Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

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TVA-WBN-TS-00-08

10 CFR 50.90
10 CFR 50.91(a)(6)

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

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - LICENSE AMENDMENT REQUEST - TECHNICAL SPECIFICATION (TS) CHANGE NUMBER TVA-WBN-TS-00-08 FOR TS 3.1.10 - PHYSICS TESTS EXCEPTIONS - MODE 2

In accordance with the provisions of 10 CFR 50.4, 50.90 and 50.91(a)(6), TVA is submitting a request for an amendment to WBN's license, NPF-90, to change the Technical Specifications for Unit 1. The proposed amendment is based on Technical Specification Task Force (TSTF) Traveler 108 and Traveler 315. TSTF-108 affects Surveillance Requirement (SR) 3.1.10.1 which currently requires that a channel operational test (COT) be performed within 12 hours prior to initiation of a physics test. Therefore, the COT must be performed regardless of whether the COT has been performed to satisfy Reactor Trip System (RTS) SR 3.3.1.7 and 3.3.1.8. The requested amendment removes the 12 hour requirement so that the testing performed for SR 3.3.1.7 and SR 3.3.1.8 can be used to satisfy SR 3.1.10.1.

For TSTF-315, the proposed amendment revises the requirements of LCO 3.1.10, "Physics Tests Exceptions - Mode 2," so that the RTS instrumentation which is normally placed in a tripped condition during the performance of a physics test, may be placed in a bypassed condition. In this configuration the

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potential for a reactor trip due to a spurious signal is lessened because the trip logic is in two-out-of-three status. The testing performed in support of the current LCO 3.1.10 requirements results in a one-out-of-three logic status.

Enclosure 1 to this letter provides the description and evaluation of the proposed change. This includes TVA's determination of no significant hazards considerations associated with the proposed change and that the change is exempt from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). The WBN Plant Operations Review Committee and the WBN Nuclear Safety Review Board have reviewed this proposed change and determined that operation of WBN Unit 1 in accordance with the proposed change will not endanger the health and safety of the public. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Tennessee State Division of Radiological Health.

Enclosure 2 contains copies of the appropriate TS pages for Unit 1 marked-up to show the proposed change. Enclosure 3 forwards the revised TS pages for Unit 1 which incorporate the proposed change.

If you have any questions about this change, please contact me at (423) 365-1824.

Sincerely,

P. L. Pace
Manager, WBN Licensing
and Industry Affairs

Subscribed and sworn to before me
on the 10th day of July, 2000

E. Jeannette Long
Notary Public

My Commission Expires June 27, 2001

Enclosures
cc: See page 3

cc (Enclosure):
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ENCLOSURE 1
PROPOSED LICENSE AMENDMENT

I. DESCRIPTION OF THE PROPOSED CHANGE

Part A - Technical Specification Task Force (TSTF) Traveler 108:

The Power Range and Intermediate Range monitors are part of the Nuclear Instrumentation System (NIS) excore neutron detectors. Channel operational tests (COTs) are performed on these monitors in accordance with Reactor Trip System (RTS) Surveillance Requirements (SRs) 3.3.1.7 and 3.3.1.8. While the unit is in Modes 1 or 2, SR 3.3.1.7 is performed for the Power Range monitors every 92 days. SR 3.3.1.8 is performed on a 31 day interval for the Intermediate Range monitors. This SR is also performed prior to startup of the reactor and at various points during power escalation or reduction. In addition, SR 3.1.10.1 currently requires that a COT be performed on the Power Range and Intermediate Range neutron monitors within 12 hours prior to initiation of a physics test, even though SR 3.3.1.7 and SR 3.3.1.8 have been performed on the required frequency.

