VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

July 20, 2001

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 01-435
CM/RAB R0
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED IMPROVED TECHNICAL SPECIFICATIONS
REQUEST FOR ADDITIONAL INFORMATION – ITS 3.0, 3.5 & 4.0

This letter transmits responses to the NRC's request for additional information regarding Sections 3.0 and 3.5 and Chapter 4.0 of the North Anna Power Station Units 1 and 2 proposed Improved Technical Specifications (ITS). The North Anna ITS license amendment request was submitted to the NRC in a December 11, 2000 letter (Serial No. 00-606). The NRC requested additional information on ITS Section 3.0 and Chapter 4.0 in a letter dated June 1, 2001 (TAC Nos. MB0799 and MB0800). The NRC requested additional information on ITS Section 3.5 in a letter dated June 22, 2001 (TAC Nos. MB0799 and MB0800).

The attachment includes each NRC question, the response to each question, and the required revisions to the original ITS license amendment request, based on the response to each question.

If you have any further questions or require additional information, please contact us.

Very truly yours,

Leslie N. Hartz
Vice President – Nuclear Engineering

Attachment

Commitments made in this letter: None

A001

cc: U.S. Nuclear Regulatory Commission
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COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 20th day of July, 2001.

My Commission Expires: 3-31-04.

Maggie McClure
Notary Public

(SEAL)

North Anna Chapter 1.0, Use and Application
North Anna Section 3.0, LCO and SR Applicability
North Anna Chapter 4.0, Design Features

Requests for Additional Information, Responses, and Revised Pages

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.0, LCO and SR Applicability

3.0 LCO and SR Applicability

3.0-1 JFD 3.0-1
ITS 3.0 Surveillance Requirement (SR) Applicability

NRC RAI: SR 3.0.1 states that "Surveillance may be performed by means of any series of sequential , overlap, or total steps." This change has been proposed generically as WOG-142.
Comment: Provide sections of WOG-142 to show where this change is adopted from.

Response: The Company will take the action proposed in the Comment. A copy of WOG-142 is supplied.

Industry/TSTF Standard Technical Specification Change Traveler

Clarifying SR 3.0.1 Bases to state that Surveillance can be performed in steps

Classification: 4) Change Bases

Priority: 3)Low

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

Description:
The SR 3.0.1 Bases are revised to state that Surveillances may be performed by means of any series of sequential, overlapping, or total steps..

Justification:

Background

The definitions related to instrument testing, such as CHANNEL CALIBRATION, CHANNEL FUNCTIONAL TEST, and CHANNEL OPERATIONAL TEST, contain a sentence stating that the tests may be performed by means of any series of sequential, overlapping, or total steps. TSTF-205, Rev. 3, which has been approved by the NRC, added this phrase to instrument testing-related definitions from which it had been omitted.

Need for Change

It is an accepted practice that any Surveillance can be performed by means of any series of sequential, overlapping, or total steps as long as the entire Surveillance is performed as specified in the Technical Specifications. However, the inclusion of explicit allowances to perform CHANNEL CALIBRATIONS, CHANNEL FUNCTIONAL TESTS, AND CHANNEL OPERATIONAL TESTS by means of any series of sequential, overlapping, or total steps implies that this allowance is not provided for any other types of Surveillances. Without the proposed general clarification to SR 3.0.1, this practice could be considered a violation of some Surveillance Requirements.

Proposed Change

The proposed change adds the following statement to the Bases of SR 3.0.1, "Surveillances may be performed by means of any series of sequential, overlapping, or total steps provided the entire Surveillance is performed within the specified Frequency."

Justification

SR 3.0.1 is established to require that Surveillances be met. The Definitions of the terms "CHANNEL CALIBRATION,", "CHANNEL FUNCTIONAL TEST," and "CHANNEL OPERATIONAL TEST" contain the sentence, "The [CHANNEL CALIBRATION, CHANNAL FUNCTIONAL TEST, or CHANNEL OPERATIONAL TEST] may be performed by means of any series of sequential, overlapping, or total channel steps."

It is logical to infer that the inclusion of this statement in those definitions is necessary to allow the corresponding Surveillances to be performed in the manner described. Otherwise, there would be no reason to include the statements in the definitions. It is also logical to infer that the absence of such a qualification means that the allowance to perform other Surveillances in this manner is not available.

However, there is no reason why all Surveillances cannot be performed by means of a series of sequential, overlapping, or total channel steps. Surveillances are routinely performed in overlapping or sequential pieces for reasons such as avoiding the actuation of equipment which should not be run during power operation, improving scheduling and resource management, and reducing plant risk by scheduling when equipment is out of service.

The proposed change to the SR 3.0.1 Bases does not provide any additional flexibility than is routinely assumed to apply currently, but clarifies that the existing practices are acceptable.

Changes to the ITS Bases do not require a Determination of No Significant Hazards Consideration.

Industry Contact: Wideman, Steve (316) 364-4037 stwidem@wcnoc.com

7/23/2001

Incorporation Into the NUREGs

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

NUREG Rev Incorporated:

Affected Technical Specifications

SR 3.0.1 Bases SR Applicability

WOG-142, Rev. 1

B 3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

BASES

SRs

SR 3.0.1 through SR 3.0.4 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.

SR 3.0.1

SR 3.0.1 establishes the requirement that SRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Surveillance within the specified Frequency, in accordance with SR 3.0.2, constitutes a failure to meet an LCO.

Surveillances may be performed by means of any series of sequential, overlapping, or total steps provided the entire Surveillance is performed within the specified Frequency.

Systems and components are assumed to be OPERABLE when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components are OPERABLE when:

a. The systems or components are known to be inoperable, although still meeting the SRs; or

b. The requirements of the Surveillance(s) are known not to be met between required Surveillance performances.

Surveillances do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated LCO are not applicable, unless otherwise specified. The SRs associated with a test exception are only applicable when the test exception is used as an allowable exception to the requirements of a Specification.

Unplanned events may satisfy the requirements (including applicable acceptance criteria) for a given SR. In this case, the unplanned event may be credited as fulfilling the performance of the SR. This allowance includes those SRs whose performance is normally precluded in a given MODE or other specified condition.

Surveillances, including Surveillances invoked by Required Actions, do not have to be performed on inoperable equipment because the ACTIONS define the remedial measures that apply. Surveillances have to be met and performed in accordance with SR 3.0.2, prior to returning equipment to OPERABLE status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with SR 3.0.2. Post maintenance testing may not be possible in the current

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.0, LCO and SR Applicability

3.0-2 ITS-3.0

NRC RAI: ITS-3.0 LCO 3.0.2 incorporates TSTF-122 by adding "Alternately, if intentional entry into ACTIONS...". However, in TSTF-122, WOG STS, the word " Alternately" should be "Additionally". **Comment:** Correction is needed.

Response: The Company will take the action proposed in the Comment. LCO 3.0.2 is revised to state, "Additionally" instead of "Alternately."

BASES

LCO 3.0.2 (continued)

unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

Completing the Required Actions is not required when an LCO is met or is no longer applicable, unless otherwise stated in the individual Specifications.

The nature of some Required Actions of some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Conditions no longer exist. The individual LCO's ACTIONS specify the Required Actions where this is the case. An example of this is in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits."

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience. Additionally, if intentional entry into ACTIONS would result in redundant equipment being inoperable, alternatives should be used instead. Doing so limits the time both subsystems/trains of a safety function are inoperable and limits the time conditions exist which may result in LCO 3.0.3 being entered. Individual Specifications may specify a time limit for performing an SR when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Actions are applicable when this time limit expires, if the equipment remains removed from service or bypassed. RAI 3.0-2 R2

When a change in MODE or other specified condition is required to comply with Required Actions, the unit may enter a MODE or other specified condition in which another Specification becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new Specification becomes applicable, and the ACTIONS Condition(s) are entered.

BASES

LCO 3.0.2 (continued)

ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

Completing the Required Actions is not required when an LCO is met or is no longer applicable, unless otherwise stated in the individual Specifications.

The nature of some Required Actions of some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Conditions no longer exist. The individual LCO's ACTIONS specify the Required Actions where this is the case. An example of this is in LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits."

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead. Doing so limits the time both subsystems/trains of a safety function are inoperable and limits the time other conditions exist which result in LCO 3.0.3 being entered. Individual Specifications may specify a time limit for performing an SR when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Actions are applicable when this time limit expires, if the equipment remains removed from service or bypassed.

Additionally, if intentional entry into ACTIONS, alternatives may

RAI 3.0-2 R2

TSTF-122

When a change in MODE or other specified condition is required to comply with Required Actions, the unit may enter a MODE or other specified condition in which another Specification becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new Specification becomes applicable, and the ACTIONS Condition(s) are entered.

(continued)

Rev. 2

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Chapter 4.0, Design Features

Chapter 4.0 - Design Features

4.0-1 JFD 4.0-5

NRC RAI: ITS 4.2.1 Fuel Assemblies states that a limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core locations, vice nonlimiting core regions. **Comment:** Provide figure of reactor core to illustrate the difference between nonlimiting core locations and nonlimiting core regions

Response: The Company will take the action proposed in the Comment, with certain modifications. In a request dated September 4, 1996, the Company specifically requested the wording "nonlimiting core locations" vice "nonlimiting core regions." The use of the word "region" would unnecessarily prohibit placing lead test assemblies in the same area as limiting fuel assemblies because the lead test assembly and the limiting assembly would be in the same "region" of the core. This prohibition would limit the burnup of the fuel assemblies and limit the usefulness of the lead assembly testing. The current Technical Specification wording, and proposed ITS wording, prohibits the placement of lead test assemblies in limiting core locations (e.g., a single fuel assembly location). This wording was approved by the NRC in amendment 204 / 185, dated May 13, 1997.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Chapter 4.0, Design Features

4.0-2 JFD 4.0-1

NRC RAI: ITS 4.3.2 Drainage states that to prevent inadvertent draining of the pool below elevation 288.83 Mean Sea Level, USGS datum which is North Anna plant specific value.
Comment: Explain with figure of fuel storage pool why this value is equal to 23 ft elevation.

Response: The Company will take the action proposed in the Comment, with certain modifications. UFSAR figure 9.1-3 and the relevant portion of UFSAR 9.1.3.3.3 (Revision 36) are attached.

The proposed ITS contains the current Technical Specification value of 288.83 feet (Mean Sea Level, USGS datum), which corresponds to the top of an internal weir which surrounds the spent fuel pool cooling system suction line. This elevation is 26 feet, 2 inches above the top of the active fuel seated in the spent fuel racks.

However, in responding to this RAI, it was determined that a more appropriate value for the ITS is 285 feet, 9 inches, which corresponds to the lowest level to which the spent fuel pool water could be drained by incorrect operation of, or a failure in, the fuel pool cooling and refueling purification system. The use of this value is also supported by an NRC Safety Evaluation for Amendments 61 / 45 dated December 21, 1984, which authorized the use of high density, boraflex fuel racks. An elevation of 285 feet, 9 inches is 23 feet, 1 inch above the top of the active fuel seated in the spent fuel racks. The discrepancy between the actual and appropriate values in the current Technical Specifications is being addressed by the corrective action system.

A less restrictive Discussion of Change discussing the change to the CTS and a corresponding Determination of No Significant Hazards Considerations have been added.

9.1.3.3.3 Spent-Fuel Pit Water Leakage Control

No means exist for completely draining the spent-fuel pit using installed systems and equipment. Figure 9.1-3 shows all piping connections to the spent-fuel pit, including any pipes that dip into the pool that can act as siphons, and the internal weir. The water level could be lowered to Elevation 285 ft. 9 in., which is 4 ft. 1 in. below the normal water level and 23 ft. 1 in. above the fuel, by incorrect operation of, or a failure in, the fuel pit cooling and refueling purification system. In these instances, detailed below, an adequate water level would exist over the fuel to provide for cooling and radiation protection.

A credible improper operation could be an open line during maintenance in the refueling purification system with an inadvertent opening of a valve along this open line, or improper valve alignment where spent-fuel pit water could be pumped to the refueling-water storage tank. In this event, an insufficient amount of water would be returned to the pool. However, the design of the fuel pit is such that the water level can only be lowered 4 ft. 1 in. below the normal water level in this event. The elevation at which the 10-inch spent-fuel pit pump suction lines FC-1-152-Q3 and FC-2-152-Q3 penetrate the spent-fuel pit prevents a lowering of the water level below 285 ft. 9 in. Also, the siphoning of the pool through the 6-inch line RP-1-152-Q3 and the 12-inch line FC-8-152-Q3 is not credible because of the siphon breaker hole in the 12-inch line FC-8-152-Q3.

Should conditions exist for siphoning the pool via the 4-inch line RP-28-152 by improper operation of the refueling purification system, such as described above, siphoning the water is only possible to Elevation 288 ft. 4 in. or 1 ft. 6 in. below the normal water level.

The spent-fuel pit water level could be lowered to Elevation 287 ft. 3 in. by a failure in either of the 1-inch lines FC-10-152-Q3 or FC-11-152-Q3 between the skimmers and the spent-fuel pit penetration while the spent-fuel pit water is being circulated for cooling and purification.

The spent-fuel pit water level can be lowered to Elevation 264 ft. 1 in., which is 1 ft. 5 in. above the stored fuel during refueling, by incorrect operation of the reactor cavity drain. During refueling, the refueling cavity water can be circulated for purification using the refueling purification pump, the refueling purification filter, and the refueling purification ion exchanger. This system takes suction from the reactor cavity drain and returns the water to the cavity following purification. With an erroneous system lineup, purified water is returned to the refueling-water storage tank instead of the reactor cavity.

The spent-fuel pit level could also be lowered to Elevation 264 ft. 1 in. by an erroneous system lineup of the reactor cavity drain and the gate valve on the fuel transfer tube. This tube connects the reactor refueling cavity to the spent-fuel pit. The spent-fuel pit water level cannot be lowered below Elevation 264 ft. 1 in. because of a 14 ft. 9 in. high concrete barrier between the pit and fuel transfer canals to Units 1 and 2, as shown in Reference Drawings 5 and 6.

N0901003

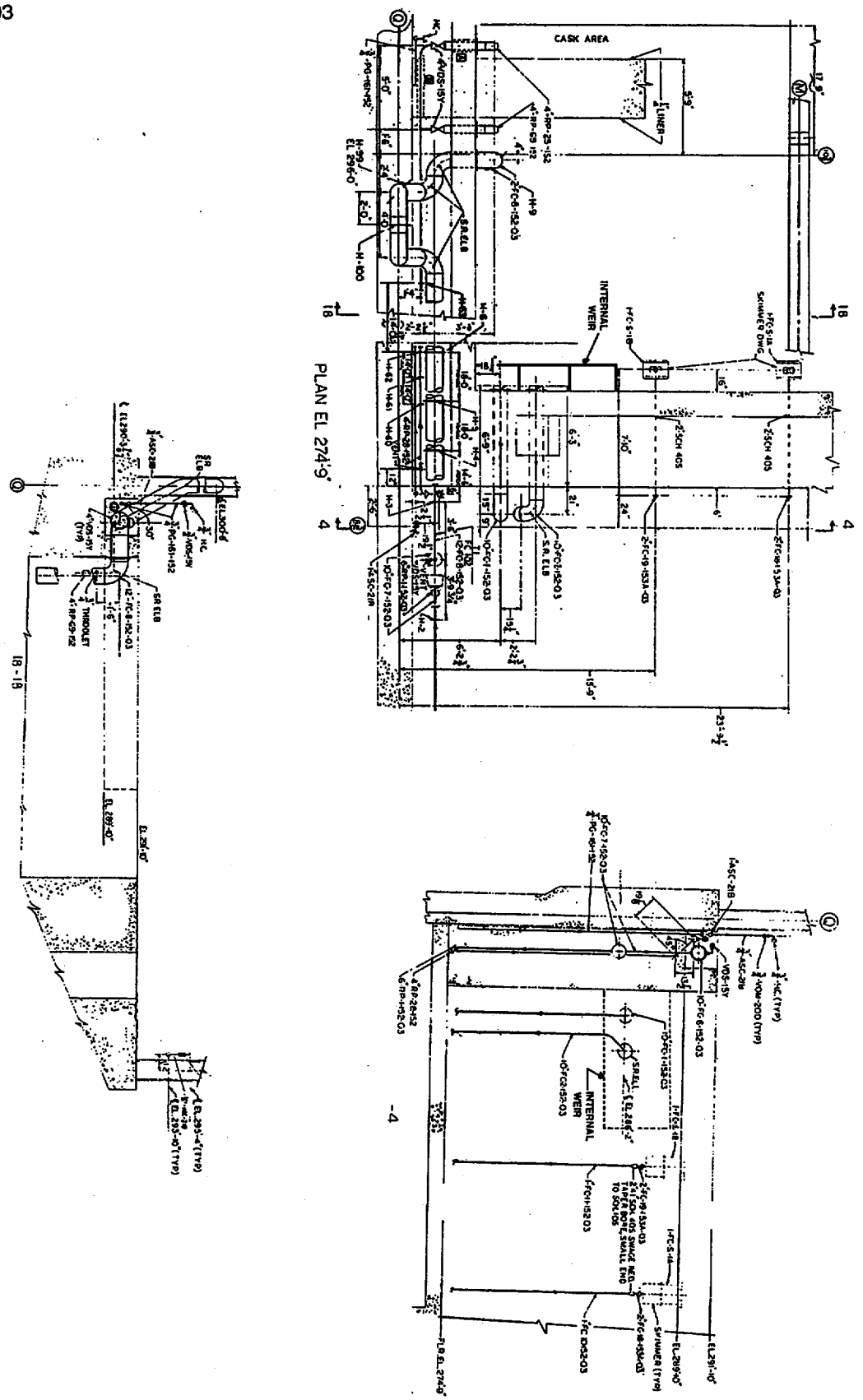

Figure 9.1-3
FUEL PIT AREA; PLAN AND ELEVATION

4.0 DESIGN FEATURES

4.3.1.1 (continued)

b. $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491); R2

c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 350 ppm, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491); and

d. A nominal 10 9/16 inch center to center distance between fuel assemblies placed in the fuel storage racks.

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of 4.6 weight percent; R2

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties;

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties; and

d. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks.

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 285 feet, 9 inches, Mean Sea Level, USGS datum. RAI 4.0-2 R2

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

CTS

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

10 9/16

5.6.1.1.b

[c. A nominal [9.15] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks];] (1)

[d. A nominal [10.95] inch center to center distance between fuel assemblies placed in [low density fuel storage racks];]

[e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of Figure [3.7.17-1] may be allowed unrestricted storage in [either] fuel storage rack(s); and]

[f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure [3.7.17-1] will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure].] (4)

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

5.3.1

(4.3) a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent; (1)

new

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; (3)

5.6.1.2

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; and (3)

5.6.1.2

(2.1) d. A nominal [10.95] inch center to center distance between fuel assemblies placed in the storage racks. (1)

4.3.2 Drainage

5.6.2

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation [23 ft]. (1) RAI 4.0-2 R2

285 feet, 9 inches Mean Sea Level, USGS datum

(continued)

Rev. 2

A.1

ITS

DESIGN FEATURES

DRAINAGE

4.3.2

5.6.2 The spent fuel pit is designed and shall be maintained to prevent inadvertent draining of the pool below elevation ~~288.83 feet~~ 285 feet, 9 inches. Mean Sea Level, USGS datum.

L.1 RAI 4.10-2 R2

CAPACITY

4.3.3

5.6.3 The fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.

See ITS Chapter 5.0

A.1

ITS

DESIGN FEATURES

5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

LA.6

5.6 FUEL STORAGE

CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

4.3.1.1.a

a. A K_{eff} equivalent to less than or equal to 0.95 when flooded with unborated water, which includes a conservative allowance of 3.4% delta k/k for uncertainties.

4.3.1.1.b

b. A nominal 10 9/16 inch center-to-center distance between fuel assemblies placed in the storage racks.

4.3.1.2.c

5.6.1.2 The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that, on a best estimate basis, k_{eff} will not exceed .98, with fuel of the highest anticipated enrichment in place, when aqueous foam moderation is assumed.

4.3.1.2.d

5.6.1.3 If new fuel for the first core loading is stored dry in the spent fuel storage racks, the center-to-center distance between the new fuel assemblies will be administratively limited to 28 inches and the k_{eff} shall not exceed 0.98 when aqueous foam moderation is assumed.

A.2

4.3.1.2.b

Insert proposed 4.3.1.2.b

M.1

DRAINAGE

4.3.2

5.6.2 The spent fuel pit is designed and shall be maintained to prevent inadvertent draining of the pool below elevation ~~288.83 feet~~ 285 feet, 9 inches Mean Sea Level, USGS datum.

L.1

RAI 4.0-2 R2

CAPACITY

4.3.3

5.6.3 The fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

contain this information. This changes the CTS by eliminating the location of the meteorological tower.

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. 10 CFR 50.36(c)(4) states that Design Features are those features such as materials of construction and geometric arrangements which, if altered or modified, would have a significant effect on safety and are not covered in other TS section. The location of the meteorological tower does not meet these requirements. 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 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.

LESS RESTRICTIVE CHANGES

L.1 CTS 5.6.2 states that the spent fuel pit is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 288.83 feet Mean Sea Level, USGS datum. ITS 4.3.2 states, "The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 285 feet, 9 inches, Mean Sea Level, USGS datum." This changes the CTS by reducing the minimum design water level of the spent fuel pool from 288.83 feet to 285 feet, 9 inches.

The purpose of CTS 5.6.2 is to state the minimum spent fuel pool water level which would be maintained assuming malfunction or failure of the systems connected to the spent fuel pool. This change is acceptable because the ITS requirements continue to ensure that the minimum spent fuel pool water level is consistent with the accident analyses and regulatory requirements. The level of 285 feet, 9 inches is over 23 feet above the spent fuel seated in the spent fuel storage racks, which provides sufficient shielding and cooling to the spent fuel. As stated in the North Anna UFSAR, Section 9.1.3.3.3, the minimum elevation to which the spent fuel water level could be lowered by incorrect operation of, or a failure in, the spent fuel pool cooling and refueling purification system is 285 feet, 9 inches. Therefore, this is the appropriate value to be included in the ITS. This change is designated as less restrictive because less stringent requirements are being applied in the ITS than were applied in the CTS.

RAI 4.0-2 R2

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGES

CHAPTER 4.0, CHANGE L.1

The North Anna Power Station 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 5.6.2 states that the spent fuel pit is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 288.83 feet Mean Sea Level, USGS datum. Mean Sea Level, USGS datum." ITS 4.3.2 states, "The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 285 feet, 9 inches, Mean Sea Level, USGS datum." This changes the CTS by reducing the minimum design water level of the spent fuel pool from 288.83 feet to 285 feet, 9 inches.

RAI 4.0-2 R2

The purpose of CTS 5.6.2 is to state the minimum spent fuel pool water level which would be maintained assuming malfunction or failure of the systems connected to the spent fuel pool. This change is acceptable because the ITS requirements continue to ensure that the minimum spent fuel pool water level is consistent with the accident analyses and regulatory requirements. The level of 285 feet, 9 inches is over 23 feet above the spent fuel seated in the spent fuel storage racks, which provides sufficient shielding and cooling to the spent fuel. As stated in the North Anna UFSAR, Section 9.1.3.3.3, the minimum elevation to which the spent fuel water level could be lowered by incorrect operation of, or a failure in, the spent fuel pool cooling and refueling purification system is 285 feet, 9 inches. Therefore, this is the appropriate value to be included in the ITS. This change is designated as less restrictive because less stringent requirements are being applied in the ITS than were applied in the CTS.

In accordance with the criteria set forth in 10 CFR 50.92, the Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

The proposed change lowers the minimum water to which the spent fuel pool must be designed and maintained to prevent inadvertent draining. This less restrictive requirements does not result in operation that will increase the probability of initiating an analyzed event and does not alter assumptions relative to mitigation of an accident or transient event in that the requirements continue to ensure process variables,

structures, systems, and components are maintained consistent with the current safety analyses and licensing basis. The minimum spent fuel pool water level to which the spent fuel pool is designed and maintained is not assumed to initiate or mitigate any accident previously evaluated. ITS LCO 3.7.15, Spent Fuel Pool Water Level, ensures that the water level in the spent fuel pool meets the accident analysis assumptions. The water level provided in the Design Features is greater than the level provided in ITS LCO 3.7.15. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

RAI 4.0-2 R2

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

The proposed change lowers the minimum water to which the spent fuel pool must be designed and maintained to prevent inadvertent draining. The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change does impose different requirements. However, the change is consistent with the assumptions in the current safety analyses and licensing basis. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

The proposed change lowers the minimum water to which the spent fuel pool must be designed and maintained to prevent inadvertent draining. As provided in the discussion of change, this change has been evaluated to ensure that the current safety analyses and licensing basis requirements are maintained. Therefore, this change does not involve a significant reduction in a margin of safety.

North Anna Chapter 1.0, Use and Application
North Anna Section 3.0, LCO and SR Applicability
North Anna Chapter 4.0, Design Features

Changes Not Associated with RAI Responses

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Chapter 1.0, Section 3.0, and Chapter 4.0

CHANGES NOT ASSOCIATED WITH RAI RESPONSES

1. A "continued" notation is added to the first page of Section 1.1 definitions that break across a page.

2. TSTF-248 is incorporated.

3. TSTF-358 is incorporated.

4. TSTF-359 is incorporated.

5. North Anna License Amendment 227 / 208 is incorporated into the ITS. This amendment allows for higher enriched fuel and modifies the spent fuel pool criticality limits in the Design Features as well as adding two new specifications to Section 3.7 on spent fuel pool boron concentration and spent fuel pool storage.

1.1 Definitions

$\bar{E}$–AVERAGE DISINTEGRATION ENERGY	$\bar{E}$ shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > 15 minutes, making up at least 95% of the total noniodine activity in the coolant.
ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME	The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
LEAKAGE	LEAKAGE shall be: a. <u>Identified LEAKAGE</u> 1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank; 2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or 3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System; (continued) R2

1.1 Definitions

LEAKAGE (continued)	b. Unidentified LEAKAGE All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE; c. Pressure Boundary LEAKAGE LEAKAGE (except SG LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.
MASTER RELAY TEST	A MASTER RELAY TEST shall consist of energizing all master relays in the channel required for channel OPERABILITY and verifying the OPERABILITY of each required master relay. The MASTER RELAY TEST shall include a continuity check of each associated required slave relay. The MASTER RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.
MODE	A MODE shall correspond to any one inclusive combination of core reactivity condition, power level, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1-1 with fuel in the reactor vessel.
OPERABLE–OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are: a. Described in Chapter 14, Initial Tests and Operation, of the UFSAR; (continued) R2

1.1 Definitions

PHYSICS TESTS (continued)	b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2893 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and (continued)

R2

TSTF-248

1.1 Definitions

PHYSICS TESTS (continued)	b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2893 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.
SHUTDOWN MARGIN (SDM)	SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and (continued)

However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. TSTF-248 R2

Definitions 1.1

CTS Section 1.0

1.1 Definitions

SHUTDOWN MARGIN (SDM) (continued)	a. All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the ~~[~~nominal zero power design level~~]~~. 3.1.1
SLAVE RELAY TEST	A SLAVE RELAY TEST shall consist of energizing ~~each~~ slave relay and verifying the OPERABILITY of each slave relay. The SLAVE RELAY TEST shall include ~~as a minimum~~ a continuity check of associated testable actuation devices. TSTF-205
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during *n* Surveillance Frequency intervals, where *n* is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.
TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT)	A TADOT shall consist of operating the trip actuating device and verifying the OPERABILITY of ~~required~~ alarm, ~~interlock~~, display, and trip ~~functions~~. The TADOT shall include adjustment, as necessary, of the trip actuating device so that it actuates at the required setpoint within the ~~required~~ accuracy. TSTF-205

all slave relays in the channel required for channel OPERABILITY

required

The SLAVE RELAY TEST may be performed by means of any series of sequential, overlapping, or total steps.

necessary

all devices in the channel required for trip actuating device OPERABILITY.

The TADOT may be performed by means of any series of sequential, overlapping, or total channel steps.

Rev 2

INSERT 1

In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

INSERT 2

The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

INSERT 3

However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and (1.5) R2

b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level.

INSERT 1

In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC.

INSERT 2

The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

INSERT 3

However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and

b. In MODES 1 and 2, the fuel and moderator temperatures are changed to the nominal zero power design level.

ADMINISTRATIVE CHANGES

A.1 In the conversion of the North Anna 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. 1, "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 ITS Section 1.1 provides definitions of ACTUATION LOGIC TEST, MASTER RELAY TEST, and TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT). These terms are used as defined terms in the ITS but do not appear in the CTS.

This change is acceptable because these changes do not impose any new requirements or alter existing requirements. Any technical changes due to the addition of these terms and definitions will be addressed in the Discussion of Changes (DOCs) for the sections of the Technical Specifications in which the terms are used. These changes are designated as administrative as they add defined terms which involve no technical change to the Technical Specifications.

A.3 CTS Section 1.0 provides a definition of SHUTDOWN MARGIN (SDM). The ITS Section 1.1 definition of SDM contains three differences from the CTS definition.

R2

- The CTS definition is changed to state the highest reactivity worth RCCA does not have to be assumed if the RCCAs can be verified fully inserted by two independent means. This change is described in DOC L.5.

- The CTS definition is changed to indicate that the worth of any Rod Control Cluster Assemblies (RCCAs) which are not capable of being fully inserted must be accounted for in the determination of the SDM.

  This change is acceptable because it is consistent with the existing SDM requirements in CTS 3.1.1.1 and 3.1.1.2.

- The CTS definition is clarified to include a description of the reactor conditions, i.e. nominal zero power level, at which the SDM is calculated.

  This change is acceptable because including this information is not a technical change. SDM calculations are currently performed for nominal zero power conditions.

This change is acceptable because ITS 3.8.1, AC Sources, contains ACTIONS (verification of redundant features) to ensure that a loss of function does not exist and that appropriate compensatory measures will be taken to respond to the loss of power. Similar evaluations are required by ITS LCO 3.0.6 and ITS Chapter 5.0, Safety Function Determination Program. This change is designated as less restrictive because under the ITS definition the loss of either the normal or emergency electrical power source for a system will not result in the system being declared inoperable when that component would be considered inoperable under the CTS.

L.4 The CTS Section 1.0 definitions of ENGINEERED SAFETY FEATURE RESPONSE TIME and REACTOR TRIP SYSTEM RESPONSE TIME require measurement of the response time from the sensor through the actuated equipment. The ITS definitions of ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME and REACTOR TRIP SYSTEM (RTS) RESPONSE TIME are modified to state, " In lieu of measurement, response time may be verified for selected components provided that the components and methodology for verification have been previously reviewed and approved by the NRC." This changes the CTS by eliminating the requirement to include all components in a response time test.

The purpose of response time testing is to ensure that the system response time, from measurement of a parameter to actuation of the appropriate device, is consistent with the assumptions in the safety analyses. WCAP-13632-P-A, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," dated January, 1996, justified the elimination of the pressure sensor response time testing requirements and allows the response time for selected components to be verified instead of measured. WCAP-14036-P, Revision 1, "Elimination of Periodic Protection Channel Response Time Tests," provides the basis for using allocated signal processing actuation logic response times in the overall verification of the protection system channel response time. This change is acceptable because the cited Topical Reports have demonstrated that modified response time tests will continue to provide assurance that the systems will perform their functions as assumed in the safety analysis. This change is designated as less restrictive because some components which must be response time tested under the CTS will not require response time testing under the ITS.

