13 Two SBACS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One SBACS train inoperable.	A.1 Restore SBACS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.13.1	Operate each SBACS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days
SR 3.6.13.2	Perform required SBACS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.13.3	Verify each SBACS train actuates on an actual or simulated actuation signal.	[18] months
SR 3.6.13.4	[Verify each SBACS filter bypass damper can be opened.	[18] months]

(1)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.13.5	Verify each SBACS train flow rate is ≥ [ ] cfm.	[18] months on a STAGGERED TEST BASIS

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.13, SHIELD BUILDING AIR CLEANUP SYSTEM (SBACS)

1. The CNP design does not include the Shield Building Air Cleanup System. Therefore, ISTS 3.6.13 is not included in the ITS.

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ISTS 3.6.13 Bases Markup and Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.13 Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)

BASES

BACKGROUND

The SBACS is required by 10 CFR 50, Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 1), to ensure that radioactive materials that leak from the primary containment into the shield building (secondary containment) following a Design Basis Accident (DBA) are filtered and adsorbed prior to exhausting to the environment.

The containment has a secondary containment called the shield building, which is a concrete structure that surrounds the steel primary containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects any containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

The SBACS establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. Shield building OPERABILITY is required to ensure retention of primary containment leakage and proper operation of the SBACS.

The SBACS consists of two separate and redundant trains. Each train includes a heater, [cooling coils,] a prefilter, moisture separators, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The moisture separators function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank. Only the upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates and maintains a negative air pressure in the shield building by means of filtered exhaust ventilation of the shield building following receipt of a safety injection (SI) signal. The system is described in Reference 2.

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters may be included to reduce the relative humidity of the airstream on systems that operate in high humidity. Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their

(1)

BASES

BACKGROUND (continued)

HEPA filters and adsorbers. [The cooling coils cool the air to keep the charcoal beds from becoming too hot due to absorption of fission product.]

During normal operation, the Shield Building Cooling System is aligned to bypass the SBACS's HEPA filters and charcoal adsorbers. For SBACS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.

The SBACS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the SBACS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE SAFETY ANALYSES

The SBACS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) assumes that only one train of the SBACS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the remaining one train of this filtration system. The amount of fission products available for release from containment is determined for a LOCA.

The modeled SBACS actuation in the safety analyses is based upon a worst case response time following an SI initiated at the limiting setpoint. The total response time, from exceeding the signal setpoint to attaining the negative pressure of [0.5] inch water gauge in the shield building, is [22 seconds]. This response time is composed of signal delay, diesel generator startup and sequencing time, system startup time, and time for the system to attain the required pressure after starting.

The SBACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

In the event of a DBA, one SBACS train is required to provide the minimum particulate iodine removal assumed in the safety analysis. Two trains of the SBACS must be OPERABLE to ensure that at least one train will operate, assuming that the other train is disabled by a single active failure.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could lead to fission product release to containment that leaks to the shield building. The large break LOCA, on which this system's design is based, is a full power event. Less severe LOCAs and leakage still require the system to be OPERABLE throughout

(1)

BASES

APPLICABILITY (continued)

these MODES. The probability and severity of a LOCA decrease as core power and Reactor Coolant System pressure decrease. With the reactor shut down, the probability of release of radioactivity resulting from such an accident is low.

In MODES 5 and 6, the probability and consequences of a DBA are low due to the pressure and temperature limitations in these MODES. Under these conditions, the Filtration System is not required to be OPERABLE (although one or more trains may be operating for other reasons, such as habitability during maintenance in the shield building annulus).

ACTIONS

A.1

With one SBACS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant SBACS train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

B.1 and B.2

If the SBACS train cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

SR 3.6.13.1

Operating each SBACS train for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing at operating units indicates that the 10 hour period is adequate for moisture

(1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

elimination on the adsorbers and HEPA filters. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System.

SR 3.6.13.2

This SR verifies that the required SBACS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.13.3

The automatic startup ensures that each SBACS train responds properly. The [18] month Frequency is based on the need to perform this 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 Surveillance when performed at the [18] month Frequency. Therefore the Frequency was concluded to be acceptable from a reliability standpoint. Furthermore, the SR interval was developed considering that the SBACS equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.13.1.

[SR 3.6.13.4

The SBACS filter bypass dampers are tested to verify OPERABILITY. The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters. The [18] month Frequency is considered to be acceptable based on damper reliability and design, mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.]

SR 3.6.13.5

The proper functioning of the fans, dampers, filters, adsorbers, etc., as a system is verified by the ability of each train to produce the required

(1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

system flow rate. The [18] month Frequency on a STAGGERED TEST BASIS is consistent with Regulatory Guide 1.52 (Ref. 4) guidance for functional testing.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41.
2. FSAR, Section [6.5].
3. FSAR, Chapter [15].
4. Regulatory Guide 1.52, Revision [2].