The redundant testing required by SR 3.1.10.1 is addressed by Technical Specification Task Force (TSTF) Traveler 108. TSTF-108 was approved by NRC on May 2, 1997, and removes the 12 hour requirement so that the testing performed for SR 3.3.1.7 and SR 3.3.1.8 may be used to satisfy SR 3.1.10.1. The proposed amendment revises SR 3.1.10.1 to implement the approved TSTF. It should be noted that the TSTF also addresses changes to Standard Technical Specification (STS) 3.4.19, "Reactor Coolant Loops - Test Exceptions." This portion of the TSTF is not applicable to WBN.

Part B - TSTF Traveler 315:

During the performance of physics testing one power range channel is used to provide input to the reactivity computer. In preparation for the test, the fuses to the electronics drawer for the channel are removed and the channel is placed in a tripped condition and results in the NIS trip logic being in a one-out-of-three logic status. Therefore, any spurious signals received on one channel will result in a reactor trip. The changes proposed by TSTF-315 allow the

Part B - TSTF 315 (continued):

fuses to remain in the NIS channel that is connected to the reactivity computer. This configuration results in the channel being in a bypassed state and places the overall logic in a two-out-of-three logic status. The advantage of this configuration is that a single spurious signal will not result in a reactor trip. The proposed amendment does not deviate from the version of TSTF-315 that was approved by NRC on June 29, 1999.

II. REASON FOR THE PROPOSED CHANGE

Part A - TSTF Traveler 108:

SR 3.1.10.1 requires the Intermediate and Power Range neutron monitors to be subjected to a COT within 12 hours prior to the start of a physics test. However, these instruments are confirmed to be operable by the performance of the testing required per SR 3.3.1.7 and SR 3.3.1.8. The additional testing required by SR 3.1.10.1 does not provide an additional measure of assurance that the instrumentation is operable. Therefore, the requirement for the instruments to be tested within 12 hours prior to initiation of a physics test is being removed. Also, the proposed amendment implements the applicable portions of the changes documented in TSTF-108 and does not deviate from the changes approved in the TSTF by NRC on May 2, 1997.

Part B - TSTF Traveler 315:

As stated previously, one of the steps currently taken to prepare for a physics test is the removal of the fuses from the electronics drawer of an NIS channel. The resultant configuration places the channel in a tripped condition and a one-out-of-three logic scheme. Due to this logic configuration, reactor trips are known to have occurred when spurious signals were generated. The proposed amendment allows the physics test to be performed while the NIS channel is in a bypassed condition and a two-out-of-three logic scheme. This configuration will aide in reducing unnecessary trips due to spurious signals.

III. SAFETY ANALYSIS - Parts A and B

The nuclear reactor of a power plant requires monitoring of its power level in order to maintain reactor safety. By placing detectors at selected locations adjacent to the reactor, neutron flux level fluctuations present during an increasing, decreasing, or operating power level are detected. The NIS monitors the power level of the reactor at all times. It is used primarily for plant protection, providing appropriate alarm functions for various phases of plant operating and shutdown conditions. It also provides a secondary control function and indicates reactor status during startup and power operation. The three overlapping ranges of instrumentation (Source, Intermediate, and Power) provide overpower trip protection at increasing levels during startup and at power operation.

The NIS provides indication, alarm, control, and trip signals along with the capability to monitor neutron flux over the complete range from reactor shutdown to 120 percent full power. The system monitors up to 200 percent full power for an abnormal condition, and computes the rate-of-flux changes for the Source and Intermediate Range channels. The system also generates permissive and level trip signals, which are then coupled to the logic matrices of the RTS. This interface either allows power changes based upon proper functioning of the next range of measurement instrumentation or shuts down the reactor as unsafe operating limits are approached.

Startup operation or a power increase requires a permissive signal from the higher range instrumentation channels before the lower range level trips can be manually blocked by the operator. A one-of-two Intermediate Range permissive signal (P6) is required before Source Range level trip blocking can be initiated by the plant operator. The Intermediate Range level trip and low-range Power Range level trip can only be blocked by the plant operator after satisfactory operation and permissive information are obtained from two-of-four Power Range channels. Individual blocking switches are provided at the control board so that the low-range Power Range trip and Intermediate Range trip can be independently blocked. These trips are automatically reactivated when any three of the four Power Range channels are below the permissive (P10) level, thus ensuring automatic activation of more restrictive trip protection. The reactor plant protection afforded by the high-range, Power Range trips is never blocked or bypassed.