L.5 The CTS Section 1.0 definition of SHUTDOWN MARGIN (SDM) states, "SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn." The ITS Section 1.1 definition of SHUTDOWN MARGIN (SDM) states, in part, "SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. all rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not

R2

necessary to account for a stuck RCCA in the SDM calculation." This changes the CTS by providing an allowance to not assume the RCCA of highest worth is stuck if all RCCAs can be verified fully inserted by two independent means.

R2

The purpose of the SHUTDOWN MARGIN definition is to verify that the reactor is, or can be, shutdown by the amount of reactivity assumed in the accident analysis. This change is acceptable because it is not necessary to include the conservatism of assuming that the RCCA of highest reactivity worth is stuck and will not insert into the core on a reactor trip if it can be verified, by two independent means, that all of the RCCAs are already fully inserted into the core. This change is designated as less restrictive because a conservatism required under the CTS is not required under some circumstances under the ITS.

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGES

CHAPTER 1.0, CHANGE L.5

The North Anna Nuclear Power Station 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 CTS Section 1.0 definition of SHUTDOWN MARGIN (SDM) states, "SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn." The ITS Section 1.1 definition of SHUTDOWN MARGIN (SDM) states, in part, "SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming: a. all rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck RCCA in the SDM calculation." This changes the CTS by providing an allowance to not assume the RCCA of highest worth is stuck if all RCCAs can be verified fully inserted by two independent means. R2

The purpose of the SHUTDOWN MARGIN definition is to verify that the reactor is, or can be, shutdown by the amount of reactivity assumed in the accident analysis. This change is acceptable because it is not necessary to include the conservatism of assuming that the RCCA of highest reactivity worth is stuck and will not insert into the core on a reactor trip if it can be verified, by two independent means, that all of the RCCAs are already fully inserted into the core. This change is designated as less restrictive because a conservatism required under the CTS is not required under some circumstances under the ITS.

In accordance with the criteria set forth in 10 CFR 50.92, the Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

The proposed change will not require the SDM calculation to assume the RCCA of highest reactivity worth is stuck fully withdrawn if all RCCAs can be verified to be fully inserted by two independent means. The change does not affect the probability of an accident. SDM is not an initiator to any accident previously analyzed. This change will not affect the consequences of an accident. The SDM assumed as an initial condition in the accident analyses will continue to be required in a manner which ensures that the assumptions of the safety analyses are met. Therefore, this change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

R2

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

The proposed change will not require the SDM calculation to assume the RCCA of highest reactivity worth is stuck fully withdrawn if all RCCAs can be verified to be fully inserted by two independent means. This change will not physically alter the plant (no new or different type of equipment will be installed). The changes in methods governing normal plant operation are consistent with current safety analysis assumptions. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

The proposed change will not require the SDM calculation to assume the RCCA of highest reactivity worth is stuck fully withdrawn if all RCCAs can be verified to be fully inserted by two independent means. The change will not significantly affect the margin of safety. Verifying all of the RCCAs are fully inserted by two independent means will ensure that it is not necessary to assume that the RCCA of highest reactivity worth is stuck fully out. Therefore, the change does not involve a significant reduction in a margin of safety.

TSTF-358

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1

SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits. Surveillances may be performed by any series of sequential, overlapping, or total steps.

SR 3.0.2

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

SR 3.0.3

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours. R2 R2

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

BASES

SR 3.0.2 (continued)

Program. This program establishes testing requirements and Frequencies in accordance with the requirements of regulations.

As stated in SR 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of SR 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

SR 3.0.3

SR 3.0.3 establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is greater, applies from the point in time that it is discovered that the Surveillance has not been performed in accordance with SR 3.0.2, and not at the time that the specified Frequency was not met. |R2

This delay period provides adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures that might preclude completion of the Surveillance.

The basis for this delay period includes consideration of unit conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, the safety significance of the delay in completing the required Surveillance, and the recognition that the most probable result of any particular Surveillance being

(continued)

BASES

SR 3.0.3 (continued)

performed is the verification of conformance with the requirements. R2

When a Surveillance with a Frequency based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations (e.g., prior to entering MODE 1 after each fuel loading, or in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, etc.) is discovered to not have been performed when specified, SR 3.0.3 allows for the full delay period of up to the specified Frequency to perform the Surveillance. However, since there is not a time interval specified, the missed Surveillance shall be performed at the first reasonable opportunity.

SR 3.0.3 provides a time limit for, and allowances for the performance of, Surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 3.0.3 is a flexibility which is not intended to be used as an operational convenience to extend Surveillance intervals. While up to 24 hours or the limit of R2 the specified Frequency is provided to perform the missed Surveillance, it is expected that the missed Surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the Surveillance as well as any plant configuration changes required to perform the Surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the Surveillance. This risk impact should be assessed and managed pursuant to 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." This Regulatory Guide addresses consideration of temporary and aggregate risk impacts, determination of risk management action thresholds, and risk management action up to and including plant shutdown. The missed Surveillance should be treated as an emergent condition as discussed in the Regulatory Guide. The risk evaluation may use quantitative, qualitative, or blended methods. The degree of depth and rigor of the evaluation should be commensurate with the importance of the component. Missed Surveillances for important components should be

(continued)

BASES

SR 3.0.3 (continued)

analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed Surveillances will be placed in the licensee's Corrective Action Program. R2

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the ACTIONS, restores compliance with SR 3.0.1.

SR 3.0.4

SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or component to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

A provision is included to allow entry into a MODE or other specified condition in the Applicability: R2

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

(continued)

CTS

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

4.0.1 SR 3.0.1

SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

Surveillances may be performed by means of any series of sequential, overlapping, or total steps.

(3)

4.0.2 SR 3.0.2

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

4.0.3 SR 3.0.3

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is ~~least~~ greater. This delay period is permitted to allow performance of the Surveillance.

TSTF-358 R2

A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be

(continued)

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SR 3.0.2 (continued)

~~Therefore, there is a Note in the Frequency stating, "SR 3.0.2 is not applicable."~~ TSTF-52

As stated in SR 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per ..." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of SR 3.0.2 are not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals (other than those consistent with refueling intervals) or periodic Completion Time intervals beyond those specified.

SR 3.0.3

SR 3.0.3 establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is ~~less~~ greater, applies from the point in time that it is discovered that the Surveillance has not been performed in accordance with SR 3.0.2, and not at the time that the specified Frequency was not met. TSTF-358 | R2

This delay period provides adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures that might preclude completion of the Surveillance.

The basis for this delay period includes consideration of unit conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, the safety significance of the delay in completing the required Surveillance, and the recognition that the most

(continued)

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SR 3.0.3 (continued)

probable result of any particular Surveillance being performed is the verification of conformance with the requirements. When a Surveillance with a frequency based not on time intervals, but upon specified unit conditions or operational situations, is discovered not to have been performed when specified, SR 3.0.3 allows the full delay period of 24 hours to perform the Surveillance. TSTF-358 R2

SR 3.0.3 also provides a time limit for completion of Surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

Insert 1

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 3.0.3 is a flexibility which is not intended to be used as an operational convenience to extend Surveillance intervals. TSTF-358

Insert 2

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the ACTIONS, restores compliance with SR 3.0.1.

SR 3.0.4

SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit.

(continued)

Rev. 2

INSERT 1

When a Surveillance with a Frequency based not on time intervals, but upon specified unit conditions, operating situations, or requirements of regulations (e.g., prior to entering MODE 1 after each fuel loading, or in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions, etc.) is discovered to not have been performed when specified, SR 3.0.3 allows for the full delay period of up to the specified Frequency to perform the Surveillance. However, since there is not a time interval specified, the missed Surveillance shall be performed at the first reasonable opportunity.

SR 3.0.3 provides a time limit for, and allowances for the performance of, Surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

INSERT 2

While up to 24 hours or the limit of the specified Frequency is provided to perform the missed Surveillance, it is expected that the missed Surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the Surveillance as well as any plant configuration changes required to perform the Surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the Surveillance. This risk impact should be assessed and managed pursuant to 10 CFR 50.65(a)(4) and its implementation guidance, NRC Regulatory Guide 1.182, 'Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants.' This Regulatory Guide addresses consideration of temporary and aggregate risk impacts, determination of risk management action thresholds, and risk management action up to and including plant shutdown. The missed Surveillance should be treated as an emergent condition as discussed in the Regulatory Guide. The risk evaluation may use quantitative, qualitative, or blended methods. The degree of depth and rigor of the evaluation should be commensurate with the importance of the component. Missed Surveillances for important components should be analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed Surveillances will be placed in the licensee's Corrective Action Program.

R2

ITS Section 3.0

A.1

3.0 APPLICABILITY 7-5-90

ITS SURVEILLANCE REQUIREMENTS (SR) A.1

SR 3.0.1 4.0.1 Surveillance Requirements shall be applicable during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement.

in the Applicability; met; the; Insert 4; A.7

SR 3.0.2 4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the surveillance interval.

Insert proposed SR 3.0.2; L.5; A.10; M.2

SR 3.0.3 4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the operability requirements for a Limiting Condition for Operation. The time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours. Surveillance requirements do not have to be performed on inoperable equipment.

A.7; Add proposed SR 3.0.3; L.6; R2; A.11; A.9

SR 3.0.4 4.0.4 Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified.

in the Applicability of an LCO; met; Insert 5; A.1; L.1; R2; A.12; L.4

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2, and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of 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 as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

<See ITS 5.0>

INSERT 4

Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits. Surveillances may be performed by means of any series of sequential, overlapping, or total steps.

INSERT 5

When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

(A.1)

(3.0) APPLICABILITY

7-5-90

(A.1)

SURVEILLANCE REQUIREMENTS (SR)

ITS

(in the Applicability)

SR 3.0.1

4.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement. (the) Insert 4

(A.7) (L.5)

SR 3.0.2

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the surveillance interval. Insert proposed SR 3.0.2

(A.10) (M.2)

(A.9)

SR 3.0.3

4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the operability requirements for a Limiting Condition for Operation. The time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours. Surveillance requirements do not have to be performed on inoperable equipment.

Add proposed SR 3.0.3

(L.6) R2

(A.11)

(A.9)

(in the Applicability of an LCO)

SR 3.0.4

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed (met) within the stated surveillance interval or as otherwise specified. Insert 5

(A.1) (L.1) R2

(A.12)

(L.4)

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2, and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of 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 as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

(See ITS 5.0)

INSERT 4

Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits. Surveillances may be performed by means of any series of sequential, overlapping, or total steps.

INSERT 5

When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

Completion Time requires periodic performance on a 'once per . . .' basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications." This results in several changes to the CTS.

- ITS SR 3.0.2 adds to the CTS, "For Frequencies specified as 'once,' the above interval extension does not apply. This is described in DOC M.2.

- ITS SR 3.0.2 adds to the CTS, "If a Completion Time requires periodic performance on a 'once per . . .' basis, the above Frequency extension applies to each performance after the initial performance." This is described in DOC L.5.

- ITS SR 3.0.2 is more specific regarding the start of the Frequency by stating, "as measured from the previous performance or as measured from the time a specified condition of the Frequency is met." This direction is consistent with the current use and application of the Technical Specifications.

  This change is acceptable because the ITS presentation has the same intent as the CTS requirement.

- ITS SR 3.0.2 adds to the CTS, "Exceptions to this Specification are stated in the individual Specifications."

  This change is acceptable because it reflects practices used in the ITS that are not used in the CTS. Any changes to a specification, by inclusion of such an exception, will be addressed in the affected specification.

The changes are designated as administrative because they reflect presentation and usage rules of the ITS without making technical changes to the Technical Specifications.

A.11 CTS 4.0.3 states, in part, that the time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours. ITS 3.0.3 states that if it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the

| R2

applicable Condition(s) must be entered. This adds to the CTS that this delay period is permitted to allow performance of the Surveillance and that if the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. Changes to the time allowed to perform the missed Surveillance are described in DOC L.6. | R2

This change is acceptable because this additional information does not change the current intent or application of CTS 4.0.3. It is understood that CTS 4.0.3 requires that the appropriate ACTIONS be taken if the SR is not performed during the time allowed by CTS 4.0.3 or if the SR is performed but fails. This change is designated as administrative because the added detail is consistent with the current intent and application of the Technical Specifications.

A.12 CTS 4.0.4 restricts entry into MODES or other conditions specified in the Applicability unless the applicable SRs have been successfully performed. ITS SR 3.0.4 contains the same restriction, but adds an allowance that, "This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit." This changes the CTS in two ways:

- ITS SR 3.0.4 adds an allowance that failure to perform a Surveillance will not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS.

  This change is acceptable because it is consistent with the current understanding and application of CTS 4.0.4 and is necessary to avoid a conflict between SR 3.0.4 and other Specifications.

- ITS SR 3.0.4 adds an allowance that failure to perform a surveillance will not prevent entry into MODES or other specified conditions in the Applicability "that are part of a shutdown of the unit." ITS SR 3.0.4 is also only applicable in MODES 1, 2, 3 and 4. These changes are addressed in DOC L.4.

This change is designated as administrative because there is no change in the intent of CTS 4.0.4 and no additional flexibility granted.

MORE RESTRICTIVE CHANGES

M.1 Not used.

L.5 CTS 4.0.2 states, "Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the surveillance interval." ITS SR 3.0.2 states, "The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as 'once,' the above interval extension does not apply. If a Completion Time requires periodic performance on a 'once per . . .' basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications." This changes the CTS by adding, "If a Completion Time requires periodic performance on a 'once per . . .' basis, the above Frequency extension applies to each performance after the initial performance." The remaining changes to CTS 4.0.2 are discussed in DOC A.10 and DOC M.2.

This change is acceptable because the 25% Frequency extension given to provide scheduling flexibility for Surveillances is equally applicable to Required Actions which must be performed periodically. The initial performance is excluded because the first performance demonstrates the acceptability of the current condition. Such demonstrations should be accomplished within the specified Completion Time without extension in order to avoid operation in unacceptable conditions. This change is designated as less restrictive because additional time is provided to perform some periodic Actions.

L.6 CTS 4.0.3 states, in part, "The time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours." ITS SR 3.0.3 states in part, "If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours." This changes the CTS by, 1) allowing a minimum of 24 hours and up to the specified Frequency to perform the missed Surveillance, provided a risk evaluation is performed for any Surveillance delayed greater than 24 hours, and 2) basing the time allowed to perform a missed Surveillance before taking the Required Actions on the Surveillance Frequency instead of the allowed outage time

R2

- The purpose of CTS 4.0.3 is to permit the delay of the ACTIONS of the LCO when a required Surveillance has not been performed, if the allowed outage time of the action is less than 24 hours. For example, if the allowed outage

time is 12 hours, 24 hours is allowed to perform the Surveillance. If the allowed outage time is 72 hours, the exception does not apply and the Action is entered. In all cases, CTS 4.0.3 allows at least 24 hours to perform the missed Surveillance, but requires declaring the LCO not met and the ACTIONS be followed if the allowed outage time is greater than 24 hours. ITS SR 3.0.3 permits the delay of declaring the LCO not met (and taking the ACTIONS) for 24 hours, or up to the limit of the specified Frequency of the Surveillance, whichever is greater. For example, if the Surveillance Frequency is 12 hours, 24 hours is allowed. If the Surveillance Frequency is 30 days, 30 days is allowed. However, a risk evaluation must be performed for any Surveillance delayed greater than 24 hours. Therefore, the ITS allows additional time to perform a missed Surveillance and does not require the LCO to be declared not met and the ACTIONS to be followed if a Surveillance is not performed within 24 hours.

This change is acceptable because this longer delay period provides adequate time to complete Surveillances that have been missed while providing reasonable assurance that the subject equipment is OPERABLE. It is overly conservative to assume that systems or components are inoperable when a surveillance has not been performed because the vast majority of surveillances do in fact demonstrate that systems or components are OPERABLE. When a surveillance is missed, it is primarily a question of OPERABILITY that has not been verified by the performance of a Surveillance Requirement. As stated in the ITS Bases, "While up to 24 hours or the limit of the specified Frequency is provided to perform the missed Surveillance, it is expected that the missed Surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the Surveillance as well as any plant configuration changes required to perform the Surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the Surveillance. . . . All missed Surveillances will be placed in the licensee's Corrective Action Program." Therefore, the missed Surveillance will be performed at the first reasonable opportunity, will be evaluated for the effect on plant risk, and will be investigated under the plant corrective action program. As a result, this less restrictive requirement has no detrimental effect on unit safety.

R2

- The time allowed to perform a missed Surveillance prior to taking the ACTIONS is based on the allowed outage time in CTS 4.0.3 and on the Surveillance Frequency in ITS SR 3.0.3.

  This change is acceptable because the SR Frequency is more representative of the safety significance of the missed SR. Surveillance Frequencies less than 24 hours are frequent, easily performed tests. Therefore, a missed

Surveillance with a Frequency less than 24 hours should be able to be performed within the Surveillance Frequency.

These changes are designated as less restrictive because they provide additional time to perform a missed Surveillance prior to declaring the LCO not met and taking the ACTIONS.

R2

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGES

SECTION 3.0, LCO AND SR APPLICABILITY, CHANGE L.6

The North Anna Nuclear Power Station 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.

L.6 CTS 4.0.3 states, in part, "The time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours." ITS SR 3.0.3 states in part, "If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This delay period is permitted to allow performance of the Surveillance. A risk evaluation shall be performed for any Surveillance delayed greater than 24 hours." This changes the CTS by, 1) allowing a minimum of 24 hours and up to the specified Frequency to perform the missed Surveillance, provided a risk evaluation is performed for any Surveillance delayed greater than 24 hours, and 2) basing the time allowed to perform a missed Surveillance before taking the Required Actions on the Surveillance Frequency instead of the allowed outage time

R2

- The purpose of CTS 4.0.3 is to permit the delay of the ACTIONS of the LCO when a required Surveillance has not been performed, if the allowed outage time of the action is less than 24 hours. For example, if the allowed outage time is 12 hours, 24 hours is allowed to perform the Surveillance. If the allowed outage time is 72 hours, the exception does not apply and the Action is entered. In all cases, CTS 4.0.3 allows at least 24 hours to perform the missed Surveillance, but requires declaring the LCO not met and the ACTIONS be followed if the allowed outage time is greater than 24 hours. ITS SR 3.0.3 permits the delay of declaring the LCO not met (and taking the ACTIONS) for 24 hours, or up to the limit of the specified Frequency of the Surveillance, whichever is greater. For example, if the Surveillance Frequency is 12 hours, 24 hours is allowed. If the Surveillance Frequency is

30 days, 30 days is allowed. However, a risk evaluation must be performed for any Surveillance delayed greater than 24 hours. Therefore, the ITS allows additional time to perform a missed Surveillance and does not require the LCO to be declared not met and the ACTIONS to be followed if a Surveillance is not performed within 24 hours.

This change is acceptable because this longer delay period provides adequate time to complete Surveillances that have been missed while providing reasonable assurance that the subject equipment is OPERABLE. It is overly conservative to assume that systems or components are inoperable when a surveillance has not been performed because the vast majority of surveillances do in fact demonstrate that systems or components are OPERABLE. When a surveillance is missed, it is primarily a question of OPERABILITY that has not been verified by the performance of a Surveillance Requirement. As stated in the ITS Bases, "While up to 24 hours or the limit of the specified Frequency is provided to perform the missed Surveillance, it is expected that the missed Surveillance will be performed at the first reasonable opportunity. The determination of the first reasonable opportunity should include consideration of the impact on plant risk (from delaying the Surveillance as well as any plant configuration changes required to perform the Surveillance) and impact on any analysis assumptions, in addition to unit conditions, planning, availability of personnel, and the time required to perform the Surveillance. . . . All missed Surveillances will be placed in the licensee's Corrective Action Program." Therefore, the missed Surveillance will be performed at the first reasonable opportunity, will be evaluated for the effect on plant risk, and will be investigated under the plant corrective action program. As a result, this less restrictive requirement has no detrimental effect on unit safety. R2

- The time allowed to perform a missed Surveillance prior to taking the ACTIONS is based on the allowed outage time in CTS 4.0.3 and on the Surveillance Frequency in ITS SR 3.0.3.

  This change is acceptable because the SR Frequency is more representative of the safety significance of the missed SR. Surveillance Frequencies less than 24 hours are frequent, easily performed tests. Therefore, a missed Surveillance with a Frequency less than 24 hours should be able to be performed within the Surveillance Frequency.

These changes are designated as less restrictive because they provide additional time to perform a missed Surveillance prior to declaring the LCO not met and taking the ACTIONS.

In accordance with the criteria set forth in 10 CFR 50.92, the Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

The proposed change applies when a required Surveillance has not been performed within the required Frequency, and allows delaying the declaration of the LCO not met, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This change does not affect the probability of an accident. The performance of Surveillances is not an initiator to any accident previously evaluated. The consequences of any accident previously evaluated are not significantly increased as the likely outcome of the performance of the missed Surveillance is confirmation that the equipment is OPERABLE. As a result, the consequences of any accident previously evaluated are not increased. Therefore, this change will not involve a significant increase in the probability or consequence of an accident previously evaluated.

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

The proposed change applies when a required Surveillance has not been performed within the required Frequency, and allows delaying the declaration of the LCO not met, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. This change will not physically alter the plant (no new or different type of equipment will be installed). Also, the change does not involve any new or unusual operator actions. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

R2

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

The proposed change applies when a required Surveillance has not been performed within the required Frequency, and allows delaying the declaration of the LCO not met, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is greater. A risk evaluation is required for any missed Surveillance delayed more than 24 hours. This risk evaluation will ensure that appropriate actions are taken to prevent a significant reduction in the margin of safety. Therefore, the change does not involve a significant reduction in a margin of safety.

TSTF-359

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

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.

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

a. MODE 3 within 7 hours;

b. MODE 4 within 13 hours; and

c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: R2

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

(continued)

3.0 LCO APPLICABILITY

LCO 3.0.4 (continued)

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. R2

This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. R2

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

LCO 3.0.5

Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6

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. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, an evaluation shall be performed in accordance with Specification 5.5.14, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

3.0 SR APPLICABILITY

SR 3.0.3 (continued)

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

SR 3.0.4

Entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency. When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made: R2 R2

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

BASES

LCO 3.0.3 (continued)

can be applicable in any or all MODES. If the LCO and the Required Actions of LCO 3.7.16 are not met while in MODE 1, 2, or 3, there is no safety benefit to be gained by placing the unit in a shutdown condition. The Required Action of LCO 3.7.16 of "Suspend movement of irradiated fuel assemblies in the fuel storage pool" is the appropriate Required Action to complete in lieu of the actions of LCO 3.0.3. These exceptions are addressed in the individual Specifications.

LCO 3.0.4

LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an LCO is not met. It precludes placing the unit in a MODE or other specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:

a. Unit conditions are such that the requirements of the LCO would not be met in the Applicability desired to be entered; and

b. Continued noncompliance with the LCO requirements, if the Applicability were entered, would result in the unit being required to exit the Applicability desired to be entered to comply with the Required Actions.

Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. When an LCO is not met, LCO 3.0.4 also allows changes in MODES or other specified conditions in the Applicability after a risk evaluation. The risk evaluation may use quantitative, qualitative, or blended approaches, and should be consistent with the approach of Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants." The results of the risk evaluation shall be considered in determining the acceptability of the MODE change, and any corresponding risk management actions. Consideration will be given to the probability of completing

R2

(continued)

BASES

LCO 3.0.4 (continued)

restoration such that the requirements of the LCO would be met prior to the expiration of ACTIONS Completion Times that would require exiting the Applicability. R2

A pre-assessment or configuration-specific risk analysis is required for determination of acceptable risk for changes in MODES or other specified conditions in the Applicability when an LCO is not met. Regulatory Guide 1.182 addresses general guidance for conduct of the risk evaluation, quantitative and qualitative guidelines for establishing risk management actions, and example risk management actions. These include actions to plan and conduct other activities in a manner that controls overall risk, increased risk awareness by shift and management personnel, actions to reduce the duration of the condition, actions to minimize the magnitude of risk increases (establishment of backup success paths or compensatory measures), and determination that the proposed MODE change is unacceptable. If the risk of changing MODES is determined to be greater than the acceptable risk, the configuration-specific risk evaluation may be used to determine the risk impact, and the need for risk management actions as appropriate, which may include changing MODES.

A quantitative, qualitative, or blended risk evaluation should be performed to assess the risk impact of the MODE change, based on the specific plant configuration at that time. This quantitative, qualitative, or blended risk evaluation should take into account the impact on initiating event frequency and mitigation capability as a function of plant MODE. From such evaluations, systems/components can be identified whose unavailability results in an equal or greater risk impact in MODES 2-5 than in MODE 1. For these systems/components, it would be generally acceptable to utilize the LCO 3.0.4 exceptions. There is a small subset of systems that have been generically determined to be more important to risk and do not typically have the LCO 3.0.4 exception allowed. The list is provided below.

The applicability of the LCO should be reviewed with respect to the actual plant configuration at that time. Entry into more than one LCO 3.0.4.b exception at the same time would be evaluated under the auspices of 10 CFR 50.65.a.4 and consideration of risk management actions discussed in Regulatory Guide 1.182. To apply the LCO 3.0.4.b exception

(continued)

BASES

LCO 3.0.4 (continued)

to plant systems/components identified in the Bases as potentially higher risk than for MODE 1 operation, a specific justification would be required. R2

The LCO 3.0.4 exception typically only applies to systems and components. The values and parameters are typically not addressed by LCO 3.0.4.

The following is a list of those systems that have been determined to be more important to risk and do not typically have the LCO 3.0.4 exception allowed:

System	MODE or Other Specified Condition in the Applicability
ESFAS Instrumentation (Function 6, Auxiliary Feedwater)	1, 2, 3, 4
RCS Loops (RHR)	5
LTOP System	4, 5, 6
ECCS Shutdown (ECCS High Head Subsystem)	4
SG PORVs	1, 2, 3, 4
AFW System	1, 2, 3, 4
AC Sources (Diesel Generator)	1, 2, 3, 4, 5, 6

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown. R2

LCO 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, LCO 3.0.4 is applicable when

(continued)

BASES

LCO 3.0.4 (continued)

entering any other specified condition in the Applicability only while operating in MODES 1, 2, 3, or 4. The requirements of LCO 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODES 1, 2, 3, or 4) because the ACTIONS of individual Specifications sufficiently define the remedial measures to be taken.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR 3.0.1. Therefore, changing MODES or other specified conditions while in an ACTIONS Condition, in compliance with LCO 3.0.4, is not a violation of SR 3.0.1 or SR 3.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, SRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO. |R2

LCO 3.0.5

LCO 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Specification is to provide an exception to LCO 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of required testing to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the required testing to demonstrate OPERABILITY. This Specification does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions and must be reopened to perform the required testing.

(continued)

BASES

SR 3.0.3 (continued)

analyzed quantitatively. If the results of the risk evaluation determine the risk increase is significant, this evaluation should be used to determine the safest course of action. All missed Surveillances will be placed in the licensee's Corrective Action Program. R2

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the ACTIONS, restores compliance with SR 3.0.1.

SR 3.0.4

SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This Specification ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or component to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

A provision is included to allow entry into a MODE or other specified condition in the Applicability: R2

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

(continued)

BASES

SR 3.0.4 (continued)

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. R2

However, in certain circumstances, failing to meet an SR will not result in SR 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed, per SR 3.0.1, which states that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillance(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.

The provisions of SR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

The precise requirements for performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of SRs' annotation is found in Section 1.4, Frequency.

(continued)

CTS

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

3.0.1

LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2. (and LCO 3.0.7) TSTF-6

3.0.2

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

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.

3.0.3

LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

a. MODE 3 within 7 hours;

b. MODE 4 within 13 hours; and

c. MODE 5 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.

3.0.4

Insert →

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made (3) except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This TSTF-359 R2

(continued)

Rev. 2

INSERT

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

CTS 3.0 LCO APPLICABILITY

3.0.4 LCO 3.0.4 (continued) Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

TSTF-359 | R2

TSTF-104

Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4. (5)

Reviewers's Note: LCO 3.0.4 has been revised so that changes in MODES or other specified conditions in the Applicability that are part of a shutdown of the unit shall not be prevented. In addition, LCO 3.0.4 has been revised so that it is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4. The MODE change restrictions in LCO 3.0.4 were previously applicable in all MODES. Before this version of LCO 3.0.4 can be implemented on a plant-specific basis, the licensee must review the existing technical specifications to determine where specific restrictions on MODE changes or Required Actions should be included in individual LCOs to justify this change; such an evaluation should be summarized in a matrix of all existing LCOs to facilitate NRC staff review of a conversion to the STS. (1)

New LCO 3.0.5 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

(continued)

Rev. 2

CTS

3.0 SR APPLICABILITY

SR 3.0.3 (continued) declared not met, and the applicable Condition(s) must be entered.

4.0.4

SR 3.0.4 Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

only — when — TSTF-359 — R2

Insert

SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

Reviewer's Note: SR 3.0.4 has been revised so that changes in MODES or other specified conditions in the Applicability that are part of a shutdown of the unit shall not be prevented. In addition, SR 3.0.4 has been revised so that it is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4. The MODE change restrictions in SR 3.0.4 were previously applicable in all MODES. Before this version of SR 3.0.4 can be implemented on a plant-specific basis, the licensee must review the existing technical specifications to determine where specific restrictions on MODE changes or Required Actions should be included in individual LCOs to justify this change; such an evaluation should be summarized in a matrix of all existing LCOs to facilitate NRC staff review of a conversion to the STS.

(1)

Rev. 2

INSERT

When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

BASES

LCO 3.0.3 (continued)

assemblies in the fuel storage pool." Therefore, this LCO can be applicable in any or all MODES. If the LCO and the Required Actions of LCO 3.7.15 are not met while in MODE 1, 2, or 3, there is no safety benefit to be gained by placing the unit in a shutdown condition. The Required Action of LCO 3.7.15 of "Suspend movement of irradiated fuel assemblies in the fuel storage pool" is the appropriate Required Action to complete in lieu of the actions of LCO 3.0.3. These exceptions are addressed in the individual Specifications.

LCO 3.0.4

LCO 3.0.4 establishes limitations on changes in MODES or other specified conditions in the Applicability when an LCO is not met. It precludes placing the unit in a MODE or other specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:

a. Unit conditions are such that the requirements of the LCO would not be met in the Applicability desired to be entered; and

b. Continued noncompliance with the LCO requirements, if the Applicability were entered, would result in the unit being required to exit the Applicability desired to be entered to comply with the Required Actions.

Insert

Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

TSTF-359 R2

The provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability

(continued)

Rev. 2

INSERT

When an LCO is not met, LCO 3.0.4 also allows changes in MODES or other specified conditions in the Applicability after a risk evaluation. The risk evaluation may use quantitative, qualitative, or blended approaches, and should be consistent with the approach of Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants". The results of the risk evaluation shall be considered in determining the acceptability of the MODE change, and any corresponding risk management actions. Consideration will be given to the probability of completing restoration such that the requirements of the LCO would be met prior to the expiration of ACTIONS Completion Times that would require exiting the Applicability.

A pre-assessment or configuration-specific risk analysis is required for determination of acceptable risk for changes in MODES or other specified conditions in the Applicability when an LCO is not met. Regulatory Guide 1.182 addresses general guidance for conduct of the risk evaluation, quantitative and qualitative guidelines for establishing risk management actions, and example risk management actions. These include actions to plan and conduct other activities in a manner that controls overall risk, increased risk awareness by shift and management personnel, actions to reduce the duration of the condition, actions to minimize the magnitude of risk increases (establishment of backup success paths or compensatory measures), and determination that the proposed MODE change is unacceptable. If the risk of changing MODES is determined to be greater than the acceptable risk, the configuration-specific risk evaluation may be used to determine the risk impact, and the need for risk management actions as appropriate, which may include changing MODES.