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.13 BASES, SHIELD BUILDING AIR CLEANUP SYSTEM (SBACS)

1. Changes are made to be consistent with changes made to the Specification.

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ISTS 3.6.19, Shield Building

ISTS 3.6.19 Markup and Justification for Deviations (JFDs)

(1)

3.6 CONTAINMENT SYSTEMS

3.6.19 Shield Building (Dual and Ice Condenser)

LCO 3.6.19 The shield building shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Shield building inoperable.	A.1	Restore shield building to OPERABLE status.	24 hours
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.19.1	[Verify annulus negative pressure is > [5] inches water gauge.	12 hours]
SR 3.6.19.2	Verify one shield building access door in each access opening is closed.	31 days
SR 3.6.19.3	Verify shield building structural integrity by performing a visual inspection of the exposed interior and exterior surfaces of the shield building.	During shutdown for SR 3.6.1.1 Type A tests

(1)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.19.4	Verify the shield building can be maintained at a pressure equal to or more negative than [-0.5] inch water gauge in the annulus by one Shield Building Air Cleanup System train with final flow ≤ [ ] cfm within [22] seconds after a start signal.	[18] months on a STAGGERED TEST BASIS for each Shield Building Air Cleanup System Train

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.19, SHIELD BUILDING

1. The CNP design does not include the Shield Building. Therefore, ISTS 3.6.19 is not included in the ITS.

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ISTS 3.6.19 Bases Markup and Justification for Deviations (JFDs)

1

B 3.6 CONTAINMENT SYSTEMS

B 3.6.19 Shield Building (Dual and Ice Condenser)

BASES

BACKGROUND	The shield building is a concrete structure that surrounds the steel containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel. The Shield Building Air Cleanup System (SBACS) establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. The shield building is required to be OPERABLE to ensure retention of containment leakage and proper operation of the SBACS.
APPLICABLE SAFETY ANALYSES	The design basis for shield building OPERABILITY is a LOCA. Maintaining shield building OPERABILITY ensures that the release of radioactive material from the containment atmosphere is restricted to those leakage paths and associated leakage rates assumed in the accident analyses. The shield building satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).
LCO	Shield building OPERABILITY must be maintained to ensure proper operation of the SBACS and to limit radioactive leakage from the containment to those paths and leakage rates assumed in the accident analyses.
APPLICABILITY	Maintaining shield building OPERABILITY prevents leakage of radioactive material from the shield building. Radioactive material may enter the shield building from the containment following a LOCA. Therefore, shield building OPERABILITY is required in MODES 1, 2, 3, and 4 when a steam line break, LOCA, or rod ejection accident could release radioactive material to the containment atmosphere. In MODES 5 and 6, the probability and consequences of these events are low due to the Reactor Coolant System temperature and pressure limitations in these MODES. Therefore, shield building OPERABILITY is not required in MODE 5 or 6.

BASES

ACTIONS

A.1

In the event shield building OPERABILITY is not maintained, shield building OPERABILITY must be restored within 24 hours. Twenty-four hours is a reasonable Completion Time considering the limited leakage design of containment and the low probability of a Design Basis Accident occurring during this time period.

B.1 and B.2

If the shield building cannot be restored to OPERABLE status within the required 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 6 hours and to MODE 5 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.

SURVEILLANCE REQUIREMENTS

[SR 3.6.19.1

Verifying that shield building annulus negative pressure is within limit ensures that operation remains within the limit assumed in the containment analysis. The 12 hour Frequency of this SR was developed considering operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES.]

SR 3.6.19.2

Maintaining shield building OPERABILITY requires verifying one door in the access opening closed. [An access opening may contain one inner and one outer door, or in some cases, shield building access openings are shared such that a shield building barrier may have multiple inner or multiple outer doors. The intent is to not breach the shield building boundary at any time when the shield building boundary is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times.] However, all shield building access doors are normally kept closed, except when the access opening is being used for entry and exit or when maintenance is being performed on an access opening. The 31 day Frequency of this SR is based on engineering judgment and is considered adequate in view of the other indications of door status that are available to the operator.

(1)

BASES

SURVEILLANCE REQUIREMENTS (continued)

[SR 3.6.19.3

This SR would give advance indication of gross deterioration of the concrete structural integrity of the shield building. The Frequency of this SR is the same as that of SR 3.6.1.1. The verification is done during shutdown.]

SR 3.6.19.4

The Shield Building Air Cleanup System produces a negative pressure to prevent leakage from the building. SR 3.6.19.4 verifies that the shield building can be rapidly drawn down to [-0.5] inch water gauge in the annulus. This test is used to ensure shield building boundary integrity. Establishment of this pressure is confirmed by SR 3.6.19.4, which demonstrates that the shield building can be drawn down to ≤ [-0.5] inches of vacuum water gauge in the annulus ≤ [22] seconds using one Shield Building Air Cleanup System train. The time limit ensures that no significant quantity of radioactive material leaks from the shield building prior to developing the negative pressure. Since this SR is a shield building boundary integrity test, it does not need to be performed with each Shield Building Air Cleanup System train. The Shield Building Air Cleanup System train used for this Surveillance is staggered to ensure that in addition to the requirements of LCO 3.6.19.4, either train will perform this test. The primary purpose of this SR is to ensure shield building integrity. The secondary purpose of this SR is to ensure that the Shield Building Air Cleanup System being tested functions as designed. The inoperability of the Shield Building Air Cleanup System train does not necessarily constitute a failure of this Surveillance relative to the shield building OPERABILITY. The 18 month Frequency is based on the need to perform this Surveillance under conditions that apply during a plant outage.

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.19 BASES, SHIELD BUILDING

1. Changes are made to be consistent with changes made to the Specification.