III. SAFETY ANALYSIS - Parts A and B (continued)

The NIS is designed to initiate nuclear overpower reactor trip signals for the RTS as a result of detecting high neutron flux or a high neutron flux rate of change and to monitor the neutron flux during and following an accident. Therefore, this system offers diverse protection against fuel cladding failure and/or loss of Reactor Coolant System integrity. The instruments supporting the Power Range and Intermediate Range functions are determined to be operable by the performance of the testing required per SR 3.3.1.7 and SR 3.3.1.8. The SR 3.1.10.1 requirement for the testing of the instruments within 12 hours prior to initiation of a physics test does not provide an additional measure of assurance that the instrumentation will perform its intended function. The redundant testing required SR 3.1.10.1 is addressed by TSTF-108 which was approved by NRC on May 2, 1997. TSTF-108 removes the 12 hour requirement so that the testing performed for SR 3.3.1.7 and SR 3.3.1.8 can be used to satisfy SR 3.1.10.1. Also, the proposed amendment implements the applicable portions of the changes documented in TSTF-108 and does not deviate from the changes approved in the TSTF by NRC on May 2, 1997.

Regarding TSTF-315, implementation of the proposed amendment will result in one power range channel being in a bypassed state. In this configuration, there will be three available channels with a two-out-of-three logic required to actuate the neutron flux trip function. As required by LCO 3.1.10, the testing will be performed while the reactor is in Mode 2 and therefore, restricted by the Technical Specifications to a power level of less than or equal to 5 percent.

There are two power range control functions, rod control and steam generator level control. At the 5 percent or less power level, rod control is in manual and is not affected by the testing configuration. Steam generator level control is not affected since its input from the NIS channel connected to the Reactivity Computer is placed in bypass when establishing the test configuration. Therefore, an assumed failure affecting these control functions does not have to be considered for the testing configuration. Also while in this configuration, an assumed single failure will not prevent the power range monitors from actuating as designed.

Other factors which should also be considered, are that the reactor trip function of the intermediate range detectors will be unaffected by proposed amendment and therefore, will be available to mitigate a reactivity transient at low power. Further, the trip setpoint for the power range monitors are decreased during startup of the reactor from

the normal 109% setpoint to a value less than or equal to 85%. This setpoint reduction provides an additional measure to limit a reactivity excursion.

Considering the preceding, the low thermal power level of the reactor, and a potential reduction in unnecessary plant transients due to the one-out-of-three logic, the proposed amendment will not significantly impact the safe operation of the plant. Also, the proposed amendment does not deviate from the version of TSTF-315 which was approved by NRC on June 29, 1999.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

I. Description of Proposed License Amendment

Part A - Technical Specification Task Force (TSTF) Traveler 108:

Channel operational tests (COTs) are performed for the Power Range and Intermediate Range neutron monitors in accordance with Reactor Trip System (RTS) Surveillance Requirements (SRs) 3.3.1.7 and 3.3.1.8. While the unit is in Modes 1 or 2, SR 3.3.1.7 is performed for the Power Range monitors every 92 days. SR 3.3.1.8 is performed for the Intermediate Range monitors prior to startup of the reactor and at various points during power escalation or reduction. In addition, SR 3.1.10.1 currently requires that a COT be performed on the Power Range and Intermediate Range neutron monitors within 12 hours prior to initiation of a physics test, even though SR 3.3.1.7 and SR 3.3.1.8 have been performed on the required frequency.

The redundant testing required SR 3.1.10.1 is addressed by Technical Specification Task Force (TSTF) Traveler 108. TSTF-108 was approved by NRC on May 2, 1997, and removes the 12 hour requirement so that the testing performed for SR 3.3.1.7 and SR 3.3.1.8 can be used to satisfy SR 3.1.10.1. The proposed amendment revises SR 3.1.10.1 to implement the approved TSTF.