A quantitative, qualitative, or blended risk evaluation should be performed to assess the risk impact of the MODE change, based on the specific plant configuration at that time. This quantitative, qualitative, or blended risk evaluation should take into account the impact on initiating event frequency and mitigation capability as a function of plant MODE. From such evaluations, systems/components can be identified whose unavailability results in an equal or greater risk impact in MODES 2-5 ~~for PWRs and MODES 2 – 4 for BWRs~~ than in MODE 1. For these systems/components, it would be generally acceptable to utilize the LCO 3.0.4 exceptions. There is a small subset of systems that have been generically determined to be more important to risk and do not typically have the LCO 3.0.4 exception allowed. The ~~Bases of each ITS NUREG contain this respective generic Owners Group list~~. list is provided below.

The applicability of the LCO should be reviewed with respect to the actual plant configuration at that time. Entry into more than one LCO 3.0.4.b exception at the same time would be evaluated under the auspices of 10 CFR 50.65.a.4 and consideration of risk management actions discussed in Regulatory Guide 1.182. To apply the LCO 3.0.4.b exception to plant systems/components identified in the Bases as potentially higher risk than for MODE 1 operation, a plant specific justification would be required.

The LCO 3.0.4 exception typically only applies to systems and components. The values and parameters are typically not addressed by LCO 3.0.4 ~~and the list of the value and parameter exclusions are found in licensee~~ controlled documents.

Previous flexibility beyond the generic LCO 3.0.4 some plants may have had approved for LCO 3.0.4 exceptions and application may be justified using plant specific justification to be retained along with the generic LCO 3.0.4. (4)

The following is a list of those systems that have been generically determined to be more important to risk and do not typically have the LCO 3.0.4 exception allowed: (4)

System	MODE or Other Specified Condition in the Applicability
ESFAS Instrumentation (Function 6, Auxiliary Feedwater)	1, 2, 3, 4
RCS Loops (RHR)	5
LTOP System	4, 5, 6
ECCS Shutdown (ECCS High Head Subsystem)	4
ADVS SG PORVs (2)	1, 2, 3, 4
AFW System	1, 2, 3, 4
AC Sources (Diesel Generators)	1, 2, 3, 4, 5, 6

R2

BASES

LCO 3.0.4 (continued)

that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

Exceptions to LCO 3.0.4 are stated in the individual Specifications. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Specification.

TSTF-359 R2

LCO 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, LCO 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODES 1, 2, 3, or 4. The requirements of LCO 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODES 1, 2, 3, or 4) because the ACTIONS of individual Specifications sufficiently define the remedial measures to be taken. [In some cases (e.g., ..) these ACTIONS provide a Note that states "While this LCO is not met, entry into a MODE or other specified condition in the Applicability is not permitted, unless required to comply with ACTIONS." This Note is a requirement explicitly precluding entry into a MODE or other specified condition of the Applicability.]

(1)

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR 3.0.1. Therefore, changing MODES or other specified conditions while in an ACTIONS Condition, in compliance with LCO 3.0.4 or where an exception to LCO 3.0.4 is stated, is not a violation of SR 3.0.1 or SR 3.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, SRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO.

TSTF-359 R2

LCO 3.0.5

LCO 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Specification is to

(continued)

The exceptions allow entry into MODES or other specified Conditions in the Applicability when the associated ACTIONS to be entered do not provide for continued operation for an unlimited period of time.

TSTF-104 TSTF-359 R2

Rev. 2

BASES

SR 3.0.4 (continued)

Insert →

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or component to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

TSTF-359 | R2

However, in certain circumstances, failing to meet an SR will not result in SR 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed, per SR 3.0.1, which states that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillance(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.

The provisions of SR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

The precise requirements for performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event,

(continued)

Rev. 2

INSERT

A provision is included to allow entry into a MODE or other specified condition in the Applicability:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

JUSTIFICATION FOR DEVIATIONS
SECTION 3.0 BASES, LCO AND SR APPLICABILITY

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. The Bases are changed to reflect a change to the Specifications.

4. The generic discussions added to the ITS 3.0 Bases by TSTF-359 have been revised to be applicable to the plant-specific Technical Specifications. References to generic evaluations and the ISTS NUREGs are eliminated. R2

ITS Section 3.0

A.1

3.0 APPLICABILITY 7-5-90

ITS

SURVEILLANCE REQUIREMENTS (SR)

A.1

in the Applicability

SR 3.0.1 4.0.1 Surveillance Requirements shall be ~~applicable~~ met during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in ~~an~~ the individual Surveillance Requirement. Insert 4

A.9

SR 3.0.2 4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the surveillance interval.

Insert proposed SR 3.0.2

L.5 A.10 M.2

SR 3.0.3 4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the operability requirements for a Limiting Condition for Operation. The time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours. Surveillance requirements do not have to be performed on inoperable equipment.

A.9

Add proposed SR 3.0.3

L.6 R:

A.11

A.9

S.R. 3.0.4 4.0.4 Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified.

in the Applicability of an LCO

met

Insert 5

A.1 L.1 R:

A.12 L.4

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2, and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of 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 as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

(See ITS 5.0)

INSERT 4

Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits. Surveillances may be performed by means of any series of sequential, overlapping, or total steps.

INSERT 5

When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

A.1

7-5-90

3.0 APPLICABILITY

A.1

SURVEILLANCE REQUIREMENTS (SR)

ITS

in the Applicability

SR 3.0.1

4.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual Limiting Conditions for Operation unless otherwise stated in an individual Surveillance Requirement. (the) Insert 4

A.7 L.5

SR 3.0.2

4.0.2 Each Surveillance Requirement shall be performed within the specified surveillance interval with a maximum allowable extension not to exceed 25 percent of the surveillance interval. Insert proposed SR 3.0.2

A.10 M.2

A.9

SR 3.0.3

4.0.3 Failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by Specification 4.0.2, shall constitute noncompliance with the operability requirements for a Limiting Condition for Operation. The time limits of the action statement requirements are applicable at the time it is identified that a surveillance requirement has not been performed. The action statement requirements may be delayed for up to 24 hours to permit the completion of the surveillance when the allowable outage time limits of the action statement requirements are less than 24 hours. Surveillance requirements do not have to be performed on inoperable equipment.

Add proposed SR 3.0.3

L.6 R2

A.11

A.9

in the Applicability of an LCO

SR 3.0.4

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed (met) within the stated surveillance interval or as otherwise specified. Insert 5

A.1 L.1 R2 A.12 L.4

4.0.5 Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2, and 3 components shall be applicable as follows:

a. Inservice inspection of ASME Code Class 1, 2, and 3 components and inservice testing of 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 as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

< See ITS 5.0 >

INSERT 4

Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits. Surveillances may be performed by means of any series of sequential, overlapping, or total steps.

INSERT 5

When an LCO is not met, entry into a MODE or other specific condition in the Applicability shall only be made:

a. When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or,

b. After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate.

R2

This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3 and 4.

editorial conventions used in the ITS without resulting in technical changes to the specifications.

A.6 CTS 3.0.3 states, "Where corrective measures are completed that permit operation under the ACTION requirement, the ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the Limiting Condition for Operation." ITS LCO 3.0.3 states this as, "Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required."

This change is acceptable because the changes to CTS 3.0.3 are editorial. Both the CTS and ITS state that LCO 3.0.3 can be exited if the LCO which lead to the entry into LCO 3.0.3 is met, or if one of the ACTIONS of that LCO is applicable. The CTS requirement also specifies that the time to complete the ACTIONS in the LCO is based on the initial failure to meet the LCO. Reentering the LCO after exiting LCO 3.0.3 does not reset the ACTION statement time requirements. This information is not explicitly stated in ITS LCO 3.0.3 but is true under the multiple condition entry concept of the ITS. This change is designated as administrative because there is no change in the intent or application of the CTS 3.0.3 requirements.

A.7 Unit 1 CTS 3.0.4 states, "Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted. This provision shall not prevent passage through OPERATIONAL MODES as required to comply with ACTION statements." The Unit 2 CTS 3.0.4 is identical, except that the phrase, "unless otherwise excepted" is eliminated from the first sentence and a sentence is added stating, "Exceptions to these requirements are stated in individual specifications." ITS 3.0.4 states, "When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: a) When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit." The addition of the a) and b) conditions is described in Discussion of Change (DOC) L.1. The following changes are made to CTS 3.0.4: R2

- Unit 1 CTS 3.0.4 states, "Entry into an OPERATIONAL MODE or other specified applicability condition shall not be made unless the conditions of the Limiting Condition for Operation are met without reliance on provisions contained in the ACTION statements unless otherwise excepted." Unit 2 CTS 3.0.4 is the same, except as described above. ITS LCO 3.0.4 does not contain a discussion of exceptions. This change is acceptable because the

provisions in ITS LCO 3.0.4 eliminate the need for specific exceptions in individual specifications. The specific exceptions are eliminated from the specifications and discussed in specific DOCs in those specifications. Elimination of reference to these exceptions is acceptable because it does not technically change the specifications. R2

This change is designated as administrative because the change is needed to reflect technical changes made in other specifications. The technical aspects of those changes are discussed in other DOCs.

- Unit 1 and Unit 2 CTS 3.0.4 states, "This provision shall not prevent passage through OPERATIONAL MODES as required to comply with ACTION statements." ITS LCO 3.0.4 states in part, "This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS." This change is acceptable because these statements are equivalent. Both are stating that LCO 3.0.4 shall not prevent a unit shutdown required by the Technical Specifications. The ITS wording recognizes that there are conditions in the Applicability that are not MODES, such as "During Core Alterations."

  This change is designated as administrative as there is no change in the intent of CTS 3.0.4 and no additional flexibility is granted.

A.8 ITS LCO 3.0.7 is added to the CTS. LCO 3.0.7 states, "Test Exception LCOs [3.1.8] and 3.4.19 allow specified Technical Specification requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications."

This change is acceptable because the current Technical Specifications contain test exception specifications which allow certain LCOs to not be met for the purpose of special tests and operations. However, the CTS does not contain the equivalent of LCO 3.0.7. As a result, there could be confusion regarding which LCOs are applicable during special tests and LCO 3.0.7 was crafted to avoid that possible confusion. LCO 3.0.7 is consistent with the use and application of current test exception Specifications and does not provide any new restriction or allowance. This change is designated as administrative because it does not technically change the specifications.

A.9 CTS 4.0.1 states that Surveillance Requirements shall be applicable during the OPERATIONAL MODES or other conditions specified for individual Limiting

for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as 'once,' the above interval extension does not apply. If a Completion Time requires periodic performance on a 'once per . . .' basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this Specification are stated in the individual Specifications." This changes the CTS by adding, "For Frequencies specified as 'once,' the above interval extension does not apply." The remaining changes to CTS 4.0.2 are discussed in DOC A.10 and DOC L.5.

The purpose of the 1.25 extension allowance to Surveillance Frequencies is to allow for flexibility in scheduling tests. This change is acceptable because Frequencies specified as "once" are typically condition-based Surveillances in which the first performance demonstrates the acceptability of the current condition. Such demonstrations should be accomplished within the specified Frequency without extension in order to avoid operation in unacceptable conditions. This change is designated as more restrictive because an allowance to extend Frequencies by 1.25 is eliminated from some Surveillances.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L.1 CTS 3.0.4 does not allow entry into a MODE or other specified condition in the Applicability when an LCO is not met and while relying on ACTIONS without a specific exception. ITS LCO 3.0.4 contains the same restriction, but eliminates specific exceptions and includes an allowance to enter a MODE or condition specified in the Applicability "a) When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate." CTS 4.0.4 states that entry into a MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise stated.

R2

ITS SR 3.0.4 states that entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency. When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: "a) When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate." This changes the CTS by allowing additional circumstances under which a MODE or other specified condition in the Applicability may be entered when the LCO is not met.

The allowance to enter a MODE or other specified condition in the Applicability with the LCO not met when the ACTIONS allow unlimited operation is acceptable because ACTIONS which allow unlimited operation provide appropriate compensatory measures which protect the safety functions affected by the LCO not being met. In such a condition, allowing the unit to enter the MODES in which the LCO is applicable will have no detrimental effect on safety. For example, the Containment Isolation Valve ACTIONS for an inoperable valve allow unlimited operation provided that the valve is in its required position assumed in the safety analysis. Therefore, the safety function being protected by the LCO (in this example, containment isolation) continues to be protected. The allowance to enter a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions is appropriate because these activities, when performed as described in the LCO 3.0.4 Bases, ensure that the change in MODE or other specified condition in the Applicability has been properly evaluated to ensure that the risk to the plant is acceptable. This change is designated as less restrictive because it will allow changes in MODE or other specified conditions in the Applicability under circumstances that would be prohibited in the CTS. R2

L.2 ITS LCO 3.0.5 is added to the CTS. ITS LCO 3.0.5 states, "Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY."

The purpose of ITS LCO 3.0.5 is to provide an exception to ITS LCO 3.0.2. ITS LCO 3.0.2 states that when an LCO is not met the Required Actions must be followed. ITS LCO 3.0.5 allows the performance of Surveillance Requirements to demonstrate the OPERABILITY of the equipment being returned to service or of other equipment that otherwise could not be performed without exiting the Applicability of the affected LCO. This LCO contains an allowance that, although

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

10 CFR 50.92 EVALUATION
FOR
LESS RESTRICTIVE CHANGES

SECTION 3.0, LCO AND SR APPLICABILITY, CHANGE L.1

The North Anna Nuclear Power Station 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 3.0.4 does not allow entry into a MODE or other specified condition in the Applicability when an LCO is not met and while relying on ACTIONS without a specific exception. ITS LCO 3.0.4 contains the same restriction, but eliminates specific exceptions and includes an allowance to enter a MODE or condition specified in the Applicability "a) When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate." CTS 4.0.4 states that entry into a MODE or other specified condition shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise stated. ITS SR 3.0.4 states that entry into a MODE or other specified condition in the Applicability of an LCO shall only be made when the LCO's Surveillances have been met within their specified Frequency. When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall only be made: "a) When the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) After performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate." This changes the CTS by allowing additional circumstances under which a MODE or other specified condition in the Applicability may be entered when the LCO is not met.

R2

The allowance to enter a MODE or other specified condition in the Applicability with the LCO not met when the ACTIONS allow unlimited operation is acceptable because ACTIONS which allow unlimited operation provide appropriate compensatory measures which protect the safety functions affected by the LCO not being met. In such a condition, allowing the unit to enter the MODES in which the

LCO is applicable will have no detrimental effect on safety. For example, the Containment Isolation Valve ACTIONS for an inoperable valve allow unlimited operation provided that the valve is in its required position assumed in the safety analysis. Therefore, the safety function being protected by the LCO (in this example, containment isolation) continues to be protected. The allowance to enter a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions is appropriate because these activities, when performed as described in the LCO 3.0.4 Bases, ensure that the change in MODE or other specified condition in the Applicability has been properly evaluated to ensure that the risk to the plant is acceptable. This change is designated as less restrictive because it will allow changes in MODE or other specified conditions in the Applicability under circumstances that would be prohibited under the CTS.

In accordance with the criteria set forth in 10 CFR 50.92, the Company has evaluated these proposed Technical Specification changes and determined they do not represent a significant hazards consideration. The following is provided in support of this conclusion.

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

R2

The proposed change allows entering a MODE or other specified condition in the Applicability when the LCO is not met provided that the ACTIONS to be entered permit continued operation for an unlimited period of time or a risk evaluation has determined the change to be acceptable. If the inoperability of a component or variable could increase the probability of an accident previously evaluated, the corresponding ACTIONS would not allow operation in that condition for an unlimited period of time or the risk evaluation would determine the change is not acceptable. As a result, the probability of an accident previously evaluated is not significantly affected by this change. ACTIONS which allow operation for an unlimited period of time with an inoperable component or variable provide compensatory measures which protect the affected safety function, which includes any mitigation actions assumed in accidents previously evaluated. A risk evaluation may also identify risk management actions which are required to be implemented. For example, inoperable isolation valves are closed or inoperable instrument channels are placed in trip. Since the affected safety functions continue to be protected, the mitigation functions of the component or variable continue to be performed. As a result, the consequences of any accident previously evaluated are not increased significantly. Therefore, this change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

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

The proposed change allows entering a MODE or other specified condition in the Applicability when the LCO is not met provided that the ACTIONS to be entered permit continued operation for an unlimited period of time or a risk evaluation has determined the change to be acceptable. This change will not physically alter the plant (no new or different type of equipment will be installed). The change also does not require any new or unusual operator actions in that operation of the unit while complying with ACTIONS is common. Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

R2

The proposed change allows entering a MODE or other specified condition in the Applicability when the LCO is not met provided that the ACTIONS to be entered permit continued operation for an unlimited period of time or a risk evaluation has determined the change to be acceptable. This change will allow unit operation in MODES or other specified conditions in the Applicability while relying on ACTIONS that would have been previously prohibited. However, ACTIONS which allow operation for an unlimited period of time with an inoperable component or variable provide adequate compensatory measures which ensure the affected safety function is maintained, and, as a result, the margin of safety is not significantly affected. A risk evaluation performed to evaluate the acceptability of the change in MODE or specified condition in the Applicability will also ensure the margin of safety is not significantly reduced. Therefore, this change does not involve a significant reduction in a margin of safety.

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTE
Separate Condition entry is allowed for each Function. R2

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.6.	Immediately
C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 12 hours

3.3 INSTRUMENTATION

3.3.4 Remote Shutdown System

LCO 3.3.4 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTE
Separate Condition entry is allowed for each Function. R2

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.3.4.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR 3.3.4.2	Verify each required control circuit and transfer switch is capable of performing the intended function.	18 months

BASES

LCO

18. High Head Safety Injection (HHSI) Flow (continued)

into the RCS. Total HHSI flow is a Type A variable because it provides an indication to the operator for the RCP trip criteria.

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

ACTIONS

A Note has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.3-1. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function. |R2

A.1

Condition A applies when one or more Functions have one required channel that is inoperable. Required Action A.1 requires restoring the inoperable channel to OPERABLE status within 30 days. The 30 day Completion Time is based on operating experience and takes into account the remaining OPERABLE channel (or in the case of a Function that has only one required channel, other non-Regulatory Guide 1.97 instrument channels to monitor the Function), the passive nature of the instrument (no critical automatic action is assumed to occur from these instruments), and the low probability of an event requiring PAM instrumentation during this interval.

B.1

Condition B applies when the Required Action and associated Completion Time for Condition A are not met. This Required Action specifies initiation of actions in Specification 5.6.6, which requires a written report to be submitted to the NRC immediately. This report discusses the results of the

(continued)

BASES

ACTIONS

A Remote Shutdown System division is inoperable when each function is not accomplished by at least one designed Remote Shutdown System channel that satisfies the OPERABILITY criteria for the channel's Function. These criteria are outlined in the LCO section of the Bases.

A Note has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function. |R2

A.1

Condition A addresses the situation where one or more required Functions of the Remote Shutdown System are inoperable. This includes the control and transfer switches for any required function.

The Required Action is to restore the required Function to OPERABLE status within 30 days. The Completion Time is based on operating experience and the low probability of an event that would require evacuation of the control room.

B.1 and B.2

If the Required Action and associated Completion Time of Condition A is not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit 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 unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1

Performance of the CHANNEL CHECK once every 31 days ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the two instrument channels could be an indication of

(continued)

CTS

3.3 INSTRUMENTATION

3.3.3 Post Accident Monitoring (PAM) Instrumentation

3.3.3.6
3.6.4.1

LCO 3.3.3 The PAM instrumentation for each Function in Table 3.3.3-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTES

(3.3.3.6)

1. ~~LCO 3.0.4 is not applicable.~~
2. Separate Condition entry is allowed for each Function.

} TSTF 359 | R2

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a (3.3.3.6) (3.6.4.1) A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
NEW B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.~~8~~ (6)	Immediately TSTF 37
Action b (3.3.3.6) (3.6.4.1) C. ~~NOTE Not applicable to hydrogen monitor channels.~~ One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days (1)

(continued)

CTS

3.3 INSTRUMENTATION

3.3.3.5 3.3.4 Remote Shutdown System

LCO 3.3.3.5 LCO 3.3.4 The Remote Shutdown System Functions in Table 3.3.4-1 shall be OPERABLE. TSTF 266

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTES
1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

TSTF-359 | R2

New

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a — A. One or more required Functions inoperable.	A.1 Restore required Function to OPERABLE status.	30 days
Action a — 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

Rev. 2

BASES

LCO

19. Auxiliary Feedwater Flow (continued)

At some units, AFW flow is a Type A variable because operator action is required to throttle flow during an SLB accident to prevent the AFW pumps from operating in runout conditions. AFW flow is also used by the operator to verify that the AFW System is delivering the correct flow to each SG. However, the primary indication used by the operator to ensure an adequate inventory is SG level. (5)

APPLICABILITY

The PAM instrumentation LCO is applicable in MODES 1, 2, and 3. These variables are related to the diagnosis and pre-planned actions required to mitigate DBAs. The applicable DBAs are assumed to occur in MODES 1, 2, and 3. In MODES 4, 5, and 6, unit conditions are such that the likelihood of an event that would require PAM instrumentation is low; therefore, the PAM instrumentation is not required to be OPERABLE in these MODES.

ACTIONS

Note 1 has been added in the ACTIONS to exclude the MODE change restriction of LCO 3.0.4. This exception allows entry into the applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require unit shutdown. This exception is acceptable due to the passive function of the instruments, the operator's ability to respond to an accident using alternate instruments and methods, and the low probability of an event requiring these instruments. TSTF-359 R2

(A) Note 2 has been added in the ACTIONS to clarify the application of Completion Time rules. The Conditions of this Specification may be entered independently for each Function listed on Table 3.3.3-1. The Completion Time(s) of the inoperable channel(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function. TSTF 359

(continued)

Rev. 2

BASES

LCO (continued)

as one channel of any of the alternate information or control sources is OPERABLE.

The remote shutdown instrument and control circuits covered by this LCO do not need to be energized to be considered OPERABLE. This LCO is intended to ensure the instruments and control circuits will be OPERABLE if unit conditions require that the Remote Shutdown System be placed in operation.

APPLICABILITY

The Remote Shutdown System LCO is applicable in MODES 1, 2, and 3. This is required so that the unit can be placed and maintained in MODE 3 for an extended period of time from a location other than the control room. (1)

This LCO is not applicable in MODE 4, 5, or 6. In these MODES, the facility is already subcritical and in a condition of reduced RCS energy. Under these conditions, considerable time is available to restore necessary instrument control functions if control room instruments or controls become unavailable.

ACTIONS

Note 1 is included which excludes the MODE change restriction of LCO 3.0.4. This exception allows entry into an applicable MODE while relying on the ACTIONS even though the ACTIONS may eventually require a unit shutdown. This exception is acceptable due to the low probability of an event requiring the Remote Shutdown System and because the equipment can generally be repaired during operation without significant risk of spurious trip.

TSTF-359 R2

(INSERT)

TSTF-266 R2

(A) Note 2 has been added to the ACTIONS to clarify the application of Completion Time rules. Separate Condition entry is allowed for each Function listed on Table 3.3.4-1. The Completion Time(s) of the inoperable channel(s)/train(s) of a Function will be tracked separately for each Function starting from the time the Condition was entered for that Function.

TSTF-359

TSTF-266

(continued)

Rev. 2

ITS

3.3 INSTRUMENTATION

3.3.3 ~~ACCIDENT~~ MONITORING INSTRUMENTATION (A.1)

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 3.3.3.6 The accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION: R2

Action A a. INSERT proposed Note to Actions (A.2) K

With the number of OPERABLE accident monitoring channels less than the total number of channels shown in Table 3.3-10, either restore the inoperable channel(s) to OPERABLE status within ~~7~~ 30 (L.1) days or be in at least HOT SHUTDOWN within the next 12 hours.

Action B INSERT proposed Action B

Action C b. With the number of OPERABLE accident monitoring instrumentation channels less than the MINIMUM CHANNELS OPERABLE requirements of Table 3.3-10, either restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours. (L.2)

Action D 7 days Mode 3 within 6 hours and

c. The provisions of Specification 3.0.4 are not applicable. (M.1) (M.6) R2

SURVEILLANCE REQUIREMENTS

INSERT Note to SR 3.3.3.3 (A.3)

SR 3.3.3.1 and 3.3.3.3 4.3.3.6 Each accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-7.

Instrumentation

Post Accident Monitoring (PAM) Instrumentation

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

A.1

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 TABLE 3.3.3-1 Item 12

3.6.4.1 Two independent containment hydrogen analyzers (shared with Unit 2) shall be OPERABLE.

LA.1

APPLICABILITY: MODES 1 and 2 3

M.2

ACTION:

R2

Action A

a. Insert proposed wok. With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours. INSERT Proposed Action B.

A.2

L.1

Action C

Action D

b. With both hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours. AND Be in MODE 4 WITHIN 12 hours

M.2

NOTE: OPERABILITY of the hydrogen analyzers includes OPERABILITY of the respective Heat Tracing System

LA.1

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days (6 MONTHS) on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gas containing:

L.3

a. One volume percent (±.25%) hydrogen, balance nitrogen, and

b. Four volume percent (±.25%) hydrogen, balance nitrogen.

LA.2

NOTE: The Channel Calibration Test shall include startup and operation of the Heat Tracing System.

LA.1

ITS 3.3.3

8-21-80

ITS

A.1

3.3 INSTRUMENTATION

3.3.3 ACCIDENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 3.3.3.6 The accident monitoring instrumentation channels shown in Table 3.3-10 shall be OPERABLE.

APPLICABILITY: MODES 1, 2 and 3.

ACTION:

INSERT proposed Note

Action A

a. With the number of OPERABLE accident monitoring instrumentation channels less than the total number of channels shown in Table 3.3-10, either restore the inoperable channel(s) to OPERABLE status within 30 days, or be in at least HOT SHUTDOWN within the next 12 hours.

A.2 | R2

L.1

Action B

INSERT proposed Action B

b. With the number of OPERABLE accident monitoring instrumentation channels less than the MINIMUM CHANNELS OPERABLE requirements of Table 3.3-10, either restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours.

Action C

Action D

7 days

MODE 3 within 6 hours and

L.2

M.1

c. The provisions of Specification 3.0.4 are not applicable.

M.6 | R2

SURVEILLANCE REQUIREMENTS

INSERT Note to SR 3.3.3.3

A.3

SR 3.3.3.1 and 3.3.3.3 4.3.3.6 Each accident monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-7.

ITS 3.3 3.3.3

INSTRUMENTATION
POST ACCIDENT MONITORING (PAM) INSTRUMENTATION

A.1

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN ANALYZERS

LIMITING CONDITION FOR OPERATION

LCO 3.3.3 Table 3.3.3-1 Item 12

3.6.4.1 Two independent containment hydrogen analyzers (shared with Unit 1) shall be OPERABLE.

LA.1

APPLICABILITY: MODES 1 and 2 3

M.2

ACTION:

INSERT PROPOSED NOTE

R2

Action A

a. With one hydrogen analyzer inoperable, restore the inoperable analyzer to OPERABLE status within 30 days or be in at least HOT STANDBY within the next 6 hours

A.2

L.1

Action B
Action C
Action D

INSert proposed Action B

b. With both hydrogen analyzers inoperable, restore at least one analyzer to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and be in Mode 4 within 12 hours

M.2

NOTE: OPERABILITY of the hydrogen analyzers includes OPERABILITY of the respective Heat Tracing System.

LA.1

SURVEILLANCE REQUIREMENTS

SR 3.3.3.2

6 months

4.6.4.1 Each hydrogen analyzer shall be demonstrated OPERABLE at least once per 92 days on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION using sample gas containing:

L.3

a. One volume percent (± .25%) hydrogen, balance nitrogen, and

b. Four volume percent (± .25%) hydrogen, balance nitrogen.

LA.2

NOTE: The Channel Calibration Test shall include startup and operation of the Heat Tracing System.

LA.1

ADMINISTRATIVE CHANGES

A.1 In the conversion of the North Anna 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. 1, "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 3.3.3.6 states the PAM instrumentation channels listed in Table 3.3-10 shall be OPERABLE. ITS 3.3.3 states the PAM instrumentation for each function shall be OPERABLE. Each Function is listed in Table 3.3.3 – 1. A Note to the Actions states, "Separate Condition entry is allowed for each Function." This changes the CTS by adding a Note to the CTS requirements. R2

The purpose for adding the Note to the Actions is to provide a clear understanding that each function is independent. Each function requires a parameter to be available for the operator to monitor during post accident conditions. This change is acceptable because the CTS is constructed to provide for separate entry into the Actions for each PAM function and the addition of the ITS Note clarifies the requirements. This change is designated as administrative because it does not result in a technical change to the CTS.

A.3 CTS SR 4.3.3.6 in Table 4.3-7 requires each PAM instrumentation channel to be demonstrated OPERABLE by the performance of a CHANNEL CALIBRATION on a refueling frequency. ITS SR 3.3.3.2 requires a CHANNEL CALIBRATION be performed on each PAM instrumentation function shown in Table 3.3.3-1, at a Frequency of eighteen months. A Note modifies the SR that excludes neutron detectors from CHANNEL CALIBRATIONS. This changes the CTS by adding a clarifying Note.

The purpose of the Note is to exclude neutron detectors from the requirement because of the impracticality of this test on this device type. CTS requirement 4.3.1.1.1 states each reactor trip instrumentation channel will have a CHANNEL CALIBRATION performed in accordance with Table 4.3-1. Note (6) to the table applies to all nuclear instrumentation required for power operation. This states, "Neutron detectors may be excluded from CHANNEL CALIBRATION." Therefore, the inclusion of the Note is acceptable because this requirement parallels the requirements of the CTS for calibration of all other nuclear instrumentation channels. This change is designated as administrative because it does not result in a technical change to the CTS.

A.4 CTS 3.3.3.6 Table 3.3-10 lists in two columns the requirements for accident monitoring instrumentation. These columns are labeled as, "Total No. of Channels"

Note (a) states, "Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured." Note (b) states, "Only on position indication channel is required for penetration flow paths with only one installed control room indication channel." This changes the CTS by adding new functions, Notes, and SRs.

This change is acceptable because a plant specific evaluation has concluded that these instrumentation channels are required to provide unambiguous information to the operator in order to perform manual actions for which no automatic controls exist. The information provided by these additional instrumentation channels is essential for the accomplishment of specified safety functions by the Control Room operator after a design basis event. The change is designated as more restrictive because seven new instrumentation functions are added to the Technical Specifications.

M.5 CTS 3.3.6, Table 3.3-10, Function 18 states the total number of channels required for the In Core Thermocouples (T/Cs) as four per core quadrant. ITS 3.3.3, Table 3.3.3-1, Function 6.c for Core Exit Temperature, states the required number of channels as two per quadrant. ITS Note c requires a channel to consist of two T/Cs. This changes the CTS to require two T/Cs be powered from one train and the other two T/Cs be powered from the other train. This changes the CTS by requiring two trains of T/Cs.

This change is acceptable because it provides the necessary redundancy and diversity for the Core Exit Thermocouples required for compliance with Regulatory Guide 1.97 and NUREG 0737 Item II.F.2. Adding this requirement will provide an unambiguous source of information to the operator on core radial temperature distribution. The change is designated as a more restrictive because the OPERABILITY requirements on the Core Exit Thermocouples channels have been increased.

M.6 CTS 3.3.3.6, Action c states, "The provisions of Specification 3.0.4 are not applicable." ITS LCO 3.3.3 does not contain a similar allowance. This changes the CTS by eliminating an explicit Specification 3.0.4 exception.