Part B - TSTF Traveler 315:

During the performance of physics testing one power range channel is used to provide input to the reactivity computer. In preparation for the test, the fuses to the electronics drawer for the channel are removed and the channel is placed in a tripped

condition and results in the NIS trip logic being in a one-out-of-three logic status. Therefore, any spurious signals received on one channel will result in a reactor trip. The changes proposed by TSTF-315 allows the fuses to remain in the NIS channel that is connected to the reactivity computer and avoid tripping the bistables associated with the NIS channel. This configuration results in the channel being in a bypassed state and places the overall logic in a two-out-of-three logic status. The advantage of this configuration is that a single spurious signal would not result in a reactor trip. The proposed amendment does not deviate from the version of TSTF-315 that was approved by NRC on June 29, 1999.

II. Basis for No Significant Hazards Consideration Determination

The Nuclear Regulatory Commission has provided standards for determining whether a significant hazards consideration exists (10 CFR 50.92 (c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Each standard is discussed below for the proposed amendment:

A. Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated.

Part A - TSTF Traveler 108:

The proposed amendment removes the requirement to perform an additional Channel Operational Test (COT) on the Intermediate and Power Range functions within 12 hours of performing a physics test. The Intermediate and Power Range instrumentation is determined to be OPERABLE by periodic surveillance requirements which must be confirmed to be within frequency prior to making the reactor critical. A COT for the Intermediate

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION (continued)

or Power Range instrumentation is not a precursor to, or assumed to be an initiator of any analyzed accident. Therefore, this change does not involve a significant increase in the probability of an accident previously evaluated.

Regarding a significant increase in the consequences of an accident, several factors must be considered. First the physics tests are performed in accordance with the Technical Specifications in Mode 2. Therefore, the power level of the reactor is limited to 5 percent or less. Along with this, the reactor trip function of the intermediate range detectors will be unaffected by the proposed amendment and therefore, will be available to mitigate a reactivity transient at low power. Further, the trip setpoint for the power range monitors are decreased during startup of the reactor from the normal 109% setpoint to a value less than or equal to 85%. This setpoint reduction provides an additional measure to limit a reactivity excursion. Considering these factors, the proposed change will not involve a significant increase in the consequences of an accident previously evaluated.

Part B - TSTF Traveler 315:

During the performance of physics testing one power range channel is used to provide input to the reactivity computer. In preparation for the test, the fuses to the electronics drawer for the channel are removed and the channel is placed in a tripped condition and results in the NIS trip logic being in a one-out-of-three logic status. Therefore, any spurious signals received on one channel will result in a reactor trip. The changes proposed by TSTF-315 allows the fuses to remain in the NIS channel that is connected to the reactivity computer. This configuration results in the channel being in a bypassed state and places the overall logic in a two-out-of-three

logic status. The advantage of this configuration is that a single spurious signal will not result in a reactor trip. In addition, the physics tests required by LCO 3.1.10 are performed while the reactor is in Mode 2. Therefore, the thermal power of the reactor is restricted to 5 percent or less. Neutron flux, which is monitored by the NIS, is only one of several RTS variables which may initiate a reactor trip in Mode 2. The other variables include reactor coolant temperature, pressurizer pressure and steam generator water level. These variables are unaffected by the proposed amendment. Considering this, the low thermal power level of the reactor, and a potential reduction in unnecessary plant transients due to the one-out-of-three logic, the proposed amendment will not significantly impact the safe operation of the plant. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

B. **Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.**

Part A - TSTF Traveler 108:

The proposed amendment is not based on a change in the design or configuration of the plant Also, the proposed amendment does not change the manner in which the plant is operated. The amendment deletes the requirement for the performance of a COT for the Intermediate and Power Range instrumentation within 12 hours of starting a physics test. Therefore, the proposed change will not create the possibility of a new or different kind of accident than any previously evaluated.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION (continued)