This change is acceptable because the ITS does not provide explicit exceptions to ITS LCO 3.0.4 (the equivalent to CTS 3.0.4) in individual specifications. Instead, ITS LCO 3.0.4 allows entering a MODE or other specified condition in the Applicability when the LCO is not met a) when the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) after performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. The allowances in ITS LCO 3.0.4 are an alternative approach to providing the operational flexibility afforded by the CTS 3.0.4 exceptions. This change is designated as more restrictive because an explicit exception provided in the CTS is eliminated and a conditional exception is provided in the ITS. R2

on a STAGGERED TEST BASIS by performing a CHANNEL CALIBRATION." ITS SR 3.3.3.2 states a CHANNEL CALIBRATION must be performed at a frequency of every six months. This changes the CTS for the hydrogen analyzer by eliminating the STAGGERED TEST BASIS (STB) requirement.

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. The change does not affect the hydrogen analyzer methods of testing or the capability of the instruments to perform their safety function. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L.4 Not Used

R2

L.5 *(Category 1 – Relaxation of LCO Requirements)* CTS 3.3.3.6 in Table 3.3-10 requires the following functions to be OPERABLE: 8) Refueling Water Storage Tank, 9) Boric Acid Tank Solution Level, 10) Auxiliary Feedwater Flow Rate, 12) PORV Position Indicator, 13) PORV Block Valve Position Indication, 14) Safety Valve Position Indication, and 16) Containment Water Level. ITS 3.3.3 does not require these functions to be OPERABLE. This changes the CTS by deleting these functions from the post accident monitoring functions.

This change is acceptable because the LCO requirements continue to ensure that the process variables are maintained consistent with the safety analyses and licensing basis. The ITS LCO requirements ensure that the process variables are maintained consistent with the safety analyses and Regulatory Guide 1.97. An evaluation has been performed under the required guidelines which found that these variables are not required to be included in this table. 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.6 *(Category 1 – Relaxation of LCO Requirements)* CTS Table 3.3-6 requires 2 channels of the Containment High Range Area Monitors to be OPERABLE in MODES 1, 2, 3, and 4 with a specified alarm setpoint and measuring range. CTS Table 4.3-6 specifies Surveillance Requirements for the Containment High Range Area Monitors as a once per shift CHANNEL CHECK, a monthly CHANNEL FUNCTIONAL TEST, and a refueling interval CHANNEL CALIBRATION. Table 3.3-6 specifies Action 35 is to be taken when a channel is inoperable. This action requires inoperable channels to be returned to OPERABLE within 7 days or submit a special report. ITS LCO 3.3.3 Function 11, Containment Area Radiation (High Range), requires 2 channels to be OPERABLE in MODES 1, 2, and 3. The ITS includes Surveillance requirements for a CHANNEL CHECK to be performed once per shift and a CHANNEL CALIBRATION to be performed every 18 months. ITS Condition A allows one

ITS 3.3.4

A.1

11-26-77

ITS
3.3
3.3.4

INSTRUMENTATION

AUXILIARY SHUTDOWN PANEL MONTIORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.4

3.3.3.5 The auxiliary shutdown panel monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room. M.2 LA.1

APPLICABILITY: MODES 1, 2 and 3. A.2 R2

Note ACTION: INSERT PROPOSED Note

Action A a. With the number of OPERABLE auxiliary shutdown panel monitoring channels less than required by Table 3.3-9, either restore the inoperable channel to OPERABLE status within 30 days, or

Action B be in HOT SHUTDOWN within the next 12 hours. INSERT PROPOSED Required Action B.1 M.1

b. The provisions of Specification 3.0.4 are not applicable. M.3 R2

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1 3.3.4.3

4.3.3.5 Each auxiliary shutdown panel monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

ITS 3.3.4

8-21-80

A.1

ITS 3.3 3.3.4

INSTRUMENTATION

AUXILIARY SHUTDOWN PANEL MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.3.4

3.3.3.5 The auxiliary shutdown panel monitoring instrumentation channels shown in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room.

M.2 LA.1

APPLICABILITY: MODES 1, 2 and 3.

Note ACTION: INSERT PROPOSED Note

A.2 R2

Action A

a. With the number of OPERABLE auxiliary shutdown panel monitoring channels less than required by Table 3.3-9, either restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT SHUTDOWN within the next 12 hours.

Action B

30 INSERT Proposed Required Action B.1

L.2 M.1

b. ~~The provisions of Specification 3.0.4 are not applicable.~~

M.3 R2

SURVEILLANCE REQUIREMENTS

SR 3.3.4.1 3.3.4.3

4.3.3.5 Each auxiliary shutdown panel monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6.

controls, and Charging Pump controls. These control systems are included in the Bases Table B3.3.4-1. ITS SR 3.3.4.2 is also added and requires verification that each required control circuit or transfer switch is capable of performing its required function once every 18 months. This changes the CTS by adding the control functions and a surveillance to verify their OPERABILITY every 18 months.

This change is acceptable because it provides the necessary requirements for the control functions that are located on the auxiliary shutdown panel in order to maintain the unit in MODE 3 without access to the control room. The inclusion of the control functions and their periodic testing provides the necessary testing to ensure remote operation of the unit outside the control room can be accomplished. This change is designated as more restrictive because it adds requirements to the CTS.

M.3 CTS 3.3.3.5, Action b, states, "The provisions of Specification 3.0.4 are not applicable." ITS LCO 3.3.4 does not contain a similar allowance. This changes the CTS by eliminating an explicit Specification 3.0.4 exception.

This change is acceptable because the ITS does not provide explicit exceptions to ITS LCO 3.0.4 (the equivalent to CTS 3.0.4) in individual specifications. Instead, ITS LCO 3.0.4 allows entering a MODE or other specified condition in the Applicability when the LCO is not met a) when the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) after performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. The allowances in ITS LCO 3.0.4 are an alternative approach to providing the operational flexibility afforded by the CTS 3.0.4 exceptions. This change is designated as more restrictive because an explicit exception provided in the CTS is eliminated and a conditional exception is provided in the ITS. R2

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.3.5 LCO states that the auxiliary shutdown monitoring instrumentation channels in Table 3.3-9 shall be OPERABLE with readouts displayed external to the control room. CTS requirement in Table 3.3-9 lists the measuring range for each required channel and the location of the auxiliary shutdown panel where the instrumentation channel is remotely displayed. ITS LCO 3.3.4 states that the Remote Shutdown Instrumentation Functions shall be OPERABLE. This changes the CTS by moving the requirement for readouts displayed external to the control room, the location of the remote readouts (auxiliary shutdown panel) and the instrument channel ranges from the specification to the UFSAR.

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

NOTE R2
Separate Condition entry is allowed for each PORV and each block valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more PORVs inoperable due to inoperable backup nitrogen supply and capable of being manually cycled.	A.1 Restore backup nitrogen supply to OPERABLE status.	14 days
B. One or more PORVs inoperable for reason other than Condition A and capable of being manually cycled.	B.1 Close and maintain power to associated block valve.	1 hour
C. One PORV inoperable and not capable of being manually cycled.	C.1 Close associated block valve. AND C.2 Remove power from associated block valve. AND C.3 Restore PORV to OPERABLE status.	1 hour 1 hour 72 hours

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

a. One containment sump (level or discharge flow) monitor; and

b. One containment atmosphere radioactivity monitor (gaseous or particulate).

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

ACTIONS [R2]

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor inoperable.	A.1 ---------NOTE--------- Not required until 12 hours after establishment of steady state operation. ---------- Perform SR 3.4.13.1. [R1]	Once per 24 hours [R1]
	AND	
	A.2 Restore required containment sump monitor to OPERABLE status.	30 days

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 μCi/gm.	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1. AND A.2 Restore DOSE EQUIVALENT I-131 to within limit.	Once per 4 hours [R2] 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
C. Required Action and associated Completion Time of Condition A not met. OR DOSE EQUIVALENT I-131 in the unacceptable region of Figure 3.4.16-1.	C.1 Be in MODE 3 with T_{avg} < 500°F.	6 hours

BASES

LCO (continued)

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.

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 to within LCO 3.4.13, "RCS Operational Leakage."

Satisfying the LCO helps minimize challenges to fission product barriers.

APPLICABILITY

In MODES 1, 2, and 3, the PORVs and their associated block valves are required to be OPERABLE to limit the potential for a small break LOCA through the flow path and for manual operation to mitigate the effects associated with an SGTR. The PORVs are also required to be OPERABLE in MODES 1, 2, and 3 for manual actuation to mitigate an SGTR event. 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.

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.

ACTIONS

Note 1 has been added to clarify that all pressurizer PORVs are treated as separate entities, each with separate Completion Times (i.e., the Completion Time is on a component basis). R2

BASES

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5 or 6, the temperature is to be $\leq$ 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.

ACTIONS

A.1 and A.2 [R2]

With the required containment sump monitor 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, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flow). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable unit conditions are established.

Restoration of the required sump monitor to OPERABLE status within a Completion Time of 30 days is required to regain the function after the monitor's failure. This time is acceptable, considering the Frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

ACTIONS

B.1.1, B.1.2, and B.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.

(continued)

BASES

ACTIONS

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the limits of Figure 3.4.16-1 are not exceeded. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is done to continue to provide a trend.

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. |R2

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 unit systems.

C.1

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 unit systems.

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

(continued)

3.4 REACTOR COOLANT SYSTEM (RCS)

CTS

3.4.11 Pressurizer Power Operated Relief Valves (PORVs)

3.4.3.2 LCO 3.4.11 Each PORV and associated block valve shall be OPERABLE.

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

ACTIONS

and each block valve

TSTF-247

NOTES

1. Separate Condition entry is allowed for each PORV.
2. LCO 3.0.4 is not applicable.

TSTF-359 | R2

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more PORVs inoperable and capable of being manually cycled. for reasons other than Condition A	B.1 Close and maintain power to associated block valve.	1 hour (3) (3)
B. One [or two] PORV[s] inoperable and not capable of being manually cycled. C.	B.1 Close associated block valve[s].	1 hour (3)
	AND B.2 Remove power from associated block valve[s].	1 hour (5) (1)
	AND B.3 Restore PORV[s] to OPERABLE status.	72 hours (3)
A. One or more PORVs inoperable due to inoperable backup nitrogen supply and capable of being manually cycled. WOG STS	A.1 Restore backup nitrogen supply to OPERABLE Status.	14 days (3)

Action A.1

Action A.4

Action A.2

(continued)

Rev. 2

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.15 RCS Leakage Detection Instrumentation

3.4.6.1

LCO 3.4.15 The following RCS leakage detection instrumentation shall be OPERABLE:

b a. One containment sump (level or discharge flow) monitor; and (2)

a b. One containment atmosphere radioactivity monitor (gaseous or particulate); [and

c. One containment air cooler condensate flow rate monitor].

(2)

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required containment sump monitor inoperable.	~~NOTE~~ LCO 3.0.4 is not applicable.	(TSTF-66) TSTF-359 R2
Note: Not required until 12 hours after establishment of steady state operation.	A.1 Perform SR 3.4.13.1.	Once per 24 hours
	AND	TSTF-116
	A.2 Restore required containment sump monitor to OPERABLE status.	30 days

Action

(continued)

Rev 2

CTS

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.16 RCS Specific Activity

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DOSE EQUIVALENT I-131 > 1.0 µCi/gm.	~~Note~~ LCO ~~3.0.4~~ is not applicable.	Once per 4 hours
	A.1 Verify DOSE EQUIVALENT I-131 within the acceptable region of Figure 3.4.16-1.	48 hours
	AND	
	A.2 Restore DOSE EQUIVALENT I-131 to within limit.	
B. Gross specific activity of the reactor coolant not within limit.	~~B.1 Perform SR 3.4.16.2.~~	~~4 hours~~
	~~AND~~	
	B.~~2~~1 Be in MODE 3 with T_{avg} < 500°F.	6 hours

(continued)

TSTF-359 | R2

NRC-EO-7 | R

NRC-EO-7 | R

TSTF-28

Table 4.4-4, item 4a)

MODE 1-5, Action A

Action a

Action b

Rev. 2

BASES (continued)

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 to minimize challenges to the pressurizer safety valves for manual actuation to mitigate a steam generator tube rupture event.

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 MODE 4 when both pressure and core energy are decreased and the pressure surges become much less significant. The PORV setpoint is reduced for LTOP in MODES 4, 5, and 6 with the reactor vessel head in place. LCO 3.4.12 addresses the PORV requirements in these MODES.

ACTIONS

Note 1 has been added to clarify that all pressurizer PORVs 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. Testing is not performed in lower MODES.

Insert

B.1

With the PORVs inoperable and capable of being manually cycled, either the PORVs must be restored or the flow path isolated within 1 hour. The block valves should be closed but power must be maintained to the associated block valves, since removal of power would render the block valve inoperable. Although a PORV may be designated inoperable, it may be able to be manually opened and closed, and therefore, able to perform its function. PORV inoperability may be due to seat leakage, instrumentation problems, automatic control problems, or other causes that do not prevent manual use and do not create a possibility for a

(e.g., excessive seat leakage). In this condition,

(continued)

Rev. 2

BASES

APPLICABLE SAFETY ANALYSES (continued)

RCS leakage detection instrumentation satisfies Criterion 1 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii). (2)

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/unit in a safe condition, when RCS LEAKAGE indicates possible RCPB degradation. (3)

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. (1)

APPLICABILITY

Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5 or 6, the temperature is to be $\leq$ 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.

ACTIONS

INSERT from page B 3.4-89

A.1 and A.2

With the required containment sump monitor 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,

TSTF-359 | R2 → TSTF-60

(continued)

Rev. 2

BASES

ACTIONS

A.1 and A.2 (continued)

Insert

must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage. ↑ TSTF-116

Restoration of the required sump monitor to OPERABLE status within a Completion Time of 30 days is required to regain the function after the monitor's failure. This time is acceptable, considering the Frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

Move to pB 3.4-88

The Required Action A.1 is 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 monitor is inoperable. This allowance is provided because other instrumentation is available to monitor RCS leakage. TSTF-60 TSTF-359 R2

(3) or required radiation monitor are

(4) grab samples, or manual leakrates are

B.1.1, B.1.2, B.2.1, and B.2.2

and

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.

or water inventory balance is performed

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 are taken every 24 hours. (4) TSTF-116

Insert

The 24 hour interval provides periodic information that is adequate to detect leakage. ↑ The 30 day Completion Time recognizes at least one other form of leakage detection is available. TSTF-116

Required Action B.1 and Required Action B.2 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 gaseous and particulate containment atmosphere radioactivity monitor channel is inoperable. This allowance TSTF-60

(continued)

Rev. 2

BASES (continued)

ACTIONS

Required Action of Condition A

A Note to the ACTIONS 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 is acceptable due to 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.

unit

TSTF-359 R2

TSTF-137 ①

②

A.1 and A.2

With the DOSE EQUIVALENT I-131 greater than the LCO limit, samples at intervals of 4 hours must be taken to demonstrate that the limits of Figure 3.4.16-1 are not exceeded. The Completion Time of 4 hours is required to obtain and analyze a sample. Sampling is done to continue to provide a trend.

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.

B.1 and B.2

the unit must be placed in a MODE in which the requirement does not apply.

With the gross specific activity in excess of the allowed limit, an analysis must be performed within 4 hours to determine DOSE EQUIVALENT I-131. The Completion Time of 4 hours is required to obtain and analyze a sample.

TSTF-28

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.

unit

①

(continued)

Rev. 2

ITS 3.4.11

A.1

03-02-99

REACTOR COOLANT SYSTEM

SAFETY AND RELIEF VALVES – OPERATING

RELIEF VALVES

ITS

LIMITING CONDITION FOR OPERATION

LCO 3.4.11

3.4.3.2 Both power-operated relief valves (PORVs) and their associated block valves shall be OPERABLE.

App.

APPLICABILITY: MODES 1, 2, and 3.

Insert proposed Action Note 1) A.2

ACTION:

A. PORV(s): and capable of being manually cycled A.3

Action B, E

1. With one or both PORV(s) inoperable ~~solely 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 capable of being manually cycled A.3

Action A. E

2. **(Risk Informed)** With one or both PORV(s) inoperable because of (an) inoperable backup nitrogen supply(ies), within 14 days either restore the PORV(s) backup nitrogen supply(ies) to OPERABLE status or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

3. With ~~one or~~ both PORV(s) inoperable due to a malfunction in the PORV automatic control system, within 1 hour restore the affected automatic control system(s) to OPERABLE status or place and maintain the affected PORV(s) in manual control. L.3

Action C, E

4. With one PORV inoperable ~~due to causes other than those addressed in ACTIONS A.1, A.2 or A.3 above~~, within 1 hour either restore the PORV to OPERABLE status or close its associated block valve and remove power from the block valve; restore the PORV 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. A.3

and not capable of being manually cycled

Action F

5. With both PORVs inoperable ~~such that ACTIONS A.1, A.2 or A.3 above do not apply~~, within 1 hour either restore at least one PORV to OPERABLE status or close the associated 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. A.3

6. ~~The provisions of Specification 3.0.4 are not applicable.~~ M.2 R2

A.1

ITS 3.4.11

03-02-99

REACTOR COOLANT SYSTEM

SAFETY AND RELIEF VALVES – OPERATING

ITS

RELIEF VALVES

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

B. Block Valves: Insert proposed Action D Note — L.2

1. With one block valve inoperable, within 1 hour either restore the block valve to OPERABLE status or place its associated PORV in manual control; restore the block valve to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. Insert proposed Action G Note — L.2

Action D, E

2. With both block valves inoperable, within 1 hour either restore the block valves to OPERABLE status or place the PORVs in manual control; restore at least one block valve to OPERABLE status within the next hour; restore the remaining inoperable block valve to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. — A.4 / A.4

Action G, (2)

3. The provisions of Specification 3.0.4 are not applicable. — M.2 | R2

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE: — A.1

a. At least once per 31 days by performing a CHANNEL FUNCTIONAL TEST, excluding valve operation, and ← See ITS 3.3.1

b. At least once per 18 months by:

SR 3.4.11.3

1. Operating the PORV through one complete cycle of full travel during MODES 3 or 4 and — LA.1

SR 3.4.11.4

2. Operating the solenoid air control valves and check valves on the associated accumulators in the PORV control systems through one complete cycle of full travel, and — M.1 | RAI 3.4-08 R1

3. Performing a CHANNEL CALIBRATION of the actuation instrumentation. — See ITS 3.3.1

SR 3.4.11.1

c. At least once per 7 days by verifying that the pressure in the PORV nitrogen accumulators is greater than the surveillance limit.

4.4.3.2.2 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 A.4 or A.5 in Specification 3.4.3.2. ← This Surveillance is only required to be met in MODES 1 and 2 — L.1

SR 3.4.11.2

A.1

ITS 3.4.11

03-02-99

REACTOR COOLANT SYSTEM

SAFETY AND RELIEF VALVES – OPERATING

RELIEF VALVES

ITS **LIMITING CONDITION FOR OPERATION**

LCO 3.4.11 3.4.3.2 Both power-operated relief valves (PORVs) and their associated block valves shall be OPERABLE.

Appl. APPLICABILITY: MODES 1, 2, and 3. Insert proposed Action Note 1 A.2

ACTION:

A. PORV(s): and capable of being manually cycled A.3

Action B, E

1. With one or both PORV(s) inoperable ~~solely 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 capable of being manually cycled A.3

Action A, E

2. **(Risk Informed)** With one or both PORV(s) inoperable because of (an) inoperable backup nitrogen supply(ies), within 14 days either restore the PORV(s) backup nitrogen supply(ies) to OPERABLE status or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

3. With one or both PORV(s) inoperable due to a malfunction in the PORV automatic control system, within 1 hour restore the affected automatic control system(s) to OPERABLE status or place and maintain the affected PORV(s) in manual control. L.3

Action C, E

4. With one PORV inoperable due to causes other than those addressed in ACTIONS A.1, A.2 or A.3 above, within 1 hour either restore the PORV to OPERABLE status or close its associated block valve and remove power from the block valve; restore the PORV 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. A.3 and not capable of being manually cycled

Action F

5. With both PORVs inoperable such that ACTIONS A.1, A.2 or A.3 above do not apply, within 1 hour either restore at least one PORV to OPERABLE status or close the associated 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. A.3

6. The provisions of Specification 3.0.4 are not applicable. M.2 R2

A.1

ITS 3.4.11

03-02-99

REACTOR COOLANT SYSTEM

SAFETY AND RELIEF VALVES – OPERATING

RELIEF VALVES

ITS

LIMITING CONDITION FOR OPERATION

ACTION:(Continued)

B. Block Valves: Insert proposed Action O Note

L.2

Action O, E

1. With one block valve inoperable, within 1 hour either restore the block valve to OPERABLE status or place its associated PORV in manual control; restore the block valve to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

L.2

Insert proposed Action G Note

Action G, H

2. With both block valves inoperable, within 1 hour either restore the block valves to OPERABLE status or place the PORVs in manual control; restore at least one block valve to OPERABLE status within 2 hours the next hour, restore the remaining inoperable block valve to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

A.4

A.4

3. The provisions of Specification 3.0.4 are not applicable.

M.2 | R2

SURVEILLANCE REQUIREMENTS

4.4.3.2.1 In addition to the requirements of Specification 4.0.5, each PORV shall be demonstrated OPERABLE:

A.1

a. At least once per 31 days by performing a CHANNEL FUNCTIONAL TEST, excluding valve operation, and

See ITS 3.3.1

SR 3.4.11.3

b. At least once per 18 months by:

1. Operating the PORV through one complete cycle of full travel during MODES 3 or 4, and

L.4.1

SR 3.4.11.4

2. Operating the solenoid air control valves and check valves on the associated accumulators in the PORV control systems through one complete cycle of full travel, and

M.1 | RAI 3.4-08 R1

3. Performing a CHANNEL CALIBRATION of the actuation instrumentation.

See ITS 3.3.1

SR 3.4.11.1

c. At least once per 7 days be verifying that the pressure in the PORV nitrogen accumulators is greater than the surveillance limit.

SR 3.4.11.2

4.4.3.2.2 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 A.4 or A.5 in Specification 3.4.3.2.

This Surveillance is only required to be met in MODES 1 and 2.

L.1

M.2 CTS 3.4.3.2, Actions A.6 and B.3, state, "The provisions of Specification 3.0.4 are not applicable." ITS LCO 3.4.11 does not contain a similar allowance. This changes the CTS by eliminating an explicit Specification 3.0.4 exception.

This change is acceptable because the ITS does not provide explicit exceptions to ITS LCO 3.0.4 (the equivalent to CTS 3.0.4) in individual specifications. Instead, ITS LCO 3.0.4 allows entering a MODE or other specified condition in the Applicability when the LCO is not met a) when the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) after performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. The allowances in ITS LCO 3.0.4 are an alternative approach to providing the operational flexibility afforded by the CTS 3.0.4 exceptions. This change is designated as more restrictive because an explicit exception provided in the CTS is eliminated and a conditional exception is provided in the ITS. R2

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 3 – Removing Procedural Details for Meeting TS Requirements)* CTS 4.4.3.2.1.b.1 states that at least once per 18 months each PORV must be operated through one complete cycle of full travel during MODES 3 and 4. ITS SR 3.4.11.3 states that a complete cycle of each PORV must be made at a Frequency of 18 months. This changes the CTS by relocating the requirement to perform the testing in MODES 3 and 4 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 the PORV be OPERABLE. The MODE in which the test is performed is a detail of testing not required to be in the Technical Specifications in order to ensure PORV OPERABILITY. The MODE in which the test should be performed is relocated to the Bases and information in the Bases explains why the testing should be performed in those MODES. 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.

ITS

REACTOR COOLANT SYSTEM

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.15

3.4.6.1 The following Reactor Coolant System leakage detection systems shall be OPERABLE:

b a. The containment atmosphere particulate ~~and~~ or gaseous radioactivity monitoring system, and L.3

a b. On The containment sump level ~~and~~ or discharge flow measurement system monitor A.3

Appl. Insert proposed ACTION B.1.1 APPLICABILITY: MODES 1, 2, 3 and 4. Insert proposed REQUIRED ACTIONS NOTE L.2 M.1

ACTION:

Action A.2, B.1.2
Action A.1, B.2
Action C.1
Action C.2

With one of the above required leakage detection systems inoperable, operation may continue for up to 30 days provided a RCS leakrate calculation (Specification 4.4.6.2.1.d) is performed at least once per 24 hours. Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. R2

INSERT Proposed Action A.1

SURVEILLANCE REQUIREMENTS A.2

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 radioactivity monitoring system - performance of CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST at the frequencies specified in Table 4.3-3,

SR 3.4.15.3

b. Containment sump level and discharge flow measurement system - performance of CHANNEL CALIBRATION at least once per 18 months.

ITS

REACTOR COOLANT SYSTEM

3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.15

3.4.6.1 The following Reactor Coolant System leakage detection systems shall be OPERABLE:

b

a. The containment atmosphere particulate and gaseous radioactivity monitoring system, and (or) L.3

a

b. One (1) The containment sump level and discharge flow measurement system. (or) (1) (monitor) A.3

Appl. Insert proposed ACTION B.1.1

APPLICABILITY: MODES 1, 2, 3 and 4. R2

M.1

ACTION: L.1

INSERT proposed Actions here

With one of the above required leakage detection systems inoperable, operation may continue for up to 30 days provided a RCS leakrate calculation (Specification 4.4.6.2.1.d) is performed at least once per 24 hours. Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Actron A.2, B.1.2
Actron A.1, B.2
Actron C.1
Actron C.2

INSERT proposed Action A.1

SURVEILLANCE REQUIREMENTS A.2

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 radioactivity monitoring system - performance of CHANNEL CHECK, CHANNEL CALIBRATION, and CHANNEL FUNCTIONAL TEST at the frequencies specified in Table 4.3-3,

SR 3.4.15.3

b. Containment sump level and discharge flow measurement system - performance of CHANNEL CALIBRATION at least once per 18 months.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.4.6.1 does not include an Action to analyze grab samples of the containment atmosphere if the required containment atmosphere radioactivity monitor is inoperable. ITS 3.4.15 Required Action B.1.1 states, "Analyze grab samples of the containment atmosphere." This changes CTS by adding a Required Action.

This change is acceptable because it provides an additional means of leakage detection while the required containment atmosphere radioactivity monitor is inoperable. This change is designated as more restrictive because it imposes a new Required Action for an existing CTS Condition.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA.1 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.3.3.1 Table 3.3-6 includes Measurement Ranges for the RCS Leakage Detection instrumentation. ITS does not include these details. This changes the CTS by moving these details to the UFSAR.

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 the instrumentation to be OPERABLE. 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 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.

LESS RESTRICTIVE CHANGES

L.1 Not used.

R2

L.2 *(Category 4 – Relaxation of Required Action)* CTS 3.4.6.1 ACTION does not include an exclusion allowing a delay in performing an RCS water inventory balance. ITS 3.4.15 REQUIRED ACTIONS A.1 and B.1.2 include NOTES that state, "Not required until 12 hours after establishment of steady state operation." This changes the CTS by allowing 12 hours after establishment of steady state operation AND after

(A.1)

ITS 3.4.16

3-11-88

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

ITS

3.4.16

SR 3.4.16.2

SR 3.4.16.1

Appl.

Action A.1

Action A.2

Action C

LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the primary coolant shall be limited ~~to:~~ (within) (2) (A.1)

a. ≤ 1.0 µCi/gram DOSE EQUIVALENT I-131, and (See ITS SR 3.4.16.2)

b. ≤ 100/$\bar{E}$ µCi/gram. (See ITS SR 3.4.16.1)

APPLICABILITY: MODES 1, 2, 3, ~~4 and 5.~~ (3) (L.1)

ACTION: MODES 1, 2 and 3*

a. With the specific activity of the primary coolant > 1.0 µCi/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 at least HOT STANDBY with T_{avg} < 500°F within 6 hours.

b. With the specific activity of the primary coolant > 100/$\bar{E}$ µCi/gram, be in at least HOT STANDBY with T_{avg} < 500°F within 6 hours.

~~MODES 1, 2, 3, 4 and 5~~ (L.1)

Action A.1

a. With the specific activity of the primary coolant > 1.0 µCi/gram DOSE EQUIVALENT I-131 ~~or > 100/$\bar{E}$ µCi/gram~~, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits. (L.4)

R2

*With T_{avg} greater than or equal to 500°F.

REACTOR COOLANT SYSTEM

ITS

LIMITING CONDITION FOR OPERATION

ACTION: (Continued)

MODES 1, 2, 3, 4 and 5

L.1

L.4

a. With the specific activity of the primary coolant greater than 1.0 uCi/gram DOSE EQUIVALENT I-131 or greater than 100/E uCi/gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits.

R2

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 primary coolant shall be determined to be within the limits by performance of the sampling and analysis program of Table 4.4-4.

R2

L.2 Not used.

L.3 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS Table 4.4-4, Item 1, requires gross activity determination at least once per 72 hours. ITS SR 3.4.16.1 requires verification that the reactor coolant gross specific activity ≤ 100 / $\overline{E}$ μCi/gm every 7 days. This changes the CTS by reducing the Frequency from 72 hours to 7 days.

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.4 *(Category 4 – Relaxation of Required Action)* CTS Table 4.4-4, Item 4, requires isotopic analysis for iodine once per 4 hours when the specific activity exceeds 100 / $\overline{E}$ μCi/gm. The ITS does not contain this Action. This changes the ITS by eliminating a conditionally performed Surveillance when gross activity exceeds 100 / $\overline{E}$ μCi/gm.

The purpose of CTS 3.4.8, Table 4.4-4, Item 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 / $\overline{E}$ μCi/gm, ITS Action B.1 and CTS Action b. require the plant to be in MODE 3 with T_{avg} ≤ 500 °F within 6 hours. Monitoring of $\overline{E}$ 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 plant is in MODE 2 in 4 hours or less, the Required Action is in conflict with the NOTE of 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 plant is required to be in MODE 3 with T_{avg} < 500 °F within 6 hours, exiting the mode of 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.

3.6 CONTAINMENT SYSTEMS

3.6.9 Hydrogen Recombiners

LCO 3.6.9 Two hydrogen recombiners shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One hydrogen recombiner inoperable.	A.1 Restore hydrogen recombiner to OPERABLE status.	30 days [R2]
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 7 days
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Perform a system functional test for each hydrogen recombiner.	18 months

BASES

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.

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.

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 occurring (that would generate an amount of hydrogen that exceeds the flammability limit), and the amount of time available after a LOCA (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit. R2

CTS

Hydrogen Recombiners (Atmospheric, Subatmospheric, Ice Condenser, and Dual) 3.6.8.9 (1)

3.6 CONTAINMENT SYSTEMS

3.6.4.2

3.6.8.9 Hydrogen Recombiners (Atmospheric, Subatmospheric, Ice Condenser, and Dual) (If permanently installed) (1)

LCO 3.6.8.9 Two hydrogen recombiners shall be OPERABLE. (1)

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
Action a / Action b A. One hydrogen recombiner inoperable.	A.1	--------NOTE-------- LCO 3.0.4 is not applicable. ---------- Restore hydrogen recombiner to OPERABLE status.	30 days TSTF-359 R2
NEW B. Two hydrogen recombiners inoperable.	B.1 AND B.2	Verify by administrative means that the hydrogen control function is maintained. Restore one hydrogen recombiner to OPERABLE status.	1 hour AND Once per 12 hours thereafter 7 days (2)
Action a C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours

Rev. 2

BASES

ACTIONS

A.1 (continued)

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 R2

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 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]. 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 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

atmosphere cleanup system containment purge blowers

(continued)

Rev. 2

A.1

ITS 3.6.9

ITS

05-12-95

CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS

LIMITING CONDITION FOR OPERATION

3.6.9

3.6.4.2 Two ~~separate and independent~~ containment hydrogen recombiner systems (~~shared with~~ Unit 2) shall be OPERABLE. LA.1

APPLICABILITY: MODES 1 and 2.

ACTION:

A.1
C.1

a. 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.

INSERT Proposed Actions B.1 and B.2

L.2

b. ~~The provisions of Specification 3.0.4 are not applicable.~~ M.1 R2

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE once per 18 months by:

3.6.9.1

a. Verifying, during a recombiner system functional test, that the minimum heater sheath temperature increases to greater than or equal to 700°F within 90 minutes and is maintained for at least 2 hours and that each hydrogen recombiner purge blower operates for at least 15 minutes. LA.2

3.6.9.1

b. Verifying, during a recombiner system functional test using containment atmospheric air at a flow rate of greater than or equal to 50 scfm, that the heater temperature increases to greater than or equal to 1100°F within 5 hours and is maintained for at least 4 hours. LA.2

3.6.9.3

c. Verifying the integrity of all heater electrical circuits by performing a resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be greater than or equal to 10,000 ohms. LA.2

3.6.9.2

d. Verifying, through a visual examination, that there is no evidence of abnormal conditions within the recombiner enclosure (i.e., loose wiring or structural connections, deposits of foreign materials, etc.). LA.2

e. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits. L.1

A.1

ITS 3.6.9
05-12-95

CONTAINMENT SYSTEMS

ITS

ELECTRIC HYDROGEN RECOMBINERS

LIMITING CONDITION FOR OPERATION

3.6.9 3.6.4.2 Two ~~separate and independent~~ containment hydrogen recombiner systems (~~shared with~~ Unit 1) shall be OPERABLE. LA.1

APPLICABILITY: MODES 1 and 2.

ACTION:

A.1 C.1 a. 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.

INSERT Proposed Actions B.1 and B.2

b. ~~The provisions of Specification 3.0.4 are not applicable.~~ L.2 M.1 R2

SURVEILLANCE REQUIREMENTS

4.6.4.2 Each hydrogen recombiner system shall be demonstrated OPERABLE once per 18 months by:

SR 3.6.9.1 a. Verifying, during a recombiner system functional test, that the minimum heater sheath temperature increases to greater than or equal to 700°F within 90 minutes and is maintained for at least 2 hours and that each hydrogen recombiner purge blower operates for at least 15 minutes. LA.2

SR 3.6.9.1 b. Verifying, during a recombiner system functional test using containment atmospheric air at a flow rate of greater than or equal to 50 scfm, that the heater temperature increases to greater than or equal to 1100°F within 5 hours and is maintained for at least 4 hours. LA.2

SR 3.6.9.3 c. Verifying the integrity of all heater electrical circuits by performing a resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be greater than or equal to 10,000 ohms. LA.2

SR 3.6.9.2 d. Verifying, through a visual examination, that there is no evidence of abnormal conditions within the recombiner enclosure (i.e., loose wiring or structural connections, deposits of foreign materials, etc.). LA.2

e. Performing a CHANNEL CALIBRATION of all recombiner instrumentation and control circuits. L.1

ADMINISTRATIVE CHANGES

A.1 In the conversion of the North Anna 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. 1, "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 3.6.4.2, Action b states, "The provisions of Specification 3.0.4 are not applicable." ITS LCO 3.6.9 does not contain a similar allowance. This changes the CTS by eliminating an explicit Specification 3.0.4 exception.

This change is acceptable because the ITS does not provide explicit exceptions to ITS LCO 3.0.4 (the equivalent to CTS 3.0.4) in individual specifications. Instead, ITS LCO 3.0.4 allows entering a MODE or other specified condition in the Applicability when the LCO is not met a) when the associated ACTIONS to be entered permit continued operation in the MODE or other specific condition in the Applicability for an unlimited period of time, or, b) after performance of a risk evaluation, consideration of the results, determination of the acceptability of the MODE change, and establishment of risk management actions, if appropriate. The allowances in ITS LCO 3.0.4 are an alternative approach to providing the operational flexibility afforded by the CTS 3.0.4 exceptions. This change is designated as more restrictive because an explicit exception provided in the CTS is eliminated and a conditional exception is provided in the ITS. R2

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, 'Two separate and independent containment hydrogen recombiner systems," shared with Unit 2 or Unit 1 for the Unit 1 or Unit CTS, respectively, "shall be OPERABLE." ITS 3.6.9 states, "Two hydrogen recombiners shall be OPERABLE." This changes the CTS by moving the detail,

3.7 PLANT SYSTEMS

3.7.4 Steam Generator Power Operated Relief Valves (SG PORVs)

LCO 3.7.4 Three SG PORV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SG PORV line inoperable.	A.1 Restore required SG PORV line to OPERABLE status.	7 days [R2]
B. Two or more required SG PORV lines inoperable.	B.1 Restore all but one SG PORV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	6 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each SG PORV.	18 months
SR 3.7.4.2	Verify one complete cycle of each SG PORV manual isolation valve.	18 months

BASES

LCO (continued)

Failure to meet the LCO can result in the inability to cool the unit to RHR entry conditions following an event in which the condenser is unavailable for use with the Steam Dump System.

An SG PORV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing, remotely or by local manual operation on demand.

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal, the SG PORVs are required to be OPERABLE.

In MODE 5 or 6, an SGTR is not a credible event.

ACTIONS

A.1

With one required SG PORV line inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE SG PORV lines, a nonsafety grade backup in the Steam Dump System, and MSSVs. |R2

B.1

With two or more SG PORV lines inoperable, action must be taken to restore all but one SG PORV line to OPERABLE status. Since the upstream manual isolation valve can be closed to isolate an SG PORV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable SG PORV lines, based on the availability of the Steam Dump System and MSSVs, and the low probability of an event occurring during this period that would require the SG PORV lines.

C.1 and C.2

If the SG PORV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon steam generator for heat removal, within 24 hours. The allowed Completion Times are reasonable, based on operating

(continued)

CTS

New ↓

SGPORVs → ADVs

3.7.4

3.7 PLANT SYSTEMS

STEAM GENERATOR POWER OPERATED RELIEF VALVES (SGPORVs)

3.7.4 ~~Atmospheric Dump Valves~~ (ADVs)

LCO 3.7.4 ~~[Three]~~ ADV lines shall be OPERABLE.

SGPORV

APPLICABILITY: MODES 1, 2, and 3.
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SGPORV ADV line inoperable.	A.1 ~~.....NOTE..... LCO 3.0.4 is not applicable.~~ Restore required SGPORV ADV line to OPERABLE status.	7 days
B. Two or more required ADV lines inoperable. (SGPORV)	B.1 Restore all but one ADV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND	6 hours
	C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	~~18~~ 24 hours

(1) (2) TSTF-359 Rev 2

(1) (2)

(1) (2) TSTF-100

(1) (2)

TSTF-352

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BASES

LCO (continued)

the condenser is unavailable for use with the Steam Bypass System. Dump SGPORV

An ADV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing on demand. remotely or by local manual operation

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal, the ADVs are required to be OPERABLE. SGPORV

In MODE 5 or 6, an SGTR is not a credible event.

ACTIONS

A.1 SGPORV

With one required ADV line inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE ADV lines, a nonsafety grade backup in the Steam Bypass System, and MSSVs. Required Action A.1 is modified by a Note indicating that LCO 3.0.4 does not apply. TSTF-359 R2

Dump SGPORV

B.1

With two or more ADV lines inoperable, action must be taken to restore all but one ADV line to OPERABLE status. Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Bypass System and MSSVs, and the low probability of an event occurring during this period that would require the ADV lines. upsteam manual isolation SGPORV Dump

C.1 and C.2 SGPORV

If the ADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least

(continued)

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AMENDMENT
227 / 208

4.0 DESIGN FEATURES

4.1 Site Location

The North Anna Power Station is located in the north-central portion of Virginia in Louisa County and is approximately 40 miles north-northwest of Richmond, 36 miles east of Charlottesville; 22 miles southwest of Fredericksburg; and 70 miles southwest of Washington, D.C. The site is on a peninsula on the southern shore of Lake Anna at the end of State Route 700.

4.2 Reactor Core

4.2.1 Fuel Assemblies

The reactor shall contain 157 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy or ZIRLO fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core locations.

4.2.2 Control Rod Assemblies

The reactor core shall contain 48 control rod assemblies. The control material shall be silver indium cadmium, as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of 4.6 weight percent; |R2

4.0 DESIGN FEATURES

4.3.1.1 (continued)

b. $k_{eff} < 1.0$ if fully flooded with unborated water, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491); R2

c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 350 ppm, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491); and

d. A nominal 10 9/16 inch center to center distance between fuel assemblies placed in the fuel storage racks.

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

a. Fuel assemblies having a maximum U-235 enrichment of 4.6 weight percent; R2

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties;

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties; and

d. A nominal 21 inch center to center distance between fuel assemblies placed in the storage racks.

4.3.2 Drainage

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 285 feet, 9 inches, Mean Sea Level, USGS datum. RAI 4.0-2 R2

4.3.3 Capacity

The spent fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

4.0 DESIGN FEATURES

CTS
New

4.1 Site Location

[Text description of site location.] Insert 1 (1)

4.2 Reactor Core

5.3.1

4.2.1 Fuel Assemblies

The reactor shall contain [157] fuel assemblies. (1) Each assembly shall consist of a matrix of [Zircaloy or ZIRLO] (1) fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core regions. locations (5)

4.2.2 [Control Rod] Assemblies (1)

5.3.2

The reactor core shall contain [48] [control rod] assemblies. (1) The control material shall be [silver indium cadmium, boron carbide, or hafnium metal] (1) as approved by the NRC.

4.3 Fuel Storage

4.3.1 Criticality

4.3.1.1 The spent fuel storage racks are designed and shall be maintained with:

5.3.1

a. Fuel assemblies having a maximum U-235 enrichment of 4.5 4.6 weight percent; (1) R2

b. k_{eff} ≤ 0.95 ≤ 1.0 if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; and (6) R2

5.6.1.1.a

Insert 2

(continued)

INSERT 1

The North Anna Power Station is located in the north-central portion of Virginia in Louisa County and is approximately 40 miles north-northwest of Richmond, 36 miles east of Charlottesville; 22 miles southwest of Fredericksburg; and 70 miles southwest of Washington, D.C. The site is on a peninsula on the southern shore of Lake Anna at the end of State Route 700.

INSERT 2

calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491).

CTS

4.0 DESIGN FEATURES

4.3 Fuel Storage (continued)

Insert

10 9/16

5.6.1.1.c

5.6.1.1.b

c. A nominal [9.15] inch center to center distance between fuel assemblies placed in [the high density fuel storage racks];

[d. A nominal [10.95] inch center to center distance between fuel assemblies placed in [low density fuel storage racks];]

[e. New or partially spent fuel assemblies with a discharge burnup in the "acceptable range" of Figure [3.7.17-1] may be allowed unrestricted storage in [either] fuel storage rack(s); and]

[f. New or partially spent fuel assemblies with a discharge burnup in the "unacceptable range" of Figure [3.7.17-1] will be stored in compliance with the NRC approved [specific document containing the analytical methods, title, date, or specific configuration or figure].]

4.3.1.2 The new fuel storage racks are designed and shall be maintained with:

5.3.1

4.6

a. Fuel assemblies having a maximum U-235 enrichment of [4.5] weight percent;

new

b. $k_{eff} \leq 0.95$ if fully flooded with unborated water, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR];

5.6.1.2

c. $k_{eff} \leq 0.98$ if moderated by aqueous foam, which includes an allowance for uncertainties as described in [Section 9.1 of the FSAR]; and

5.6.1.2

21

d. A nominal [10.95] inch center to center distance between fuel assemblies placed in the storage racks.

4.3.2 Drainage

5.6.2

The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation [28 ft]

285 feet, 9 inches Mean Sea Level, USGS datum

(continued)

Rev. 2

INSERT

c. $k_{eff} \leq 0.95$ if fully flooded with water borated to 350 ppm, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491).

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. References to fuel storage K_{eff} uncertainty discussions in the FSAR are eliminated as the North Anna UFSAR does not contain this information. Where specific uncertainties are part of the licensing basis, that information has been added to the ITS.

4. The North Anna spent fuel pool does not contain low density storage racks or utilize zoned spent fuel storage. ITS requirements related to these features have been eliminated.

5. Design Features 4.2.1 is revised to allow a limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core locations, vice nonlimiting core regions. This wording is consistent with the CTS and allows greater flexibility in the placement of lead test assemblies.

6. References to fuel storage k_{eff} uncertainty discussions in the FSAR are revised and ITS 4.3.1.1.c is added to address the North Anna plant-specific licensing basis.

ITS

DESIGN FEATURES

DESIGN PRESSURE AND TEMPERATURE

5.2.2 The reactor containment building is designed and shall be maintained for a maximum internal pressure of 45 psig and a temperature of 280°F.

LA.2

5.3 REACTOR CORE

FUEL ASSEMBLIES

• Each fuel assembly shall consist of a matrix of

LA.3

4.2.1

5.3.1 The reactor core shall contain 157 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4 or ZIRLO. Each fuel rod shall have a nominal active fuel length of 144 inches. The initial core loading shall have a maximum enrichment of 3.2 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.6 weight percent U-235. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core locations.

4.3.1.1.a

4.3.1.2.a

R2

CONTROL ROD ASSEMBLIES

4.2.2

5.3.2 The reactor core shall contain 48 full length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

LA.4

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

LA.5

fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material.

The control material shall be silver indium cadmium. as approved by the NRC.

A.1

Chapter 4.0

ITS

DESIGN FEATURES

a. In accordance with the code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

LA.5

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is approximately 10,000 cubic feet at nominal operating conditions.

5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

LA.6

5.6 FUEL STORAGE

CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

4.3.1.1.a

a. A K_{eff} equivalent to less than 1.0 when flooded with unborated water, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491). R2

4.3.1.1.d

b. A nominal 10 9/16 inch center-to-center distance between fuel assemblies placed in the storage racks.

4.3.1.1.E

c. A K_{eff} equivalent to less than 0.95 when fully flooded with water borated to 350 ppm, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491), but excludes allowances for postulated accidents. R2

4.3.1.2.c

5.6.1.2 The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that, on a best estimate basis, K_{eff} will not exceed .98, with fuel of the highest anticipated enrichment in place, when aqueous foam moderation is assumed.

4.3.1.2.d

5.6.1.3 If new fuel for the first core loading is stored dry in the spent fuel storage racks, the center-to-center distance between the new fuel assemblies will be administratively limited to 28 inches and the k_{eff} shall not exceed 0.98 when aqueous foam moderation is assumed.

A.2

4.3.1.2.b

Insert proposed ITS 4.3.1.2.b

M.1

ITS

DESIGN FEATURES

DRAINAGE

4.3.2

5.6.2 The spent fuel pit is designed and shall be maintained to prevent inadvertent draining of the pool below elevation ~~288.83 feet~~ 285 feet, 9 inches. Mean Sea Level, USGS datum.

L.1 RAI 4.10-2 R2

CAPACITY

4.3.3

5.6.3 The fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

5.7 COMPONENT CYCLIC OR TRANSIENT LIMIT

5.7.1 The components identified in Table 5.7-1 are designed and shall be maintained within the cyclic or transient limits of Table 5.7-1.

See ITS Chapter 5.0

ITS

DESIGN FEATURES

5.3 REACTOR CORE

Each fuel assembly shall consist of a matrix of

FUEL ASSEMBLIES

4.2.1

5.3.1 The reactor core shall contain 157 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4 or ZIRLO. Each fuel rod shall have a nominal active fuel length of 144 inches. The initial core loading shall have a maximum enrichment of 3.2 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment of 4.6 weight percent U-235. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in nonlimiting core locations.

LA.3

R2

4.3.1.1.a
4.3.1.2.a

CONTROL ROD ASSEMBLIES

5.3.2 The reactor core shall contain 48 full length control rod assemblies. The full length control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal values of absorber material shall be 80 percent silver, 15 percent indium and 5 percent cadmium. All control rods shall be clad with stainless steel tubing.

LA.4

4.2.2

5.4 REACTOR COOLANT SYSTEM

DESIGN PRESSURE AND TEMPERATURE

5.4.1 The reactor coolant system is designed and shall be maintained:

a. In accordance with the code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,

b. For a pressure of 2485 psig, and

c. For a temperature of 650°F, except for the pressurizer which is 680°F.

LA.5

VOLUME

5.4.2 The total water and steam volume of the reactor coolant system is approximately 10,000 cubic feet at nominal operating conditions.

fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO_2) as fuel material.

The control material shall be silver indium cadmium as approved by the NRC.

A.1

ITS

DESIGN FEATURES

5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1.

LA.6

5.6 FUEL STORAGE

CRITICALITY

5.6.1.1 The spent fuel storage racks are designed and shall be maintained with:

4.3.1.1.a

a. A K_{eff} equivalent to less than 1.0 when flooded with unborated water, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491).

R2

4.3.1.1.c

b. A nominal 10 9/16 inch center-to-center distance between fuel assemblies placed in the storage racks.

4.3.1.1.b

c. A K_{eff} equivalent to less than 0.95 when fully flooded with water borated to 350 ppm, which includes an allowance for uncertainties calculated in accordance with the methodology described in Virginia Electric and Power Company letter dated September 27, 2000 (Serial No. 00-491), but excludes allowances for postulated accidents.

R2

4.3.1.2.c

5.6.1.2 The new fuel pit storage racks are designed and shall be maintained with a nominal 21 inch center-to-center distance between new fuel assemblies such that, on a best estimate basis, k_{eff} will not exceed .98, with fuel of the highest anticipated enrichment in place, when aqueous foam moderation is assumed.

4.3.1.2.d

5.6.1.3 If new fuel for the first core loading is stored dry in the spent fuel storage racks, the center-to-center distance between the new fuel assemblies will be administratively limited to 28 inches and the k_{eff} shall not exceed 0.98 when aqueous foam moderation is assumed.

A.2

M.1

4.3.1.2.b

Insert proposed ITS 4.3.1.2.b

DRAINAGE

4.3.2

5.6.2 The spent fuel pit is designed and shall be maintained to prevent inadvertent draining of the pool below elevation ~~288.83 feet~~ 285 feet, 9 inches Mean Sea Level, USGS datum.

L.1

RAI 4.0-2 R2

CAPACITY

4.3.3

5.6.3 The fuel storage pool is designed and shall be maintained with a storage capacity limited to no more than 1737 fuel assemblies.

3.7 PLANT SYSTEMS

3.7.17 Fuel Storage Pool Boron Concentration

LCO 3.7.17 The fuel storage pool boron concentration shall be ≥ 2500 ppm.

APPLICABILITY: When fuel assemblies are stored in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Fuel storage pool boron concentration not within limit.	----------NOTE---------- LCO 3.0.3 is not applicable. ----------	
	A.1 Suspend movement of fuel assemblies in the fuel storage pool.	Immediately
	AND	
	A.2 Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.17.1	Verify the fuel storage pool boron concentration is within limit.	7 days

Intentionally Blank

B 3.7 PLANT SYSTEMS

B 3.7.17 Fuel Storage Pool Boron Concentration

BASES

BACKGROUND

The water in the spent fuel storage pool contains soluble boron, which results in large subcriticality margins under normal operating conditions. However, the NRC guidelines assume accident conditions, such as loss of all soluble boron or misloading of a fuel assembly. In these cases, the subcriticality margin is allowed to be smaller, but in all cases must be less than 1.0. This subcriticality margin is maintained by storing the fuel assemblies in the fuel storage pool in a geometry which limits the reactivity of the fuel assemblies and by the use of soluble boron in the fuel storage pool water. The required geometry for fuel assembly storage in the fuel storage pool is described in LCO 3.7.18, "Spent Fuel Assembly Storage." The accident analyses assume the presence of soluble boron under accident conditions, such as the misloading of a fuel assembly into a location not allowed by LCO 3.7.18, a loss of cooling to the fuel storage pool resulting in a temperature increase of the fuel storage pool water, or a dilution of the boron dissolved in the fuel storage pool.

A general description of the fuel storage pool design is given in the UFSAR, Section 9.1.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

Criticality of the fuel assemblies in the fuel storage pool racks is prevented by the design of the rack and by administrative controls related to fuel storage pool boron concentration, fuel assembly burnup credit, and fuel storage pool geometry (Ref. 2). There are three basic acceptance criteria which ensure conformance with the design bases (Ref. 3). They are:

a. $k_{eff} < 1.0$ assuming no soluble boron in the fuel storage pool,

b. A soluble boron concentration sufficient to ensure $k_{eff} < 0.95$, and

c. An additional amount of soluble boron sufficient to offset the maximum reactivity effects of postulated accidents and to account for the uncertainty in the computed reactivity of fuel assemblies.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The postulated accidents considered when determining the required fuel storage pool boron concentration are the misloading of a fuel assembly, an increase in fuel storage pool temperature, and boron dilution. Analyses have shown that the amount of boron required by the LCO is sufficient to ensure that the most limiting misloading of a fuel assembly results in a $k_{eff} < 0.95$. The boron concentration limit also accommodates decreases in water density due to temperature increases in the fuel storage pool. Analyses have also shown that there is sufficient time to detect and mitigate a boron dilution event prior to exceeding the design basis of $k_{eff} < 0.95$. The fuel storage pool analyses do not credit the Boraflex neutron absorbing material in the fuel storage pool racks.

The concentration of dissolved boron in the fuel storage pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The fuel storage pool boron concentration is required to be $\geq$ 2500 ppm. The specified concentration of dissolved boron in the fuel storage pool preserves the assumptions used in the analyses which take credit for soluble boron and for fuel loading restrictions based on fuel enrichment and burnup. The fuel loading restrictions are described in LCO 3.7.18. The fuel storage pool boron concentration limit, when combined with fuel burnup and geometry limits in LCO 3.7.18, ensures that the fuel storage pool k_{eff} meets the limits in Section 4.3, "Design Features."

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel storage pool. The required boron concentration ensures that the k_{eff} limits in Section 4.3 are met when fuel is stored in the fuel storage pool.

ACTIONS

A.1 and A.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

When the concentration of boron in the fuel storage pool is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. Prior to resuming movement of fuel assemblies, the concentration of boron must be restored to within limit. This does not preclude movement of a fuel assembly to a safe position.

If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

This SR verifies that the concentration of boron in the fuel storage pool is within the required limit. As long as this SR is met, the analyzed accidents are fully addressed. The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over such a short period of time.

REFERENCES

1. UFSAR, Section 9.1.2.

2. UFSAR, Section 4.3.2.7.

3. UFSAR, Section 3.1.53.

Intentionally Blank

CTS

3.7 PLANT SYSTEMS

3.7.16 Fuel Storage Pool Boron Concentration

3.7.14 LCO 3.7.16 The fuel storage pool boron concentration shall be ≥ [2300] 2500 ppm.

Appl. APPLICABILITY: When fuel assemblies are stored in the fuel storage pool and a fuel storage pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action b / Action a A. Fuel storage pool boron concentration not within limit.	----------NOTE---------- LCO 3.0.3 is not applicable. ----------	
Action a	A.1 Suspend movement of fuel assemblies in the fuel storage pool.	Immediately
	AND	
Action b	A.2 Initiate action to restore fuel storage pool boron concentration to within limit.	Immediately
	OR	
Initiate action to perform a fuel storage pool verification.	A.2.2 Verify by administrative means [Region 2] fuel storage pool verification has been performed since the last movement of fuel assemblies in the fuel storage pool.	Immediately

TSTF-70

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1 (17)	Verify the fuel storage pool boron concentration is within limit.	7 days

4.7.14

(2) (1) (2)

R2

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.17, FUEL STORAGE POOL BORON CONCENTRATION

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

2. The North Anna ITS contains specifications that do not appear in the ISTS. ISTS Specification 3.7.16, Fuel Storage Pool Boron Concentration, has been has been renumbered 3.7.17 in the North Anna ITS in order to accommodate those additional specifications. R2

3. The ISTS has been modified to match the North Anna analysis and CTS. Specifically, the North Anna analysis does not credit the use of a fuel storage pool verification for determining the Applicability of the LCO. The CTS and the ITS require that each fuel assembly is verified to be in the correct storage location during fuel movement. Retention of the ISTS Applicability would render the LCO never applicable. Therefore, the Applicability is revised to, "when fuel assemblies are stored in the fuel storage pool." Revision of the Applicability also eliminates the need for Required Action A.2.2.

B 3.7 PLANT SYSTEMS

B 3.7.16 (17) Fuel Storage Pool Boron Concentration

BASES

BACKGROUND

In the Maximum Density Rack (MDR) [(Refs. 1 and 2)] design, the spent fuel storage pool is divided into two separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure [3.7.17-1], in the accompanying LCO. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.

The water in the spent fuel storage pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 3) allows credit for soluble boron under other abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the movement of fuel from [Region 1 to Region 2], and accidental misloading of a fuel assembly in [Region 2]. This could potentially increase the criticality of [Region 2]. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the MDR with no movement of assemblies may therefore be achieved by controlling the location of each assembly in accordance with LCO 3.7.17, "Spent Fuel Assembly Storage." Prior to movement of an assembly, it is necessary to perform SR 3.7.16.1.

Insert

(continued)

Rev. 2

INSERT

The water in the spent fuel storage pool contains soluble boron, which results in large subcriticality margins under normal operating conditions. However, the NRC guidelines assume accident conditions, such as loss of all soluble boron or misloading of a fuel assembly. In these cases, the subcriticality margin is allowed to be smaller, but in all cases must be less than 1.0. This subcriticality margin is maintained by storing the fuel assemblies in the fuel storage pool in a geometry which limits the reactivity of the fuel assemblies and by the use of soluble boron in the fuel storage pool water. The required geometry for fuel assembly storage in the fuel storage pool is described in LCO 3.7.18, "Spent Fuel Assembly Storage." The accident analyses assume the presence of soluble boron under accident conditions, such as the misloading of a fuel assembly into a location not allowed by LCO 3.7.18, a loss of cooling to the fuel storage pool resulting in a temperature increase of the fuel storage pool water, or a dilution of the boron dissolved in the fuel storage pool. R2

A general description of the fuel storage pool design is given in the UFSAR, Section 9.1.2 (Ref. 1).

BASES (continued)

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the activity of either of the two regions. Examples of these accident conditions are the loss of cooling (reactivity increase with decreasing water density) and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the storage pool prevents criticality in both regions. The postulated accidents are basically of two types. A fuel assembly could be incorrectly transferred from [Region 1 to Region 2] (e.g., an unirradiated fuel assembly or an insufficiently depleted fuel assembly). The second type of postulated accidents is associated with a fuel assembly which is dropped adjacent to the fully loaded [Region 2] storage rack. This could have a small positive reactivity effect on [Region 2]. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios. The accident analyses is provided in the FSAR, Section [15.7.4] (Ref. 4).

Insert 1

The concentration of dissolved boron in the fuel storage pool satisfies Criterion 2 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii).

LCO

The fuel storage pool boron concentration is required to be ≥ [2300] ppm. The specified concentration of dissolved boron in the fuel storage pool preserves the assumptions used in the analyses of the potential critical accident scenarios as described in Reference 4. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the fuel storage pool.

2500

Insert 2

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel storage pool, until a complete spent fuel storage pool verification has been performed following the last movement of fuel assemblies in the spent fuel storage pool. This LCO does not apply following the verification, since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in

Insert 3

(continued)

Rev. 2

INSERT 1

Criticality of the fuel assemblies in the fuel storage pool racks is prevented by the design of the rack and by administrative controls related to fuel storage pool boron concentration, fuel assembly burnup credit, and fuel storage pool geometry (Ref. 2). There are three basic acceptance criteria which ensure conformance with the design bases (Ref. 3). They are:

a) k_{eff} < 1.0 assuming no soluble boron in the fuel storage pool,

b) A soluble boron concentration sufficient to ensure keff < 0.95, and

c) An additional amount of soluble boron sufficient to offset the maximum reactivity effects of postulated accidents and to account for the uncertainty in the computed reactivity of fuel assemblies.

The postulated accidents considered when determining the required fuel storage pool boron concentration are the misloading of a fuel assembly, an increase in fuel storage pool temperature, and boron dilution. Analyses have shown that the amount of boron required by the LCO is sufficient to ensure that the most limiting misloading of a fuel assembly results in a k_{eff} < .95. The boron concentration limit also accommodates decreases in water density due to temperature increases in the fuel storage pool. Analyses have also shown that there is sufficient time to detect and mitigate a boron dilution event prior to exceeding the design basis of k_{eff} < 0.95. The fuel storage pool analyses do not credit the Boraflex neutron absorbing material in the fuel storage pool racks. R2

INSERT 2

The specified concentration of dissolved boron in the fuel storage pool preserves the assumptions used in the analyses which take credit for soluble boron and for fuel loading restrictions based on fuel enrichment and burnup. The fuel loading restrictions are described in LCO 3.7.18. The fuel storage pool boron concentration limit, when combined with fuel burnup and geometry limits in LCO 3.7.18, ensures that the fuel storage pool k_{eff} meets the limits in Section 4.3, "Design Features."

INSERT 3

The required boron concentration ensures that the k_{eff} limits in Section 4.3 are met when fuel is stored in the fuel storage pool.

BASES

APPLICABILITY (continued)

progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly.

ACTIONS

A.1, A.2.1, and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

When the concentration of boron in the fuel storage pool is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. An acceptable alternative is to verify by administrative means that the fuel storage pool verification has been performed since the last movement of fuel assemblies in the fuel storage pool. However, prior to resuming movement of fuel assemblies, the concentration of boron must be restored. This does not preclude movement of a fuel assembly to a safe position. (to within limits)

Alternately, beginning a verification of the fuel storage pool fuel locations to ensure proper locations of the fuel can be performed.

If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1 (17)

This SR verifies that the concentration of boron in the fuel storage pool is within the required limit. As long as this SR is met, the analyzed accidents are fully addressed. The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over such a short period of time.

(continued)

BASES (continued)

REFERENCES

1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."
2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station). (2)
3. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).
4. FSAR, Section [15.1.4]. (1) R2

1. UFSAR, Section 9.1.2.
2. UFSAR, Section 4.3.2.7.
3. UFSAR, Section 3.1.53.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.17 BASES, FUEL STORAGE POOL BORON CONCENTRATION

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. Changes are made to reflect consistency with or those changes made to the ISTS. The following requirements are renumbered or revised, where applicable, to reflect the changes. R2

4. The criteria of the NRC Final Policy Statement on Technical Specifications Improvements have been included in 10 CFR 50.36(c)(2)(ii). Therefore, references in the ISTS Bases to the NRC Final Policy Statement are revised in the ITS Bases to reference 10 CFR 50.36.

UNIT 1

R2

A.1

ITS 3.7.17

3/4.7 PLANT SYSTEMS

3/4.7.14 SPENT FUEL POOL BORON CONCENTRATION

ITS

LIMITING CONDITION FOR OPERATION

3.7.17

3.7.14 The spent fuel pool boron concentration shall be ≥ 2500 ppm.

Appl.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pool.

ACTION:

Condition A

a. Immediately suspend movement of fuel assemblies in the spent fuel pool and initiate action to restore the spent fuel pool boron concentration to within limits.

Required Action Note

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

4.7.14 The spent fuel pool boron concentration shall be determined to be ≥ 2500 ppm at least once every 7 days.

R2

UNIT 2 | R2

(A.1)

ITS 3.7.17

3/4.7 PLANT SYSTEMS

3/4.7.14 SPENT FUEL POOL BORON CONCENTRATION

ITS

LIMITING CONDITION FOR OPERATION

3.7.17

3.7.14 The spent fuel pool boron concentration shall be ≥ 2500 ppm.

Appl.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pool

ACTION:

Condition A

a. Immediately suspend movement of fuel assemblies in the spent fuel pool and initiate action to restore the spent fuel pool boron concentration to within limits.