Part B - TSTF Traveler 315:

The NIS provides indication, alarm, control, and trip signals along with the capability to monitor neutron flux over the complete range from reactor shutdown to 120 percent full power. The system also generates permissive and level trip signals, which are then coupled to the logic matrices of the RTS. This interface either allows power changes based upon proper functioning of the next range of measurement instrumentation or shuts down the reactor as unsafe operating limits are approached. The changes in the operation of the NIS proposed by this amendment for TSTF-315, do not inhibit the capabilities of the system to initiate a reactor trip, if required. Therefore, the proposed amendment will not create the possibility of a new or different kind of accident.

C. **Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in the margin of safety.**

Part A - TSTF Traveler 108:

As stated previously, the proposed change deletes the requirement to perform an additional COT for the Intermediate and Power Range functions within 12 hours of the start of physics test. The Intermediate and Power Range instrumentation channels are determined to be operable by meeting the requirements of the periodic surveillances. These surveillance requirements are not affected by the proposed amendment. Since the equipment will be determined to be operable by periodic surveillances, the performance of the a surveillance prior to the initiation of a physics test does not provide any additional assurance that the functions are more reliable. Considering this, the proposed amendment does not significantly reduce the margin of safety.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION (continued)

Part B - TSTF Traveler 315:

During the low power physics testing, implementation of the proposed amendment will result in one power range channel being in a bypassed state. In this configuration, there will be three available channels with a two-out-of-three logic required to actuate the neutron flux trip function. As required by LCO 3.1.10, the testing will be performed while the reactor is in Mode 2 and therefore, restricted by the Technical Specifications to a power level of less than or equal to 5 percent.

There are two power range control functions, rod control and steam generator level control. At the 5 percent or less power level, rod control is in manual and is not affected by the testing configuration. Steam generator level control is not affected since its input from the NIS channel connected to the Reactivity Computer is placed in bypass when establishing the test configuration. Therefore, an assumed failure affecting these control functions does not have to be considered for the testing configuration. Also while in this configuration, an assumed single failure will not prevent the power range monitors from actuating as designed.

The reactor trip function of the intermediate range detectors will be unaffected by the proposed amendment and therefore, will be available to mitigate a reactivity transient at low power. Further, the trip setpoint for the power range monitors are decreased during startup of the reactor from the normal 109% setpoint to a value less than or equal to 85%. This setpoint reduction provides an additional measure to limit a reactivity excursion.

Based on the preceding, TVA concludes that there is no significant reduction in the margin of safety due to the implementation of the proposed amendment.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION (continued)

III. Summary

Based on the above analysis, TVA has determined that operation of Watts Bar Unit 1, in accordance with the proposed amendments, would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated (2) create the possibility of a new or different kind of accident from any accident previously evaluated or (3) involve a significant reduction in a margin of safety; therefore, operation of Watts Bar Unit 1, in accordance with the proposed amendment, would not involve a significant hazards consideration as defined in 10 CFR 50.92.

V. ENVIRONMENTAL IMPACT CONSIDERATION

The proposed change does not involve a significant hazards consideration, a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.

ENCLOSURE 2
ANNOTATED TECHNICAL SPECIFICATION PAGES

AFFECTED PAGES

Technical Specification

3.1-23
3.1-24

Technical Specification Bases

B 3.1-67
B 3.1-68
B 3.1-69

3.1 REACTIVITY CONTROL SYSTEMS

3.1.10 PHYSICS TESTS Exceptions—MODE 2

LCO 3.1.10 During the performance of PHYSICS TESTS, the requirements of

LCO 3.1.4, "Moderator Temperature Coefficient (MTC)";
LCO 3.1.5, "Rod Group Alignment Limits";
LCO 3.1.6, "Shutdown Bank Insertion Limits";
LCO 3.1.7, "Control Bank Insertion Limits"; and
LCO 3.4.2, "RCS Minimum Temperature for Criticality"

may be suspended, provided:

a. RCS lowest loop average temperature is ≥ 541°F; and

b. SDM is ≥ 1.6% Δk/k.