Required Action Note

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

4.7.14 The spent fuel pool boron concentration shall be determined to be ≥ 2500 ppm at least once every 7 days.

R2

page 1 of 1

Rev. 2

DISCUSSION OF CHANGES
ITS 3.7.17, FUEL STORAGE POOL BORON CONCENTRATION

ADMINISTRATIVE CHANGES

A.1 In the conversion of the North Anna 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. 1, "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. R2

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

3.7 PLANT SYSTEMS

3.7.18 Spent Fuel Pool Storage

LCO 3.7.18 The combination of initial enrichment and burnup of each fuel assembly stored in the fuel storage pool shall be in accordance with the following:

a. New or irradiated fuel assemblies with a combination of burnup and initial nominal enrichment in the "Acceptable" burnup domain of Figure 3.7.18-1 may be stored in the fuel storage pool in a non-matrix location or a low reactivity location in the 5 x 5 matrix configuration shown in Figure 3.7.18-2. They may also be placed in a high reactivity location if stored in the 5 x 5 matrix configuration shown in Figure 3.7.18-2;

b. New or irradiated fuel assemblies with a combination of burnup and initial nominal enrichment in the "Conditionally Acceptable" domain of Figure 3.7.18-1 may be stored in the fuel storage pool in a non-matrix location, but must be placed in a high reactivity location if stored in the 5 x 5 matrix configuration shown in Figure 3.7.18-2; and

c. New or irradiated fuel assemblies with a combination of burnup and initial nominal enrichment in the "Unacceptable" domain of Figure 3.7.18-1 must be stored in the fuel storage pool in a high reactivity location in the 5 x 5 matrix configuration shown in Figure 3.7.18-2. A fuel assembly transferred from Surry for storage in the North Anna fuel storage pool must be treated as a fuel assembly in the "Unacceptable" domain.

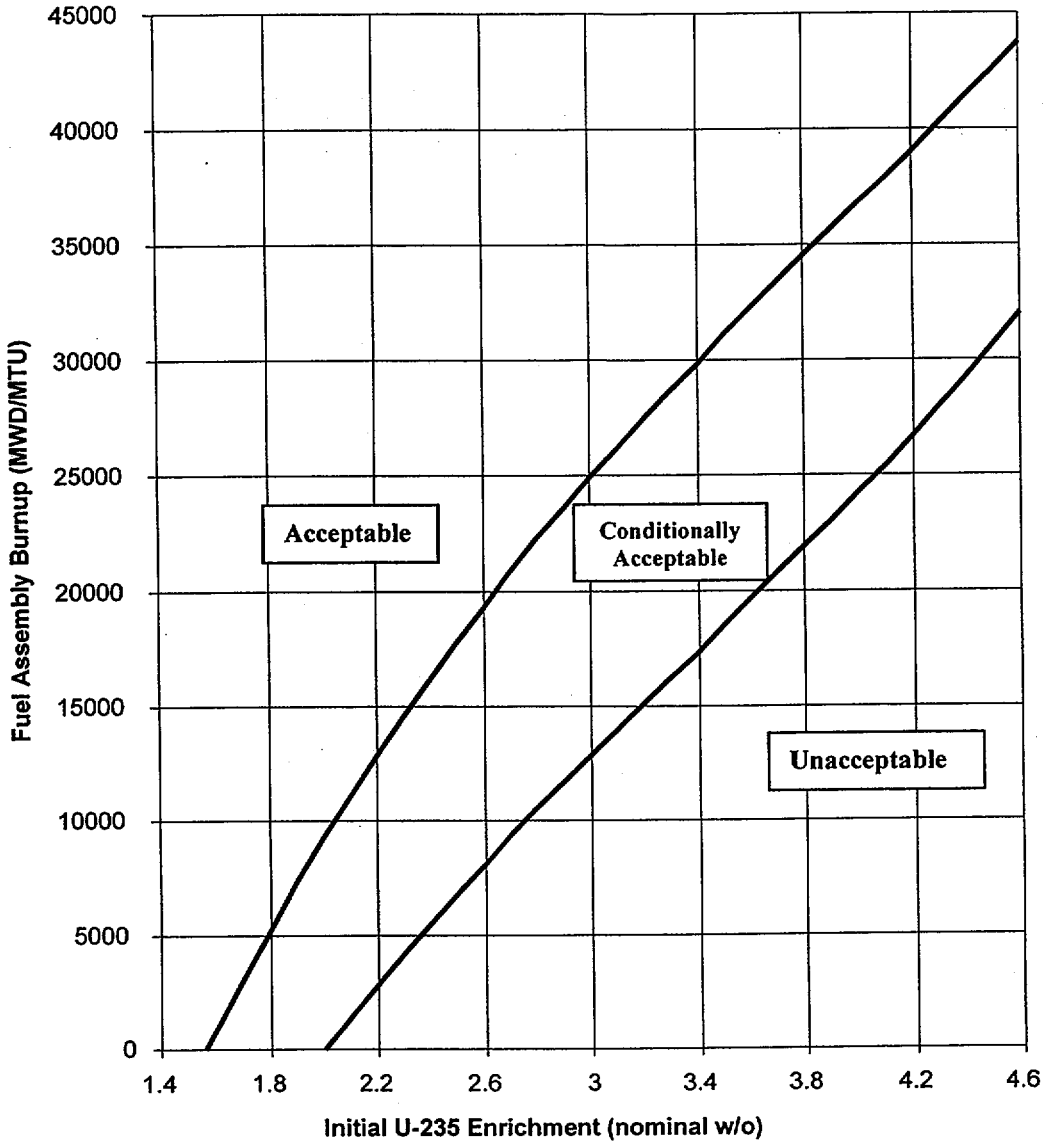
APPLICABILITY: Whenever any fuel assembly is stored in the spent fuel pool.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Initiate action to move the noncomplying fuel assembly to an acceptable location.	Immediately

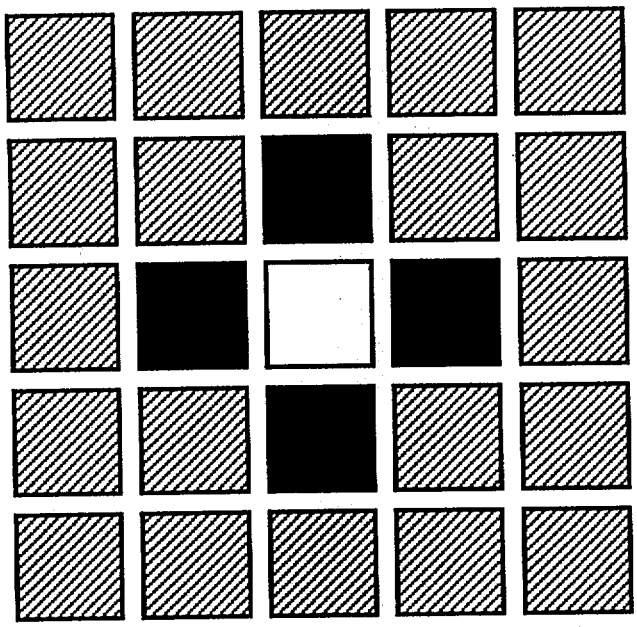
SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.18.1	Verify by a combination of visual inspection and administrative means that the initial enrichment, burnup and storage location of the assembly is acceptable.	Prior to storing the fuel assembly in the spent fuel pool



Acceptable: Acceptable for storage in non-matrix location or low reactivity location in matrix configuration. May also be placed in high reactivity locations in matrix configuration.
Conditionally Acceptable: Acceptable for storage in non-matrix location, but must be placed in high reactivity location if stored in matrix configuration.
Unacceptable: Must be stored in high reactivity location in matrix configuration. Surry spent fuel must be stored in high reactivity locations in a matrix.

Figure 3.7.18-1 (page 1 of 1)
Burnup Credit Requirements



Low reactivity fuel
(Per Figure 3.7.18-1 or cell containing no fuel assembly)

High reactivity fuel
(Per Figure 3.7.18-1, reactivity up to and including 4.6 w/o U^{235} fresh fuel or cell containing no fuel assembly)

No fuel assembly

Notes to Figure:

1. A partial matrix at the boundary of the spent fuel pool storage locations is an acceptable configuration.
2. Storage of non-fueled components within the matrix or non-matrix cells that results in a reduced spent fuel pool k_{eff} is acceptable.
3. A storage cell containing no fuel assembly may be substituted for any location in either matrix or non-matrix configuration.
4. Spent fuel transferred from Surry must be stored in high reactivity locations.

Figure 3.7.18-2 (page 1 of 1)
5 x 5 Matrix Storage Configuration

B 3.8 PLANT SYSTEMS

B 3.7.18 Spent Fuel Pool Storage

BASES

BACKGROUND

The fuel storage pool contains racks which hold the fuel assemblies. The arrangement of the fuel assemblies in the fuel racks can be used to limit the interaction of the fuel assemblies and the resulting reactivity of the fuel in the fuel storage pool. The geometrical arrangement is based on classifying fuel assemblies as "high reactivity" or "low reactivity" based on the burnup and initial enrichment of the fuel assemblies. A 5 x 5 fuel location matrix is employed with acceptable locations for high and low reactivity fuel assemblies. Fuel assemblies may also be stored in fuel locations not associated with a storage matrix if the assemblies meet certain requirements.

Storing the fuel assemblies in the locations required by the LCO ensures a fuel storage pool $k_{eff} < 1.0$ for normal conditions. In addition, the water in the spent fuel storage pool contains soluble boron, which results in large subcriticality margins under normal operating conditions. However, the NRC guidelines assume accident conditions, such as loss of all soluble boron or misloading of a fuel assembly. In these cases, the subcriticality margin is allowed to be smaller, but in all cases must be less than 1.0. This subcriticality margin is maintained by storing the fuel assemblies as described in the LCO and by the use of soluble boron in the fuel storage pool water as required by LCO 3.7.17, "Fuel Storage Pool Boron Concentration." The accident analyses assume the presence of soluble boron under accident conditions, such as the misloading of a fuel assembly into a location not allowed by LCO 3.7.18, a loss of cooling to the fuel storage pool resulting in a temperature increase of the fuel storage pool water, or a dilution of the boron dissolved in the fuel storage pool.

A general description of the fuel storage pool design is given in the UFSAR, Section 9.1.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

Criticality of the fuel assemblies in the fuel storage pool racks is prevented by the design of the rack and by administrative controls related to fuel storage pool boron concentration, fuel assembly burnup credit, and fuel storage

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

pool geometry (Ref. 2). There are three basic acceptance criteria which ensure conformance with the design bases (Ref. 3). They are:

a. $k_{eff} \leq 1.0$ assuming no soluble boron in the fuel storage pool,

b. A soluble boron concentration sufficient to ensure $k_{eff} < 0.95$, and

c. An additional amount of soluble boron sufficient to offset the maximum reactivity effects of postulated accidents and to account for the uncertainty in the computed reactivity of fuel assemblies.

The postulated accidents considered when determining the required fuel storage pool arrangement and minimum boron concentration are the misloading of a fuel assembly, an increase in fuel storage pool temperature, and boron dilution. Analyses have shown that a combination of the fuel storage pool geometric arrangement and the amount of boron required by the LCO is sufficient to ensure that the most limiting misloading of a fuel assembly results in a $k_{eff} < 0.95$.

The configuration of fuel assemblies in the fuel storage pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The restrictions on the placement of fuel assemblies within the spent fuel pool, in accordance with Figures 3.7.18-1 and 3.7.18-2, in the accompanying LCO, ensures the k_{eff} of the spent fuel storage pool will always remain < 1.0. Figure 3.7.18-1 is used to determine if a fuel assembly is acceptable for storage without use of a fuel assembly matrix. Based on the initial enrichment and burnup, a fuel assembly may be stored without using a fuel assembly matrix, or must be stored in a high or low reactivity location of a fuel assembly matrix. Figure 3.7.18-2 describes the fuel assembly matrix storage configuration. These storage restrictions, when combined with the fuel storage pool boron concentration limit in LCO 3.7.17, ensure that the fuel storage pool k_{eff} meets the limits in Section 4.3, "Design Features."

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in the fuel storage pool.

BASES

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in the spent fuel storage pool is not in accordance with Figure 3.7.18-1 and Figure 3.7.18-2, the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with the LCO.

If unable to move irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not be applicable. If unable to move irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.18.1

This SR verifies by a combination of visual inspection and administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.18-1 and the fuel assembly storage location is in accordance with Figure 3.7.18-2.

REFERENCES

1. UFSAR, Section 9.1.2.
2. UFSAR, Section 4.3.2.7.
3. UFSAR, Section 3.1.53.

Intentionally Blank

CTS

TSTF 255 (2)

Pool

3.7 PLANT SYSTEMS

3.7.17 (18) Spent Fuel Assembly Storage

(2) TSTF-255

LCO 3.7.15

LCO 3.7.17 (18) (2)

Insert

The combination of initial enrichment and burnup of each spent fuel assembly stored in [Region 2] shall be within the Acceptable [Burnup Domain] of Figure 3.7.17-1 or in accordance with Specification 4.3.1.1. (3)

Appl.

APPLICABILITY: Whenever any fuel assembly is stored in [Region 2] of the spent fuel storage pool. (3)

(1)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 --------NOTE-------- LCO 3.0.3 is not applicable. ---------- Initiate action to move the noncomplying fuel assembly from [Region 2] to an acceptable location	Immediately (3)

Action b

Action a

R2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.17 (18).1 Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.17-1 or Specification 4.3.1.1.	Prior to storing the fuel assembly in [Region 2] the spent fuel pool (3)

4.7.15

Verify by a combination of visual inspection and administrative means that the initial enrichment, burnup and storage location of the assembly is acceptable.

Rev. 2

INSERT

the fuel storage pool shall be in accordance with the following:

a. New or irradiated fuel assemblies with a combination of burnup and initial nominal enrichment in the "Acceptable" burnup domain of Figure 3.7.18-1 may be stored in the fuel storage pool in a non-matrix location or a low reactivity location in the 5x5 matrix configuration shown in Figure 3.7.18-2. They may also be placed in a high reactivity location if stored in the 5x5 matrix configuration shown in Figure 3.7.18-2;

b. New or irradiated fuel assemblies with a combination of burnup and initial nominal enrichment in the "Conditionally Acceptable" domain of Figure 3.7.18-1 may be stored in the fuel storage pool in a non-matrix location, but must be placed in a high reactivity location if stored in the 5x5 matrix configuration shown in Figure 3.7.18-2; and R2

c. New or irradiated fuel assemblies with a combination of burnup and initial nominal enrichment in the "Unacceptable" domain of Figure 3.7.18-1 must be stored in the fuel storage pool in a high reactivity location in the 5x5 matrix configuration shown in Figure 3.7.18-2. A fuel assembly transferred from Surry for storage in the North Anna fuel storage pool must be treated as a fuel assembly in the "Unacceptable" domain.

TSTF-255 (2)

CTS

Figure 3.7.15-1

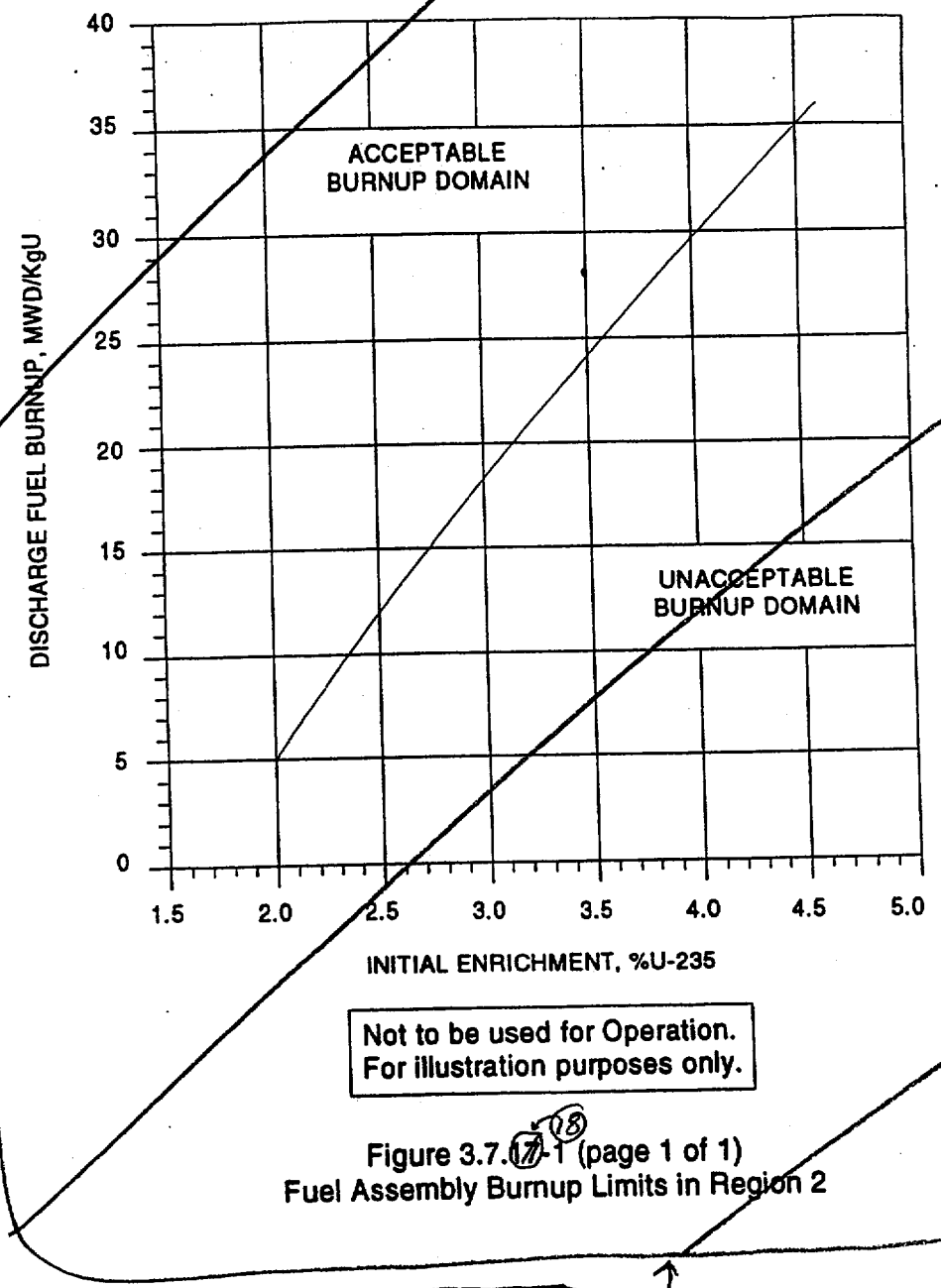


Figure 3.7.17-1 (page 1 of 1)
Fuel Assembly Burnup Limits in Region 2

(1) (3) R2

Insert 1

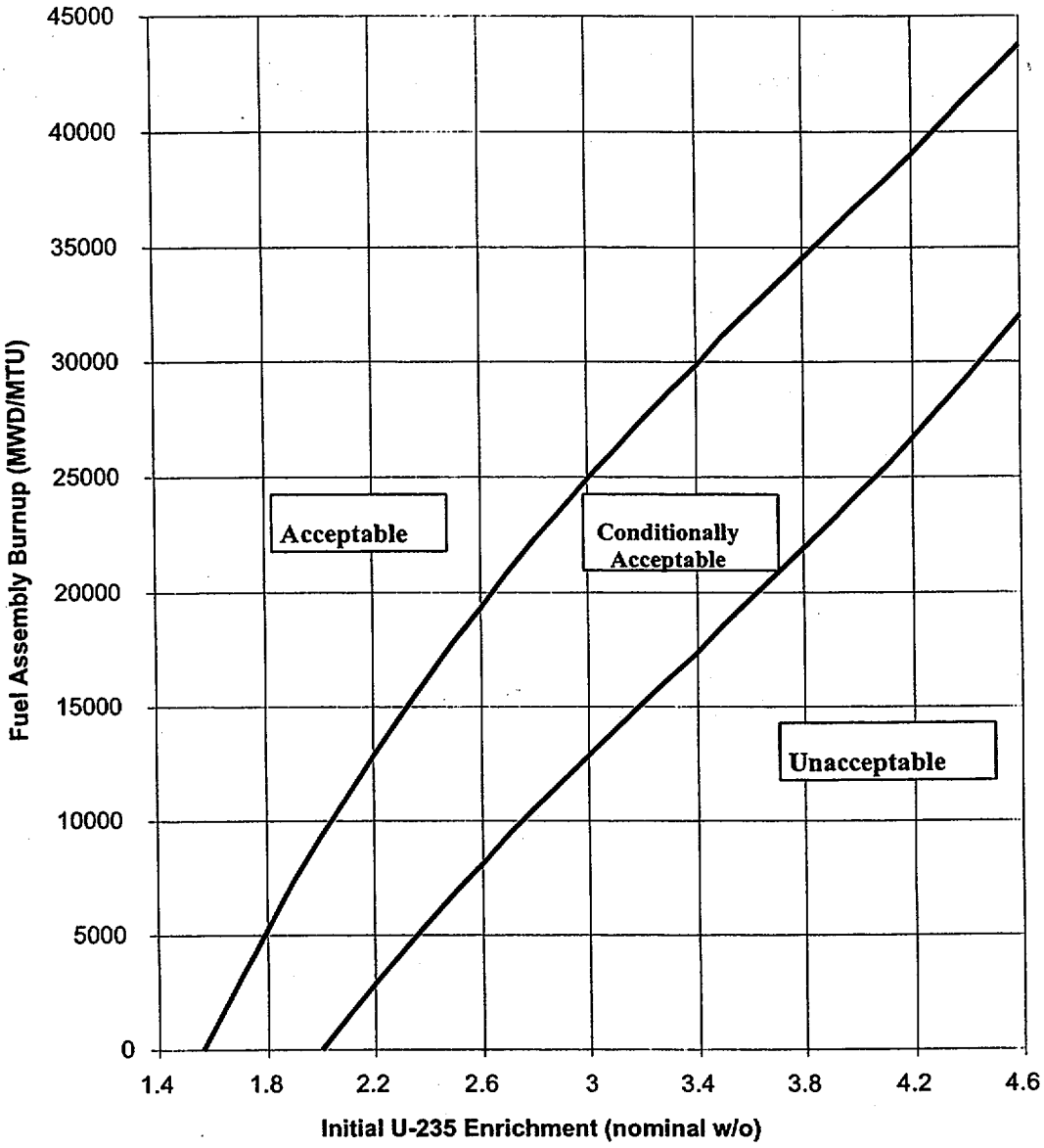
(3)

Figure 3.7.15-2

Insert 2

Rev. 2

Insert 1



R2

Acceptable: Acceptable for storage in non-matrix location or low reactivity location in matrix configuration. May also be placed in high reactivity locations in matrix configuration.

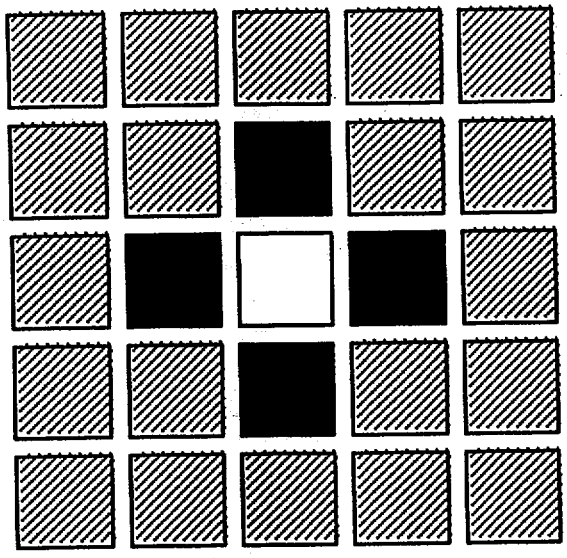
Conditionally Acceptable: Acceptable for storage in non-matrix location, but must be placed in high reactivity location if stored in matrix configuration.

Unacceptable: Must be stored in high reactivity location in matrix configuration. Surry spent fuel must be stored in high reactivity locations in a matrix.

Figure 3.7.18-1 (page 1 of 1)
Burnup Credit Requirements

Rev. 2

Insert 2



Low reactivity fuel
(Per Figure 3.7.18-1 or cell containing no fuel assembly)

High reactivity fuel
(Per Figure 3.7.18-1, reactivity up to and including 4.6 w/o U^{235} fresh fuel or cell containing no fuel assembly)

No fuel assembly

R2

Notes to Figure:

1. A partial matrix at the boundary of the spent fuel pool storage locations is an acceptable configuration.
2. Storage of non-fueled components within the matrix or non-matrix cells that results in a reduced spent fuel pool K_{eff} is acceptable.
3. A storage cell containing no fuel assembly may be substituted for any location in either matrix or non-matrix configuration.
4. Spent fuel transferred from Surry must be stored in high reactivity locations.

Figure 3.7.18-2 (page 1 of 1)
5 x 5 Matrix Storage Configuration

Rev. 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.18, SPENT FUEL POOL STORAGE

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

2. The North Anna ITS contains specifications that do not appear in the ISTS. ISTS Specification 3.7.17, Spent Fuel Pool Storage, has been has been renumbered 3.7.18 in the North Anna ITS in order to accommodate those additional specifications. R2

3. The ISTS has been revised to reflect the North Anna analysis and licensing basis. The spent fuel pool assembly storage restrictions at North Anna do not involve a two region pool, as assumed in the ISTS. LCO 3.7.18 has been modified to reflect the North Anna analysis.

B 3.7 PLANT SYSTEMS

B 3.7.17 Spent Fuel Assembly Storage

BASES

BACKGROUND

In the Maximum Density Rack (MDR) [(Refs. 1 and 2)] design, the spent fuel storage pool is divided into two separate and distinct regions which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure 3.7.17-1, in the accompanying LCO. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.

The water in the spent fuel storage pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 3) allows credit for soluble boron under other abnormal or accident conditions, since only a single accident need be considered at one time. For example, the most severe accident scenario is associated with the movement of fuel from [Region 1 to Region 2], and accidental misloading of a fuel assembly in [Region 2]. This could potentially increase the criticality of [Region 2]. To mitigate these postulated criticality related accidents, boron is dissolved in the pool water. Safe operation of the MDR with no movement of assemblies may therefore be achieved by controlling the location of each assembly in accordance with the accompanying LCO. Prior to movement of an assembly, it is necessary to perform SR 3.7.16.1.

(continued)

Rev. 2

INSERT

The fuel storage pool contains racks which hold the fuel assemblies. The arrangement of the fuel assemblies in the fuel racks can be used to limit the interaction of the fuel assemblies and the resulting reactivity of the fuel in the fuel storage pool. The geometrical arrangement is based on classifying fuel assemblies as "high reactivity" or "low reactivity" based on the burnup and initial enrichment of the fuel assemblies. A 5 x 5 fuel location matrix is employed with acceptable locations for high and low reactivity fuel assemblies. Fuel assemblies may also be stored in fuel locations not associated with a storage matrix if the assemblies meet certain requirements.

Storing the fuel assemblies in the locations required by the LCO ensures a fuel storage pool $k_{eff} < 1.0$ for normal conditions. In addition, the water in the spent fuel storage pool contains soluble boron, which results in large subcriticality margins under normal operating conditions. However, the NRC guidelines assume accident conditions, such as loss of all soluble boron or misloading of a fuel assembly. In these cases, the subcriticality margin is allowed to be smaller, but in all cases must be less than 1.0. This subcriticality margin is maintained by storing the fuel assemblies as described in the LCO and by the use of soluble boron in the fuel storage pool water as required by LCO 3.7.17, "Fuel Storage Pool Boron Concentration." The accident analyses assume the presence of soluble boron under accident conditions, such as the misloading of a fuel assembly into a location not allowed by LCO 3.7.18, a loss of cooling to the fuel storage pool resulting in a temperature increase of the fuel storage pool water, or a dilution of the boron dissolved in the fuel storage pool.

R2

A general description of the fuel storage pool design is given in the UFSAR, Section 9.1.2 (Ref. 1).

BASES (continued)

APPLICABLE SAFETY ANALYSES

The hypothetical accidents can only take place during or as a result of the movement of an assembly (Ref. 4). For these accident occurrences, the presence of soluble boron in the spent fuel storage pool (controlled by LCO 3.7.16, "Fuel Storage Pool Boron Concentration") prevents criticality in both regions. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents may be limited to a small fraction of the total operating time. During the remaining time period with no potential for accidents, the operation may be under the auspices of the accompanying LCO.

The configuration of fuel assemblies in the fuel storage pool satisfies Criterion 2 of the NRC Policy Statement.

LCO

The restrictions on the placement of fuel assemblies within the spent fuel pool, in accordance with Figure 3.7.17-1, the accompanying LCO, ensures the k_{eff} of the spent fuel storage pool will always remain < 0.95, assuming the pool to be flooded with unborated water. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with Specification 4.3.1.1 in Section 4.3.

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in [Region 2] of the fuel storage pool.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in [Region 2] the spent fuel storage pool is not in accordance with Figure 3.7.17-1, or paragraph 4.3.1.1, the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with Figure 3.7.17-1 or Specification 4.3.1.1.

(continued)

R2—

Rev. 2

INSERT 1

Criticality of the fuel assemblies in the fuel storage pool racks is prevented by the design of the rack and by administrative controls related to fuel storage pool boron concentration, fuel assembly burnup credit, and fuel storage pool geometry (Ref. 2). There are three basic acceptance criteria which ensure conformance with the design bases (Ref. 3). They are:

a) k_{eff} < 1.0 assuming no soluble boron in the fuel storage pool,

b) A soluble boron concentration sufficient to ensure keff < 0.95, and

c) An additional amount of soluble boron sufficient to offset the maximum reactivity effects of postulated accidents and to account for the uncertainty in the computed reactivity of fuel assemblies.

The postulated accidents considered when determining the required fuel storage pool arrangement and minimum boron concentration are the misloading of a fuel assembly, an increase in fuel storage pool temperature, and boron dilution. Analyses have shown that a combination of the fuel storage pool geometric arrangement and the amount of boron required by the LCO is sufficient to ensure that the most limiting misloading of a fuel assembly results in a k_{eff} < .95. R2

INSERT 2

Figure 3.7.18.1 is used to determine if a fuel assembly is acceptable for storage without use of a fuel assembly matrix. Based on the initial enrichment and burnup, a fuel assembly may be stored without using a fuel assembly matrix, or must be stored in a high or low reactivity location of a fuel assembly matrix. Figure 3.7.1-2 describes the fuel assembly matrix storage configuration. These storage restrictions, when combined with the fuel storage pool boron concentration limit in LCO 3.7.17, ensure that the fuel storage pool k_{eff} meets the limits in Section 4.3, "Design Features."

Pool

TSTF 255

(18) (3)

BASES

ACTIONS

A.1 (continued)

If unable to move irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not be applicable. If unable to move irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

(1)

SURVEILLANCE REQUIREMENTS

SR 3.7.[17].1

(18)

a combination of visual inspection and

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Figure [3.7.17-1] in the accompanying LCO. For fuel assemblies in the unacceptable range of Figure 3.7.17-1, performance of this SR will ensure compliance with Specification 4.3.1.1.

(19)

(3)

REFERENCES

1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."
2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).
3. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).
4. FSAR, Section [15.7.4].

(3)

and the fuel assembly storage location is in accordance with Figure 3.7.18-2.

1. UFSAR, Section 9.1.2.
2. UFSAR, Section 4.3.2.7.
3. UFSAR, Section 3.1.53.

Rev. 2

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.18 BASES, SPENT FUEL POOL STORAGE

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. Changes are made to reflect consistency with or those changes made to the ISTS. The following requirements are renumbered or revised, where applicable, to reflect the changes. R2

4. The criteria of the NRC Final Policy Statement on Technical Specifications Improvements have been included in 10 CFR 50.36(c)(2)(ii). Therefore, references in the ISTS Bases to the NRC Final Policy Statement are revised in the ITS Bases to reference 10 CFR 50.36.

UNIT 1 R2

A.1

ITS 3.7.18

3/4.7 PLANT SYSTEMS

ITS

3/4.7.15 SPENT FUEL POOL BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.7.18

3.7.15 The combination of initial enrichment, burnup, and configuration of the fuel assemblies stored in the spent fuel pool shall be in accordance with the following:

3.7.18.a

a. New or partially spent fuel assemblies with a combination of burnup and initial nominal enrichment in the "Acceptable" burnup domain of Figure 3.7.15-1 may be stored in the spent fuel pool in a non-matrix location or a low reactivity location in the 5 x 5 matrix configuration shown in Figure 3.7.15-2. They may also be placed in a high reactivity location if stored in the 5 x 5 matrix configuration shown in Figure 3.7.15-2.

3.7.18.b

b. New or partially spent fuel assemblies with a combination of burnup and initial nominal enrichment in the "Conditionally Acceptable" domain of Figure 3.7.15-1 may be stored in the spent fuel pool in a non-matrix location, but must be placed in a high reactivity location if stored in the 5 x 5 matrix configuration shown in Figure 3.7.15-2.

3.7.18.c

c. New or partially spent fuel assemblies with a combination of burnup and initial nominal enrichment in the "Unacceptable" domain of Figure 3.7.15-1 must be stored in the spent fuel pool in a high reactivity location in the 5 x 5 matrix configuration shown in Figure 3.7.15-2. A fuel assembly transferred from Surry for storage in the North Anna spent fuel pool must be treated as a fuel assembly in the "Unacceptable" domain.

R2

Appl.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pool.

ACTION:

Required Action A.1

a. Immediately initiate action to move the non-complying fuel assembly to an acceptable storage location.

Required Action A.1 Note

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.7.18.1

4.7.15 Prior to storing the fuel assembly in the spent fuel pool location, verify by a combination of visual inspection and administrative means that the initial enrichment, burnup, and storage location of the fuel assembly are in accordance with Specification 3.7.15.

ITS 3.7.18

(A.1)

ITS

Figure 3.7.18-1

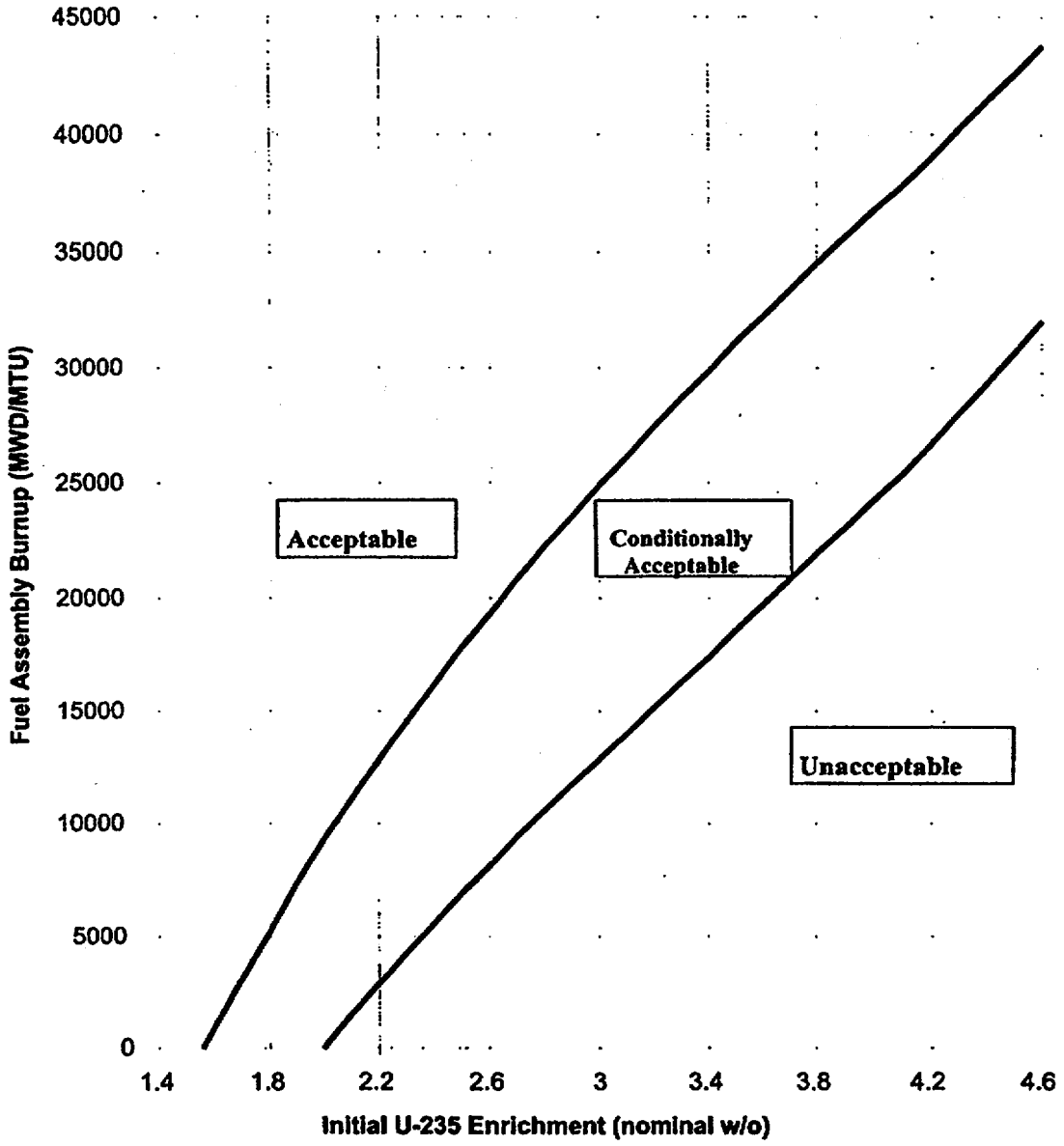


Figure 3.7.15-1 North Anna Burnup Credit Requirements for Spent Fuel Pool Storage

Acceptable: Acceptable for storage in non-matrix location or low reactivity location in matrix configuration. May also be placed in high reactivity locations in matrix configuration.

Conditionally Acceptable: Acceptable for storage in non-matrix location, but must be placed in high reactivity location if stored in matrix configuration.

Unacceptable: Must be stored in high reactivity location in matrix configuration. Surry spent fuel must be stored in high reactivity locations in a matrix.

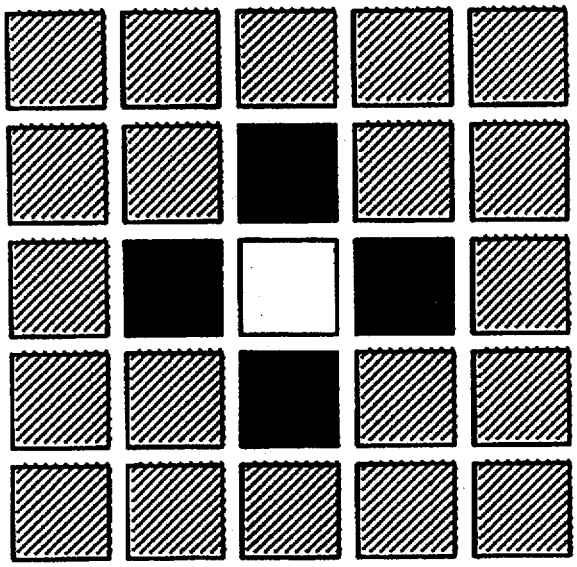
R2

ITS 3.7.18

(A.1)

ITS

Figure 3.7.18-2



Low reactivity fuel
(Per Figure 3.7.15-1 or cell containing no fuel assembly)

High reactivity fuel
(Per Figure 3.7.15-1, reactivity up to and including 4.6 w/o U^{235} fresh fuel or cell containing no fuel assembly)

No fuel assembly

R2

Figure 3.7.15-2 North Anna 5 x 5 Matrix Storage Configuration

Notes to Figure:

1. A partial matrix at the boundary of the spent fuel pool storage locations is an acceptable configuration.
2. Storage of non-fueled components within the matrix or non-matrix cells that results in a reduced spent fuel pool K_{eff} is acceptable.
3. A storage cell containing no fuel assembly may be substituted for any location in either matrix or non-matrix configuration.
4. Spent fuel transferred from Surry must be stored in high reactivity locations.

UNIT 2 R2

ITS 3.7.18

(A.1)

3/4.7 PLANT SYSTEMS

ITS

3/4.7.15 FUEL ASSEMBLY STORAGE IN THE SPENT FUEL POOL

LIMITING CONDITION FOR OPERATION

3.7.18

3.7.15 The combination of initial enrichment, burnup, and configuration of the fuel assemblies stored in the spent fuel pool shall be in accordance with the following:

3.7.18.a

a. New or partially spent fuel assemblies with a combination of burnup and initial nominal enrichment in the "Acceptable" burnup domain of Figure 3.7.15-1 may be stored in the spent fuel pool in a non-matrix location or a low reactivity location in the 5 x 5 matrix configuration shown in Figure 3.7.15-2. They may also be placed in a high reactivity location if stored in the 5 x 5 matrix configuration shown in Figure 3.7.15-2.

3.7.18.b

b. New or partially spent fuel assemblies with a combination of burnup and initial nominal enrichment in the "Conditionally Acceptable" domain of Figure 3.7.15-1 may be stored in the spent fuel pool in a non-matrix location, but must be placed in a high reactivity location if stored in the 5 x 5 matrix configuration shown in Figure 3.7.15-2.

3.7.18.c

c. New or partially spent fuel assemblies with a combination of burnup and initial nominal enrichment in the "Unacceptable" domain of Figure 3.7.15-1 must be stored in the spent fuel pool in a high reactivity location in the 5 x 5 matrix configuration shown in Figure 3.7.15-2. A fuel assembly transferred from Surry for storage in the North Anna spent fuel pool must be treated as a fuel assembly in the "Unacceptable" domain.

RL

Appl.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pool.

ACTION:

Required Action A.1

a. Immediately initiate action to move the non-complying fuel assembly to an acceptable storage location.

Required Action A.1 Note

b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

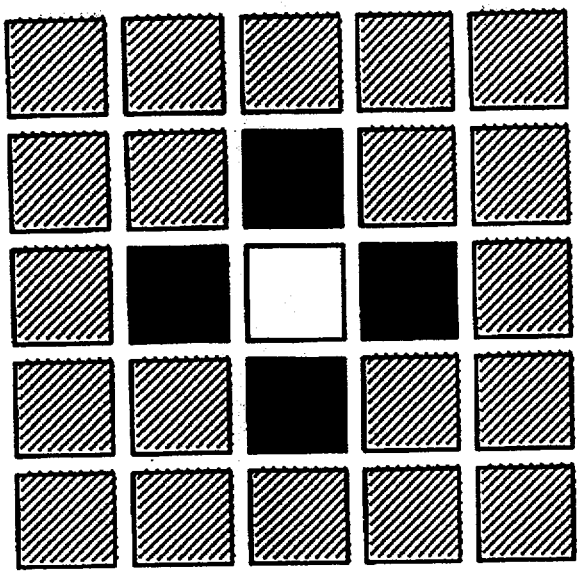
SR 3.7.18.1

4.7.15 Prior to storing the fuel assembly in the spent fuel pool location, verify by a combination of visual inspection and administrative means that the initial enrichment, burnup, and storage location of the fuel assembly are in accordance with Specification 3.7.15.

A.1

ITS 3.7.18

ITS
Figure
3.7.18-2



R2

Low reactivity fuel
(Per Figure 3.7.15-1 or cell containing no fuel assembly)

High reactivity fuel
(Per Figure 3.7.15-1, reactivity up to and including 4.6 w/o U^{235} fresh fuel or cell containing no fuel assembly)

No fuel assembly

Figure 3.7.15-2 North Anna 5 x 5 Matrix Storage Configuration

Notes to Figure:

1. A partial matrix at the boundary of the spent fuel pool storage locations is an acceptable configuration.
2. Storage of non-fueled components within the matrix or non-matrix cells that results in a reduced spent fuel pool K_{eff} is acceptable.
3. A storage cell containing no fuel assembly may be substituted for any location in either matrix or non-matrix configuration.
4. Spent fuel transferred from Surry must be stored in high reactivity locations.

ADMINISTRATIVE CHANGES

A.1 In the conversion of the North Anna 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. 1, "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.

R2

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

North Anna Section 3.5, Emergency Core Cooling Systems (ECCS)

Requests for Additional Information, Responses, and Revised Pages

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.5, Emergency Core Cooling Systems (ECCS)

3.5.2 ECCS - Operating

3.5-01 ITS SR 3.5.2.6
Current Technical Specifications (CTS) Surveillance Requirement (SR) 4.5.2.e.2
Justification for Deviation (JFD) 4
ITS 3.5.2 Bases

NRC RAI: ITS SR 3.5.2.6 proposes to add the phrase "capable of starting automatically" such that the SR would read "Verify each ECCS pump capable of starting automatically starts automatically on an actual or simulated actuation signal." The proposed phrase does not appear in CTS SR 4.5.2.e.2. An explanation for adding the phrase was not provided. **Comment:** Adopt STS SR 3.5.2.6 or provided further justification for addition of the proposed phrase.

Response: The Company will take the action proposed in the Comment. JFD 7 is added, explaining that HHSI pumps A and B are capable of being automatically started, and HHSI pump C can only be manually started. For HHSI pump C to be OPERABLE, it must be running since it does not start automatically.

(7) RA 3.5 R2

CTS

SURVEILLANCE REQUIREMENTS (continued)

capable of starting automatically

	SURVEILLANCE		FREQUENCY	
4.5.2.e.2	SR 3.5.2.6	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	18 months	(2)
4.5.2.g.2	SR 3.5.2.7	Verify for each ECCS throttle valve listed below, each position stop is secured in the correct position. Unit 1 → Valve Number: 1-51-188, 1-51-191, 1-51-193, 1-51-203, 1-51-204, 1-51-205 Unit 2 Valve Number: 2-51-89, 2-51-97, 2-51-103, 2-51-116, 2-51-111, 2-51-123	18 months	(2) (4)
4.5.2.d.1	SR 3.5.2.8	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 months	(2)

Rev. 2

1. Pressure isolation valve testing on the safety injection flow paths is performed outside of MODES 1, 2, and 3. Note 1 provides an exception to LCO 3.5.2 for the performance of the testing in MODE 3. Therefore, Note 1 is not needed and has been removed.

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

3. The North Anna LTOP system enable temperatures are 235 °F for Unit 1 and 270 °F for Unit 2. These temperatures are outside of the ECCS Applicability of MODES 1 - 3. Note 2 provides an exception for ECCS pumps inoperable pursuant to LTOP controls. Note 2 is not needed and had been removed.

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. Surveillance Requirement (SR) 3.5.2.3 is modified to add the word "sufficiently," so that the SR reads, "Verify ECCS piping is sufficiently full of water." Unit operating experience and engineering analysis has shown that after initial filling of the ECCS piping, some noncondensible gases remain. These gases will form voids and pockets in the ECCS piping. The ECCS piping contents are stable and the ECCS will perform its function when required. Performing the SR every 92 days does not verify the ECCS piping completely filled with water, but provides an added degree of assurance that the piping is sufficiently full of water to allow the ECCS to perform its function when required. There is no requirement for this Surveillance in the CTS.

6. A Frequency of 92 days is adopted for SR 3.5.2.3 to verify that ECCS piping is sufficiently full of water. The 92 day Frequency has been determined to be adequate based on plant operating experience and engineering analysis. Performing the SR every 92 days does not verify the ECCS piping completely filled with water, but provides an added degree of assurance that the piping is sufficiently full of water to allow the ECCS to perform its function when required. There is no requirement for this Surveillance in the CTS.

7. ISTS SR 3.5.2.6 is modified to add the phrase "capable of starting automatically," so that the SR reads, "Verify each ECCS pump capable of starting automatically starts automatically on an actual or simulated actuation signal." HHSI pumps A and B are capable of being automatically started and are powered from separate emergency buses. HHSI pump C can only be manually started, but can be powered from either of the emergency buses that HHSI pumps A and B are powered from. An interlock prevents HHSI pump C from being powered from both emergency buses simultaneously. For HHSI pump C to be OPERABLE, it must be running since it does not start automatically. Since HHSI pump C does not start automatically, this modification to ISTS SR 3.5.2.6 is necessary. RAI 3.5-01 R2

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.5, Emergency Core Cooling Systems (ECCS)

3.5.6 Boron Injection Tank (BIT)

3.5-02 ITS 3.5.6 ACTION B.2
JFD 1

NRC RAI: JFD 1 for ITS 3.5.6 states that the proposed change is consistent with Technical Specifications Task Force (TSTF)-9 Rev. 1, but this technical specification change was omitted from TSTF-9 Rev. 1. The staff has not received the generic change correcting TSTF-9 Rev. 1. **Comment:** Please ensure that the generic change is submitted to the staff.

Response: The Company will take the action proposed in the Comment. The generic change is being submitted to the NRC as WOG-ED-28.

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.5, Emergency Core Cooling Systems (ECCS)

3.5.1 Accumulators

3.5-03 CTS 3.5.1
ITS 3.5.1
DOC A6

NRC RAI: CTS 3.5.1 Actions a and b state that if the requirement is not met the unit must be in Hot Shutdown (Mode 4) within the next 12 hours. ITS 3.5.1 Action C.2 states that the pressure should be reduced to less than 1000 psig, while in Mode 3, if the requirements are not met. This change in 'end states' from Mode 4 in the CTS to Mode 3 in the ITS is a less restrictive change. **Comment:** DOC A6 should be categorized as "L" - less restrictive change.

Response: The Company does not agree with the action recommended in the Comment. Additional detail is added to DOC A.6 to explain why this is an administrative change. The CTS 3.5.1 Applicability is MODES 1, 2, and 3, with pressurizer pressure > 1000 psig. CTS LCO 3.0.1 states that the LCO and Action requirements are applicable during the Operational MODEs or other conditions specified for each Specification. Therefore, when CTS Actions a and b are taken, once the pressurizer pressure for the unit is ≤ 1000 psig, the unit is outside the MODE of Applicability, and is not required to continue to HOT SHUTDOWN. Changing the requirement to reduce pressure to ≤ 1000 psig instead of placing the unit in HOT SHUTDOWN is a more accurate representation of the current requirement, rather than a less restrictive change.

A.5 CTS 3.5.1 Applicability is modified by a Note restricting the MODE 3 applicability to when pressurizer pressure above 1000 psig. ITS 3.5.1 Applicability restricts MODE 3 applicability to when RCS pressure is above 1000 psig.

This change is acceptable because the difference between pressurizer pressure and RCS pressure is not significant, though pressurizer pressure and RCS pressure do differ somewhat due to the elevation head of the pressurizer. Specifying RCS pressure instead of pressurizer pressure provides consistency with the instrumentation actually used to meet the LCO. This change is designated as administrative because it does not result in technical changes to the CTS.

A.6 CTS 3.5.1, Action a states that if an inoperable accumulator is not restored to OPERABLE status within one hour, the unit must be placed in HOT SHUTDOWN within the next 12 hours. CTS 3.5.1, Action b states that with one accumulator inoperable due to the isolation valve being closed, if the valve is not immediately opened, the unit be in HOT STANDBY within one hour, and HOT SHUTDOWN within the next 12 hours. CTS 3.0.1 states that the LCO and Action requirements are applicable during the Operational MODEs or other conditions specified for each Specification. RCS pressure is not part of the definition of HOT STANDBY or HOT SHUTDOWN in the CTS or MODE 3 or MODE 4 in the ITS. The Applicability of CTS 3.5.1 is MODES 1, 2, and MODE 3 with pressurizer pressure > 1000 psig, so the LCO and Actions become not applicable in MODE 3 with pressurizer pressure ≤ 1000 psig, and entry into HOT SHUTDOWN (MODE 4) is not required. RAI 3.5-03 R2

ITS 3.5.1, ACTION B.1 requires that with one accumulator inoperable for reasons other than boron concentration not within limits, that the accumulator be restored to OPERABLE status within one hour. If the accumulator is not restored to OPERABLE status within one hour, ITS 3.5.1 Action C.1 requires entry into MODE 3 within 6 hours, and Action C.2 requires RCS pressure be ≤ 1000 psig within 12 hours. This changes the CTS by replacing the requirement to be in HOT SHUTDOWN within 13 hours of the inoperability with a requirement to reduce RCS pressure to ≤ 1000 psig while in MODE 3 within 13 hours. Reducing pressurizer pressure to ≤ 1000 psig while in MODE 3 in the CTS would remove the unit from the MODE of Applicability, and placing the unit in MODE 4 would not be required, making the Required Actions the same, though described differently. The addition of the 6 hour time limit to be in MODE 3 is described in Discussion of Change M.1. RAI 3.5-03 R2

This change is acceptable because the time to reduce RCS pressure to ≤ 1000 psig while in MODE 3 is still 13 hours from the time of the inoperability. This change clarifies an existing requirement. This change is designated as administrative because it does not result in technical changes to the CTS.

A.7 CTS 4.5.1.1.b requires each accumulator be demonstrated OPERABLE, "At least once per 31 days and within 6 hours after each solution volume increase of greater

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.5, Emergency Core Cooling Systems (ECCS)

3.5.1 Accumulators

3.5-04 CTS SR 3.5.1.b
ITS SR 3.5.1.4

NRC RAI: CTS SR 3.5.1.b discusses volume increases of ≥5% of tank volume while ITS SR 3.5.1.4 states ≥50% of indicated level. No description of this specific change was provided (i.e., is 5% of tank volume equivalent to 50% of indicated level?).
Comment: Provide justification for the proposed change.

Response: The Company will take the action proposed in the Comment. DOC A.7 is provided explaining that a 5% increase in tank volume correlates to a 52% increase in indicated level. This is consistent with one of the options provided in the ISTS for this value.

A.1

ITS

SR 3.5.1.4

SR 3.5.1.5

EMERGENCY CORE COOLING SYSTEMS

that is not the result of addition from the refueling water storage tank — L.4

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 31 days and within 6 hours after each solution volume increase of ≥ 50 indicated level % of tank volume by verifying the boron concentration of the affected accumulator solution is ≥ 2200 ppm and ≤ 2400 ppm — A.7, RAI 3.5-6 R2; A.2

c. At least once per 31 days when the RCS pressure is above 2000 psig by verifying that the breaker supplying power to the isolation valve operator is locked in the off position removed — L.6

d. At least once per 18 months by verifying that each accumulator isolation valve opens automatically under each of the following conditions: — L.5

1. When the RCS pressure exceeds 2010 psig,

2. Upon receipt of a safety injection test signal.

A.4

8-21-80

A.1

ITS

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

that is not the result of addition from the refueling water storage tank. — L.4

SR 3.5.1.4 and NOTE
SR 3.5.1.5

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 50 indicated level % of tank volume by verifying the boron concentration of the affected accumulator solution is ≥ 2200 ppm and ≤ 2400 ppm — A.2 | RZ

A.7 | RAJ 3.5-RZ

c. At least once per 31 days when the RCS pressure is above 2000 psig by verifying that the ~~breaker supplying~~ power to the isolation valve operator is ~~locked in the off position~~ removed — L.6

d. At least once per 18 months by verifying that each accumulator isolation valve opens automatically under each of the following conditions: — L.5

1. When a simulated RCS pressure signal exceeds 2010 psig,

2. Upon receipt of a safety injection test signal.

A.4

A.5 CTS 3.5.1 Applicability is modified by a Note restricting the MODE 3 applicability to when pressurizer pressure above 1000 psig. ITS 3.5.1 Applicability restricts MODE 3 applicability to when RCS pressure is above 1000 psig.

This change is acceptable because the difference between pressurizer pressure and RCS pressure is not significant, though pressurizer pressure and RCS pressure do differ somewhat due to the elevation head of the pressurizer. Specifying RCS pressure instead of pressurizer pressure provides consistency with the instrumentation actually used to meet the LCO. This change is designated as administrative because it does not result in technical changes to the CTS.

A.6 CTS 3.5.1, Action a states that if an inoperable accumulator is not restored to OPERABLE status within one hour, the unit must be placed in HOT SHUTDOWN within the next 12 hours. CTS 3.5.1, Action b states that with one accumulator inoperable due to the isolation valve being closed, if the valve is not immediately opened, the unit be in HOT STANDBY within one hour, and HOT SHUTDOWN within the next 12 hours. CTS 3.0.1 states that the LCO and Action requirements are applicable during the Operational MODEs or other conditions specified for each Specification. RCS pressure is not part of the definition of HOT STANDBY or HOT SHUTDOWN in the CTS or MODE 3 or MODE 4 in the ITS. The Applicability of CTS 3.5.1 is MODES 1, 2, and MODE 3 with pressurizer pressure > 1000 psig, so the LCO and Actions become not applicable in MODE 3 with pressurizer pressure ≤ 1000 psig, and entry into HOT SHUTDOWN (MODE 4) is not required.

ITS 3.5.1, ACTION B.1 requires that with one accumulator inoperable for reasons other than boron concentration not within limits, that the accumulator be restored to OPERABLE status within one hour. If the accumulator is not restored to OPERABLE status within one hour, ITS 3.5.1 Action C.1 requires entry into MODE 3 within 6 hours, and Action C.2 requires RCS pressure be ≤ 1000 psig within 12 hours. This changes the CTS by replacing the requirement to be in HOT SHUTDOWN within 13 hours of the inoperability with a requirement to reduce RCS pressure to ≤ 1000 psig while in MODE 3 within 13 hours. Reducing pressurizer pressure to ≤ 1000 psig while in MODE 3 in the CTS would remove the unit from the MODE of Applicability, and placing the unit in MODE 4 would not be required, making the Required Actions the same, though described differently. The addition of the 6 hour time limit to be in MODE 3 is described in Discussion of Change M.1.

This change is acceptable because the time to reduce RCS pressure to ≤ 1000 psig while in MODE 3 is still 13 hours from the time of the inoperability. This change clarifies an existing requirement. This change is designated as administrative because it does not result in technical changes to the CTS.

A.7 CTS 4.5.1.1.b requires each accumulator be demonstrated OPERABLE, "At least once per 31 days and within 6 hours after each solution volume increase of greater

RAI 3.5-03 R2

than or equal to 5% of tank volume by verifying the boron concentration of the accumulator solution." ITS SR 3.5.1.4 requires verifying boron concentration every 31 days and once within 6 hours after each solution volume increase of ≥ 50% of indicated level that is not the result of addition from the refueling water storage tank. This changes CTS by changing the parameter value of solution volume increase of greater than or equal to 5% of tank volume to solution volume increase of ≥ 50% of indicated level. Changes associated with adding the criteria that the verification is not required when the volume increase is the result of addition from the refueling water storage tank is addressed by DOC L.4.

RAI 3.5-04 R2

This change is acceptable because a solution volume increase of ≥ 5% of tank volume correlates to a solution volume increase of ≥ 50% of indicated level. This change is consistent with NUREG-1431, Rev. 1, "Standard Technical Specifications-Westinghouse Plants" (ISTS). This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M.1 CTS 3.5.1, Action a states that if an inoperable accumulator is not restored to OPERABLE status within one hour, the unit must be placed in HOT SHUTDOWN within the next 12 hours, but does not include a time by which the unit must be placed in MODE 3. ITS 3.5.1, Action C.1 requires entry into MODE 3 within 6 hours. This changes the CTS by adding a 6 hour time limit to be in MODE 3.

This change is acceptable because the requirement to place the unit in MODE 3 in six 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 new Completion Time requirement.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

North Anna Section 3.5, Emergency Core Cooling Systems (ECCS)

Changes Not Associated with RAI Responses

North Anna Improved Technical Specifications (ITS) Review Comments
ITS Section 3.5, Emergency Core Cooling Systems (ECCS)

CHANGES NOT ASSOCIATED WITH RAI RESPONSES

1. A Note is added to LCO 3.5.2 allowing, while in MODE 3, both safety injection flow paths to 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. Approved Unit 1 Technical Specification Amendment 225 and Unit 2 Technical Specification Amendment 206 are incorporated into the ITS . The boron concentration requirements in ITS SR 3.5.1.3, ITS SR 3.5.4.3, and ITS SR 3.6.7.3 are modified in accordance with the amendments. Boron concentration requirements located in CTS 3.1.2.7, CTS 3.1.2.8, and CTS 3.9.1 which are modified by amendments are relocated to the Technical Requirements Manual or the COLR, and result in no changes to the proposed ITS, JFDs, or DOCs. Notes are added to ITS SR 3.5.1.3, ITS SR 3.5.4.3, and ITS SR 3.6.7.3 stating that, for Unit 2, until first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the boron concentration acceptance criteria shall be those specified in the respective Notes, consistent with Unit 2 Technical Specification Amendment 206. The Bases are modified accordingly.

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS–Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

NOTE

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. [R2]

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more trains inoperable.	A.1 Restore train(s) to OPERABLE status.	72 hours
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
C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	C.1 Enter LCO 3.0.3.	Immediately

BASES

LCO (continued)

As indicated in the Note, 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. R2

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. MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis.

This LCO is only applicable in MODE 3 and above. Below MODE 3, the SI signal setpoint has already been 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, 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."

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.

(continued)

CTS

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS—Operating

3.5.2

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

TSTF 153

APPLICABILITY: MODES 1, 2, and 3.

~~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. Operation in MODE 3 with ECCS pumps ~~declared inoperable~~ made incapable of injecting pursuant to LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," is allowed for up to 4 hours or until the temperature of all RCS cold legs exceeds [375]°F, whichever comes first.

(3) (2) R2

TSTF-153

(3)

TSTF-153

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a. A. One or more trains inoperable. ~~AND~~ C. ~~At least~~ Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available.	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. AND B.2 Be in MODE 4.	6 hours 12 hours
New	C.1 Enter LCO 3.0.3.	Immediately TSTF-325

Rev. 2

1. Not Used. R2

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

3. The North Anna LTOP system enable temperatures are 235 °F for Unit 1 and 270 °F for Unit 2. These temperatures are outside of the ECCS Applicability of MODES 1 - 3. Note 2 provides an exception for ECCS pumps inoperable pursuant to LTOP controls. Note 2 is not needed and had been removed.

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. Surveillance Requirement (SR) 3.5.2.3 is modified to add the word "sufficiently," so that the SR reads, "Verify ECCS piping is sufficiently full of water." Unit operating experience and engineering analysis has shown that after initial filling of the ECCS piping, some noncondensible gases remain. These gases will form voids and pockets in the ECCS piping. The ECCS piping contents are stable and the ECCS will perform its function when required. Performing the SR every 92 days does not verify the ECCS piping completely filled with water, but provides an added degree of assurance that the piping is sufficiently full of water to allow the ECCS to perform its function when required. There is no requirement for this Surveillance in the CTS.

6. A Frequency of 92 days is adopted for SR 3.5.2.3 to verify that ECCS piping is sufficiently full of water. The 92 day Frequency has been determined to be adequate based on plant operating experience and engineering analysis. Performing the SR every 92 days does not verify the ECCS piping completely filled with water, but provides an added degree of assurance that the piping is sufficiently full of water to allow the ECCS to perform its function when required. There is no requirement for this Surveillance in the CTS.

7. ISTS SR 3.5.2.6 is modified to add the phrase "capable of starting automatically," so that the SR reads, "Verify each ECCS pump capable of starting automatically starts automatically on an actual or simulated actuation signal." HHSI pumps A and B are capable of being automatically started and are powered from separate emergency buses. HHSI pump C can only be manually started, but can be powered from either of the emergency buses that HHSI pumps A and B are powered from. An interlock prevents HHSI pump C from being powered from both emergency buses simultaneously. For HHSI pump C to be OPERABLE, it must be running since it does not start automatically. Since HHSI pump C does not start automatically, this modification to ISTS SR 3.5.2.6 is necessary.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The effects on containment mass and energy releases are accounted for in appropriate analyses (Ref. 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 the NRC Policy Statement.

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 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.

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.

The flow path for each train must maintain its designed independence to ensure that no single failure can disable both ECCS trains.

INSERT FROM ISTS PAGE B 3.5-15 TSTF 153 R2

(continued)

Rev 2

BASES (continued)

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. MODE 2 and MODE 3 requirements are bounded by the MODE 1 analysis. (7) (9)

MOVE TO ISTS PAGE B 3.5-14

This LCO is only applicable in MODE 3 and above (has already been). 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." (15)

As indicated in Note 1, the (SI) flow path 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. TSTF-153 R2

As indicated in Note 2, operation in MODE 3 with ECCS trains declared inoperable pursuant to 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 inoperable at and below the LTOP arming temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to restore the inoperable pumps to OPERABLE status. (3)

made incapable of injection

incapable of injection

TSTF-153 R2

TSTF-153 (2)

Unit

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."

(continued)

Rev 2

A.1

07-24-96

EMERGENCY CORE COOLING SYSTEMS

ECCS SUBSYSTEMS – Tavg GREATER THAN OR EQUAL TO 350°F

ITS

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 charging pump,

b. One OPERABLE low head safety injection pump,

c. An OPERABLE flow path capable of transferring fluid to the Reactor Coolant System when taking suction from the refueling water storage tank on a safety injection signal or from the containment sump when suction is transferred during the recirculation phase of operation or from the discharge of the outside recirculation spray pump.

LA.1

M.4

APPLICABILITY: MODES 1, 2 and 3.

INSERT PROPOSED LCONOTE

L.8

ACTION: 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.

L.2

MODE 3 in 6 hours and

M.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.

c. The provisions of Specification 3.0.4 are not applicable to 3.5.2.a and 3.5.2.b for one hour following heatup above 235°F or prior to cooldown below 235°F.

L.3

M.2

Action C

Insert Proposed Action C

L.2

ITS 3.5.2

A.1

07-24-96

EMERGENCY CORE COOLING SYSTEMS

ITS

ECCS SUBSYSTEMS – Tavg GREATER THAN OR EQUAL TO 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 charging pump,

b. One OPERABLE low head safety injection pump,

c. An OPERABLE flow path capable of transferring fluid to the Reactor Coolant System when taking suction from the refueling water storage tank on a safety injection signal or from the containment sump when suction is transferred during the recirculation phase of operation.

LA.1

APPLICABILITY: MODES 1, 2 and 3.

INSERT PROPOSED LCO NOTE

L.8 R2

L.2

ACTION: 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. MODE 3 in 6 hours and

M.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. The current value of the usage factor for each affected safety injection nozzle shall be provided in this Special Report whenever its value exceeds 0.70.

Action C

c. The provisions of Specification 3.0.4 are not applicable to 3.5.2.a and 3.5.2.b for one hour following heatup above 270°F or prior to cooldown below 270°F.

L.3

Insert Proposed Action C

M.2

L.2

SURVEILLANCE REQUIREMENTS

4.5.2 Each ECCS subsystem shall be demonstrated OPERABLE:

SR 3.5.2.1 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:

L.8 *(Category 1 – Relaxation of LCO Requirements)* ITS 3.5.2 LCO Note states, "In MODE 3, both safety injection (SI) 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." CTS 3.5.2 does not include such a Note. This changes the CTS by allowing both trains of ECCS to be inoperable in MODE 3 for up to 2 hours for required pressure isolation valve testing per 3.4.14.1. R2

The purpose of the ITS 3.5.2 LCO Note is to allow the unit to remain in MODE 3 for a short period of time, under controlled conditions, with both SI flow paths isolated when pressure isolation valve testing is required per SR 3.4.14.1. 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 SI flow paths are readily restorable from the control room, the period of time that the SI flow paths are isolated is minimized, and the flow paths are under controlled conditions. There continues to be no allowance to have both SI flow paths isolated in MODES 1 and 2. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

CTS 3.1.2.7

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES – SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be OPERABLE:

a. A boric acid storage system and associated heat tracing with:

1. A minimum contained borated water volume of 1378 gallons,
2. Between 12,950 and 15,750 ppm of boron, and
3. A minimum solution temperature of 115°F.

b. The refueling water storage tank with:

1. A minimum contained borated water volume of 51,000 gallons,
2. Between 2600 and 2800 ppm of boron, and
3. A minimum solution temperature of 35°F.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until at least one borated water source is restored to OPERABLE status.

R.1

SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,
2. Verifying the contained borated water volume of the tank, and
3. Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWST temperature when it is the source of borated water and the outside air temperature is < 35°F.

CTS 3.1.2.7

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES – SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be OPERABLE:

a. A boric acid storage system and at least one associated heat tracing system with:

1. A minimum contained borated water volume of 1378 gallons,
2. Between 12,950 and 15,750 ppm of boron, and
3. A minimum solution temperature of 115°F.

b. The refueling water storage tank with:

1. A minimum contained borated water volume of 51,000 gallons,
2. Between 2600 and 2800 ppm of boron, and
3. A minimum solution temperature of 35°F.

R.1 |

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until at least one borated water source is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,
2. Verifying the contained borated water volume of the tank, and
3. Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWST temperature when it is the source of borated water and the outside air temperature is less than 35°F.

CTS · 3.1.2.8

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES – OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.8 Each of the following borated water sources shall be OPERABLE:

a. A boric acid storage system and associated heat tracing with:

1. A contained borated water volume of between 6000 and 16,280 gallons,
2. Between 12,950 and 15,750 ppm of boron, and
3. A minimum solution temperature of 115°F.

b. The refueling water storage tank with:

1. A contained borated water volume of between 466,200 and 487,000 gallons,
2. Between 2600 and 2800 ppm of boron, and
3. A solution temperature between 40°F and 50°F.

R.1

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the boric acid storage system inoperable, restore the storage system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1.77% Δk/k at 200°F; restore the boric acid storage system to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable, restore the tank to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.8 Each borated water source shall be demonstrated OPERABLE:

CTS 3.1.2.8

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES – OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.8 As a minimum, the following borated water source(s) shall be OPERABLE as required by Specification 3.1.2.2:

a. A boric acid storage system and at least one associated heat tracing system with:

1. A contained borated water volume of between 6000 and 16,280 gallons,
2. Between 12,950 and 15,750 ppm of boron, and
3. A minimum solution temperature of 115°F.

b. The refueling water storage tank with:

1. A contained borated water volume of between 466,200 and 487,000 gallons,
2. Between 2600 and 2800 ppm of boron, and
3. A solution temperature between 40°F and 50°F.

R.1

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the boric acid storage system inoperable and being used as one of the above required borated water sources, restore the storage system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1.77% Δ k/k at 200°F; restore the boric acid storage system to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable, restore the tank to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 7580 gallons and ≤ 7756 gallons.	12 hours
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 599 psig and ≤ 667 psig.	12 hours
SR 3.5.1.4	----------NOTE---------- For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be ≥ 2200 ppm and ≤ 2400 ppm. ---------- Verify boron concentration in each accumulator is ≥ 2500 ppm and ≤ 2800 ppm.	31 days AND -----NOTE------ Only required to be performed for affected accumulators ---------- Once within 6 hours after each solution volume increase of ≥ 50% of indicated level that is not the result of addition from the refueling water storage tank

R2

R2

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. A Note states that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be $\geq$ 2200 ppm and $\leq$ 2400 ppm. 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 50% increase of indicated level 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. 3). R2

Although the run of piping between the two accumulator discharge check valves is credited in demonstrating compliance with Technical Specification 3.5.1 minimum accumulator volume requirement, the minimum boron concentration requirement does not apply to this run of piping. Applicable accident analyses have explicitly considered in-leakage from the RCS, and the resulting reduction in boron concentration in this run of piping, which is not sampled.

SR 3.5.1.5

Verification every 31 days that power is removed from each accumulator isolation valve operator when the RCS pressure is $\geq$ 2000 psig ensures that an active failure could not

(continued)

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.5.1.a.2	SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
4.5.1.a.1	SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ [7853] gallons [( )%] and ≤ [8111] gallons [( )%]. (7580, 7756)	12 hours (1)
4.5.1.a.1	SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ [385] psig and ≤ [481] psig. (599, 667)	12 hours (1)
4.5.1.b	SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ [1900] ppm and ≤ [2100] ppm. (2500, 2800) INSERT	31 days AND -----NOTE----- Only required to be performed for affected accumulators ---------- Once within 6 hours after each solution volume increase of ≥ [ ] gallons, [1 (50)% of indicated level] that is not the result of addition from the refueling water storage tank (1) (2) R2 (1)

(continued)

Rev. 2

INSERT

----------NOTE----------

For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be ≥ 2200 ppm and ≤ 2400 ppm.

R2

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

2. A Note is added to SR 3.5.1.4 stating that for Unit 2 until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be $\geq$ 2200 ppm and $\leq$ 2400 ppm. The values of $\geq$ 2500 ppm and $\leq$ 2800 ppm are approved for Unit 1 by Amendment No. 225 to Facility Operating License No. NPF-4 for the North Anna Power Station, Unit 1. The values of $\geq$ 2500 ppm and $\leq$ 2800 ppm are approved for Unit 2 by Amendment No. 206 to Facility Operating License No. NPF-7 for the North Anna Power Station, Unit 2 after the Unit 2 Fall 2002 refueling outage. The Unit 2 CTS pages with these changes are not provided here because they will not be implemented prior to the scheduled implementation date for ITS. The NOTE addresses this discrepancy. R2

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. 8).

SR 3.5.1.5

Verification every 31 days that power is removed from each accumulator isolation valve operator when the pressurizer 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 one accumulator 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.

This SR allows power to be supplied to the motor operated isolation valves when pressurizer pressure is < 2000 psig, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during plant startups or shutdowns. Even with power supplied to the valves, inadvertent closure is prevented by the RCS pressure interlock associated with the valves.

Should closure of a valve occur in spite of the interlock, the SI signal provided to the valves would open a closed valve in the event of a LOCA.

(continued)

Rev. 2

INSERT 1

Although the run of piping between the two accumulator discharge check valves is credited in demonstrating compliance with Technical Specification 3.5.1 minimum accumulator volume requirement, the minimum boron concentration requirement does not apply to this run of piping. Applicable accident analyses have explicitly considered in-leakage from the RCS, and the resulting reduction in boron concentration in this run of piping, which is not sampled.

INSERT 2

A Note states that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the accumulator boron concentration acceptance criteria shall be $\geq$ 2200 ppm and $\leq$ 2400 ppm. R2

ITS

A.1

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

ACCUMULATORS

LIMITING CONDITION FOR OPERATION

LCO 3.5.1

3.5.1 ~~Each~~ Three reactor coolant system accumulator shall be OPERABLE ~~with:~~ A.1

SR 3.5.1.1 a. ~~The~~ isolation valve open,

SR 3.5.1.2 b. A contained borated water volume of between ~~7580~~ and 7756 gallons A.2

SR 3.5.1.4 and NOTE c. Between 2200 and 2400 ppm of boron, and R2

SR 3.5.1.3 d. A nitrogen cover-pressure of between 599 and 667 psig. L.2

APPLICABILITY: MODES 1, 2 and 3*.

Action A ACTION: Add proposed Action A (reduce RCS pressure to ≤1000 psig) A.1

Condition A

a. With one accumulator inoperable, except as a result of ~~a closed isolation valve~~, restore the inoperable accumulator to OPERABLE status within one hour or ~~be in HOT SHUTDOWN~~ within the next 12 hours. L.3 A.6

Action B

Action C.2

Add proposed Action C.1 M.1

b. ~~With one accumulator inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in HOT STANDBY within one hour and be in HOT SHUTDOWN within the next 12 hours.~~ L.3 A.6

Action C.1

Action D

SURVEILLANCE REQUIREMENTS Add proposed Action D A.3

4.5.1.1 Each accumulator shall be demonstrated OPERABLE:

a. At least once per 12 hours by: (is ≥ 7580 gallons and ≤ 7756 gallons) A.2

SR 3.5.1.2 1. Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and (is ≥ 599 psig and ≤ 667 psig)

SR 3.5.1.3

SR 3.5.1.1 2. Verifying that each accumulator isolation valve is open. A.1

~~*Pressurizer~~ Pressure above 1000 psig. ~~Power lock out of valves is not permitted in MODE 3 when below 1000 psig.~~ (fully) L.1

RCS A.5

8-21-80

A.1

ITS

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

that is not the result of addition from the refueling water storage tank. — L.4

SR 3.5.1.4 and NOTE SR 3.5.1.5

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 50 indicated level of tank volume by verifying the boron concentration of the accumulator solution is ≥ 2200 ppm and ≤ 2400 ppm — A.7, RA 3.5 R2; A.2, R2

affected

c. At least once per 31 days when the RCS pressure is above 2000 psig by verifying that the ~~breaker supplying~~ power to the isolation valve operator is ~~locked in the off position~~ removed — L.6

d. At least once per 18 months by verifying that each accumulator isolation valve opens automatically under each of the following conditions: — L.5

1. When a simulated RCS pressure signal exceeds 2010 psig,

2. Upon receipt of a safety injection test signal.

A.4

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.4.1	Verify RWST borated water temperature is ≥ 40°F and ≤ 50°F.	24 hours
SR 3.5.4.2	Verify RWST borated water volume is ≥ 466,200 gallons and ≤ 487,000 gallons.	7 days
SR 3.5.4.3	----------NOTE---------- For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm. ---------- Verify RWST boron concentration is ≥ 2600 ppm and ≤ 2800 ppm.	7 days

R2

R2

BASES

APPLICABLE SAFETY ANALYSES (continued)

available volume. The deliverable volume limit is assumed by the Large Break LOCA containment analyses. For the RWST, the deliverable volume is different from the total volume contained. Because of the design of the tank, more water can be contained than can be delivered. The upper RWST volume limit is assumed for pH control after a LBLOCA. 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 because of the boron injection tank (BIT) with a high boron concentration. 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 RWST temperature ensures that the amount of containment cooling provided from the RWST during containment pressurization events is consistent with safety analysis assumptions. The minimum RWST temperature is an assumption in the inadvertent Quench Spray actuation analyses.

For a large break LOCA analysis, the minimum water volume limit of 466,200 gallons and the lower boron concentration limit of 2600 ppm are used to compute the post LOCA sump boron concentration necessary to assure subcriticality. For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the minimum RWST boron concentration acceptance criteria shall be $\geq$ 2300 ppm. The large break LOCA is the limiting case since the safety analysis assumes that all control rods are out of the core. R2

The upper limit on boron concentration of 2800 ppm is used to determine the maximum allowable time to switch to hot leg recirculation following a LOCA. For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the maximum RWST boron concentration acceptance criteria shall be $\leq$ 2400 ppm. The purpose of switching from cold leg to hot leg injection is to avoid boron precipitation in the core following the accident. R2 R2

In the ECCS analysis, the quench spray temperature is bounded by the RWST lower temperature limit of 40°F. If the lower temperature limit is violated, the quench 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 50°F is bounded by the values used in the small break LOCA analysis

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.4.2 (continued)

support continued ECCS and Recirculation Spray System pump operation on recirculation. Since the RWST volume is normally stable and is protected by an alarm, a 7 day Frequency is 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. A Note states that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be $\geq$ 2300 ppm and $\leq$ 2400 ppm. 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. R2

REFERENCES

1. UFSAR, Chapter 6 and Chapter 15.

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.4.1	NOTE Only required to be performed when ambient air temperature is < [35]°F or > [100]°F. Verify RWST borated water temperature is ≥ [35]°F and ≤ [100]°F. (40 → 35; 50 → 100)	24 hours
SR 3.5.4.2	Verify RWST borated water volume is ≥ [466,200 gallons ( )%]. → 466,200 gallons and ≤ 487,000 gallons	7 days
SR 3.5.4.3	Verify RWST boron concentration is ≥ [2000] ppm and ≤ [2200] ppm. (2600 → 2000; 2800 → 2200)	7 days

INSERT

4.5.5.b
LCO 3.5.5.c
(2) (1)

4.5.5.a.1
LCO 3.5.5.a
(1)

4.5.5.a.2
LCO 3.5.5.b
(1)

(3) R2

Rev 2

INSERT

----------NOTE----------

For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm.

R2

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

2. A bracketed Note for SR 3.5.4.1 associated with the effect of ambient air temperature on RWST temperature is not adopted. NAPS RWST borated water is cooled and not maintained at ambient temperature.

3. A Note is added to SR 3.5.4.3 stating that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be $\geq$ 2300 ppm and $\leq$ 2400 ppm. The values of $\geq$ 2600 ppm and $\leq$ 2800 ppm are approved for Unit 1 by Amendment No. 225 to Facility Operating License No. NPF-4 for the North Anna Power Station, Unit 1. The values of $\geq$ 2600 ppm and $\leq$ 2800 ppm are approved for Unit 2 by Amendment No. 206 to Facility Operating License No. NPF-7 for the North Anna Power Station, Unit 2 after the Unit 2 Fall 2002 refueling outage. The Unit 2 CTS pages with these changes are not provided here because they will not be implemented prior to the scheduled implementation date for ITS. The NOTE addresses this discrepancy. R2

BASES

APPLICABLE SAFETY ANALYSES (continued)

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 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

(continued)

Rev. 2

INSERT

For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the minimum RWST boron concentration acceptance criteria shall be ≥ 2300 ppm. R2

BASES

INSERT

APPLICABLE SAFETY ANALYSES (continued)

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 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.

The RWST satisfies Criterion 3 of the NRC Policy Statement. 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

(continued)

Rev 2

INSERT

For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the maximum RWST boron concentration acceptance criteria shall be ≤ 2400 ppm. | R2

BASES

ACTIONS

C.1 and C.2 (continued)

power conditions in an orderly manner and without challenging plant (unit) systems. (2)

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 (Recirculation) (1). Since the RWST volume is normally stable and is protected by an alarm, a 7 day Frequency is 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 (INSERT 3) R2 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

(continued)

Rev. 2

INSERT

A Note states that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the RWST boron concentration acceptance criteria shall be $\geq$ 2300 ppm and $\leq$ 2400 ppm. R2

A.1

12-14-88

EMERGENCY CORE COOLING SYSTEMS

REFUELING WATER STORAGE TANK

ITS

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 contained borated water volume of between 466,200 and 487,000 gallons.~~

SR 3.5.4.3 and NOTE b. ~~Between 2300 and 2400 ppm of boron, and~~

SR 3.5.4.1 c. ~~A solution temperature between 40°F and 50°F.~~

A.2 | R2

APPLICABILITY: MODES 1, 2, 3 and 4.

Action A

ACTION: Add proposed Action A

Action B
Action C

With the refueling water storage tank inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

for reasons other than Condition A

L.1
A.1

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 volume in the tank is ≥ 466,200 gallons and ≤ 487,000 gallons, and

SR 3.5.4.3 and NOTE 2. Verifying the boron concentration of the water is ≥ 2300 ppm and ≤ 2400 ppm

SR 3.5.4.1 b. At least once per 24 hours by verifying the RWST temperature is ≥ 40°F and ≤ 50°F

R2

A.1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One outside RS subsystem and one inside RS subsystem inoperable and not in the same train. OR Three or more RS subsystems inoperable. OR Two outside RS subsystems inoperable.	F.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.7.1	Verify casing cooling tank temperature is ≥ 35°F and ≤ 50°F.	24 hours
SR 3.6.7.2	Verify casing cooling tank contained borated water volume is ≥ 116,500 gal.	7 days
SR 3.6.7.3	----------NOTE---------- For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the casing cooling tank boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm. ---------- Verify casing cooling tank boron concentration is ≥ 2600 ppm and ≤ 2800 ppm.	7 days

R2

R2

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.7.2 (continued)

the parameter variations and instrument drift during the applicable MODES. Furthermore, the 7 day Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal condition.

SR 3.6.7.3

Verifying the boron concentration of the solution in the casing cooling tank provides assurance that borated water added from the casing cooling tank to RS subsystems will not dilute the solution being recirculated in the containment sump. A Note states that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the casing cooling tank boron concentration acceptance criteria shall be $\geq$ 2300 ppm and $\leq$ 2400 ppm. The 7 day Frequency of this SR was developed considering the known stability of stored borated water and the low probability of any source of diluting pure water. R2

SR 3.6.7.4

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the RS System and casing cooling tank provides assurance that the proper flow path exists for operation of the RS System. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified as being in the correct position prior to being secured. 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.

SR 3.6.7.5

Verifying that each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head ensures that these pumps' performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 4). Since the RS System pumps cannot be tested with flow through the spray headers, they are tested on recirculation flow. This test confirms one point on the pump

(continued)

F. One outside RS subsystem and one inside RS subsystem inoperable and not in the same train.
OR

RS System (Subatmospheric) 3.6.6E.7 (2) (1)

CTS

Action a
Action b
Action c
new

new

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
E F. Required Action and associated Completion Time not met.	F.1	Be in MODE 3.	6 hours (5)
	AND E		
	F.2	Be in MODE 5.	84 hours
G. Three or more RS subsystems inoperable.	F G.1	Enter LCO 3.0.3.	Immediately (5)

RAI 3.6.7-2 R1

OR
Two outside RS subsystems inoperable. (5)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.6E.1 (7)	Verify casing cooling tank temperature is ≥ [35]°F and ≤ [50]°F.	24 hours (1) (3)
SR 3.6.6E.2 (7)	Verify casing cooling tank contained borated water volume is ≥ [116,500] gal.	7 days (1) (3)
SR 3.6.6E.3 (7)	Verify casing cooling tank boron concentration is ≥ [2300] ppm and ≤ [2400] ppm. 2800, 2600 — INSERT	7 days (1) (3) (6) R
SR 3.6.6E.4 (7)	Verify each RS [and casing cooling] 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) (3)

4.6.2.2.2.b
3.6.2.2.b.3

4.6.2.2.2.a.1
3.6.2.2.b.1

4.6.2.2.2.a.2
3.6.2.2.b.2

4.6.2.2.1.a

(continued)

Rev. 2

INSERT

----------NOTE----------

For Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the casing cooling tank boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm.

R2

1. North Anna Units 1 and 2 utilize subatmospheric containments. Therefore, the NUREG-1431 specifications applicable to that containment design were used in developing the plant-specific Improved Technical Specifications (ITS). Necessary editorial changes to the NUREG-1431 pages were made.

2. The North Anna Recirculation Spray (RS) System consists of 2 trains. Each train consists of an inside RS subsystem and outside RS subsystem. The outside RS subsystems are supported by a casing cooling tank. Each subsystem supplies water to a spray header which covers 180° of the containment, for a total of 4 spray headers. The Required Actions when two subsystems are inoperable must consider both the available heat removal capacity and the available spray coverage. The accident analysis assumes that 360° of spray coverage is available. In order to clarify this aspect of the North Anna design, the combination of two inoperable RS subsystems which does not provide 360° of containment spray coverage is added to the ACTION for inadequate heat removal. The Bases are enhanced to explain the requirements. This deviation reflects the North Anna design and provides ACTIONS for all combinations of inoperable RS subsystems and makes clear which combinations are acceptable and why.

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

4. North Anna Units 1 and 2 have completed the first refueling outages. Therefore, the SR 3.6.7.7 bracketed Frequency of "At first refueling" is not needed and is removed.

5. North Anna Units 1 and 2 Outside RS subsystems provide a higher flow capacity than the inside RS subsystems. Allowing two outside RS subsystems to be inoperable would leave less than 100% of the required spray capacity. Therefore, this bracketed allowance is not adopted.

6. A Note is added to SR 3.6.7.3 stating that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the casing cooling tank boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm. The values of ≥ 2600 ppm and ≤ 2800 ppm are approved for Unit 1 by Amendment No. 225 to Facility Operating License No. NPF-4 for the North Anna Power Station, Unit 1. The values of ≥ 2600 ppm and ≤ 2800 ppm are approved for Unit 2 by Amendment No. 206 to Facility Operating License No. NPF-7 for the North Anna Power Station, Unit 2 after the Unit 2 Fall 2002 refueling outage. The Unit 2 CTS pages with these changes are not provided here because they will not be implemented prior to the scheduled implementation date for ITS. The NOTE addresses this discrepancy. R2

BASES (continued) 7

SURVEILLANCE REQUIREMENTS

SR 3.6.6E.1 7 1

Verifying that the casing cooling tank solution temperature is within the specified tolerances provides assurance that the water injected into the suction of the outside RS pumps will increase the NPSH available as per design. The 24 hour Frequency of this SR was developed considering operating experience related to the parameter variations and instrument drift during the applicable MODES. 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 condition.

SR 3.6.6E.2 7 1

Verifying the casing cooling tank contained borated water volume provides assurance that sufficient water is available to support the outside RS subsystem pumps during the time they are required to operate. The 7 day Frequency of this SR was developed considering operating experience related to the parameter variations and instrument drift during the applicable MODES. Furthermore, the 7 day Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal condition.

SR 3.6.6E.3 7 1

Verifying the boron concentration of the solution in the casing cooling tank provides assurance that borated water added from the casing cooling tank to RS subsystems will not dilute the solution being recirculated in the containment sump. The 7 day Frequency of this SR was developed considering the known stability of stored borated water and the low probability of any source of diluting pure water. 7 | R2

INSERT

SR 3.6.6E.4 7 1

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the RS System and casing cooling tank provides assurance that the proper flow path exists for operation of the RS System. This SR does not apply to valves that are locked, sealed, or

(continued)

Rev. 2

INSERT

A Note states that for Unit 2, until the first entry into MODE 4 following the Unit 2 Fall 2002 refueling outage, the casing cooling tank boron concentration acceptance criteria shall be ≥ 2300 ppm and ≤ 2400 ppm. R2

A.1

ITS 3.6.7
9-2-93

Four subsystems

CONTAINMENT SYSTEMS

CONTAINMENT RECIRCULATION SPRAY SYSTEM

ITS

LIMITING CONDITION FOR OPERATION

3.6.2.2 Two trains of containment recirculation spray shall be OPERABLE. Each train shall consist of:

3.6.7

a. 1. One inside containment recirculation spray subsystem composed of an inside containment recirculation spray pump, associated heat exchanger and flow path, and

2. One outside containment recirculation spray subsystem composed of an outside containment recirculation spray pump, associated heat exchanger and flow path, and a casing cooling pump and a flow path capable of transferring fluid from the casing cooling tank to the suction of the outside recirculation spray pump.

b. One casing cooling tank (shared with both trains) shall be OPERABLE with:

SR 3.6.7.2 1. Contained borated water volume of at least 116,500 gallons.

SR 3.6.7.3 and NOTE (verify) 2. Between 2300 and 2400 ppm boron concentration.

SR 3.6.7.1 3. A solution temperature ≥ 35°F and ≤ 50° F.

A.2 | LA.1 | LA.2 | A.3 | R2

APPLICABILITY: Modes 1, 2, 3 and 4

ACTION:

Action A / Action E a. With one containment recirculation spray subsystem inoperable in one containment recirculation spray train, restore the inoperable subsystem to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours; restore the inoperable subsystem to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 30 hours. (84)

M.1 | RAI 3.6.7-R1

Actions B, C / Action E b. With two containment recirculation spray subsystems inoperable in one containment recirculation spray train, restore one inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (84)

Insert 1 | L.1

Action D / Action E c. With the casing cooling tank inoperable, restore the tank to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (84)

L.2 | RAI 3.6.7-R1

Action F

Add proposed Action F

A.4

SURVEILLANCE REQUIREMENTS

4.6.2.2.1 Each containment recirculation spray subsystem and casing cooling subsystem shall be demonstrated OPERABLE:

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 3.6.7.4

A.1

ITS 3.6.7

ITS

04-22-99

CONTAINMENT SYSTEMS

CONTAINMENT RECIRCULATION SPRAY SYSTEM

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.7.5

b. Verify each RS and casing cooling pump's developed head at the flow test point is greater than or equal to the required developed head. The frequency shall be in accordance with the Inservice Testing Program.

c. At least once per 18 months by:

SR 3.6.7.6

1. Verifying that on ~~a Containment Pressure–High-High signal~~ an actual or simulated actuation signal each casing cooling pump starts automatically ~~without time delay~~ and each recirculation spray pump starts automatically ~~with the following time delays: inside~~ 195 ± 9.75 seconds, ~~outside~~ 210 ± 21 seconds. LA.4 L.3 LA.3 L.4

Insert

2. Verifying that each automatic valve in the flow path actuates to its correct position on ~~a Containment Pressure – high-high test signal~~ LA.4 L.3

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.5

4.6.2.2.2 The casing coolant tank shall be demonstrated OPERABLE:

a. At least once per 7 days by:

SR 3.6.7.2

1. Verifying the contained borated water volume in the tank, is ≥ 116,500 gallons, and

SR 3.6.7.3 and Note

2. Verifying the boron concentration of the water is ≥ 2300 ppm and ≤ 2400 ppm

SR 3.6.7.1

b. At least once per 24 hours by verifying the casing cooling tank temperature is ≥ 35°F and ≤ 50°F

A.3 R2

A.1

ITS 3.9.1

3/4.9 REFUELING OPERATIONS

BORON CONCENTRATION

ITS

LIMITING CONDITION FOR OPERATION

and the refueling cavity (A.3)

3.9.1

3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met: (A.2)

a. Either a K_{eff} of 0.95 or less, or

b. A boron concentration of ≥ 2600 ppm.

within the limit of the COLR (LA.1)

Applicability Note

APPLICABILITY: Mode 6*.

NOTE
Only applicable to the refueling canal and refueling cavity when connected to the RCS.

A.2

L.3

Condition A

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration at ≥ 10 gpm of ≥ 12,950 ppm boric acid solution or its equivalent until K_{eff} is reduced to ≤ 0.95 or the boron concentration is restored to ≥ 2600 ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable. (L.1) (LA.1)

until boron concentration is within limit. (A.4)

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length control rod located within the reactor pressure vessel, in excess of 3 feet from its fully inserted position. (L.2)

SR 3.9.1.1

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

* The reactor shall be maintained in MODE 6 when the reactor vessel head is unbolted or removed. (A.2)

A.1

ITS 3.9.1

3/4.9 REFUELING OPERATIONS

BORON CONCENTRATION

A.3

ITS

LIMITING CONDITION FOR OPERATION

and the refueling cavity

3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:

A.2

LA.1

a. Either a K_{eff} of 0.95 or less, or

b. A boron concentration of ≥ 2600 ppm

within the limit of the COLR.

A.2

Applicability Note

APPLICABILITY: Mode 6*

NOTE
Only applicable to the refueling canal and the refueling cavity when connected to the RCS.

L.3

ACTION:

Condition A

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration at ≥ 10 gpm of ≥ 12,950 ppm boric acid solution or its equivalent until K_{eff} is reduced to ≤ 0.95 or the boron concentration is restored to ≥ 2600 ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable.

L.1

LA.1

until boron concentration is within limit.

A.4

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length control rod located within the reactor pressure vessel, in excess of 3 feet from its fully inserted position.

L.2

SR 3.9.1.1

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

* The reactor shall be maintained in MODE 6 when the reactor vessel head is unbolted or removed.

A.2