Insert:
and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels,

APPLICABILITY: MODE 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit. AND A.2 Suspend PHYSICS TESTS exceptions.	15 minutes 1 hour
B. THERMAL POWER not within limit.	B.1 Open reactor trip breakers.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.10.1	Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	~~Within 12 hours~~ ~~p~~P~~r~~rior to initiation of PHYSICS TESTS
SR 3.1.10.2	Verify the RCS lowest loop average temperature is 541°F.	30 minutes
SR 3.1.10.3	Verify SDM is ≥ 1.6% Δk/k.	24 hours

Delete "Within 12 hours" and capitalize the "P" in "prior."

BASES

APPLICABLE SAFETY ANALYSES (continued)

problems, may require the operating control or process variables to deviate from their LCO limitations.

The FSAR defines requirements for initial testing of the facility, including PHYSICS TESTS. Table 14.2-2 summarizes the zero, low power, and power tests. Requirements for reload fuel cycle PHYSICS TESTS are defined in ANSI/ANS-19.6.1-1985 (Ref. 4). Although these PHYSICS TESTS are generally accomplished within the limits for all LCOs, conditions may occur when one or more LCOs must be suspended to make completion of PHYSICS TESTS possible or practical. This is acceptable as long as the fuel design criteria are not violated. When one or more of the requirements specified in LCO 3.1.4, "Moderator Temperature Coefficient (MTC)," LCO 3.1.5, LCO 3.1.6, LCO 3.1.7, and LCO 3.4.2 are suspended for PHYSICS TESTS, the fuel design criteria are preserved as long as the power level is limited to $\leq$ 5% RTP, the reactor coolant temperature is kept $\geq$ 541°F, and SDM is $\geq$ 1.6% $\Delta k/k$.

The PHYSICS TESTS include measurement of core nuclear parameters or the exercise of control components that affect process variables. Among the process variables involved are AFD and QPTR, which represent initial conditions of the unit safety analyses. Also involved are the movable control components (control and shutdown rods), which are required to shut down the reactor. The limits for these variables are specified for each fuel cycle in the COLR. PHYSICS TESTS meet the criteria for inclusion in the Technical Specifications, since the components and process variable LCOs suspended during PHYSICS TESTS meet Criteria 1, 2, and 3 of the NRC Policy Statement.

Reference 6 allows special test exceptions (STEs) to be included as part of the LCO that they affect. It was decided, however, to retain this STE as a separate LCO because it was less cumbersome and provided additional clarity.

LCO

This LCO allows the reactor parameters of MTC and minimum temperature for criticality to be outside their specified limits. In addition, it allows selected control and shutdown rods to be positioned outside of their specified alignment and insertion limits. Operation beyond specified

Insert:
One Power Range Neutron Flux channel may be bypassed, reducing the number of required channels from "4" to "3".

(continued)

BASES

LCO (continued)

limits is permitted for the purpose of performing PHYSICS TESTS and poses no threat to fuel integrity, provided the SRs are met.

The requirements of LCO 3.1.4, LCO 3.1.5, LCO 3.1.6, LCO 3.1.7, and LCO 3.4.2 may be suspended during the performance of PHYSICS TESTS provided:

a. RCS lowest loop average temperature is $\geq$ 541°F; and

b. SDM is $\geq$ 1.6% Δ k/k.

Insert:
and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels

APPLICABILITY

This LCO is applicable in MODE 2 when performing low power PHYSICS TESTS. The applicable PHYSICS TESTS are performed in MODE 2 at HZP. Other PHYSICS TESTS are performed in MODE 1 and are addressed in LCO 3.1.9, "PHYSICS TESTS Exceptions - MODE 1."

ACTIONS

A.1 and A.2

If the SDM requirement is not met, boration must be initiated promptly. A Completion Time of 15 minutes is adequate for an operator to correctly align and start the required systems and components. The operator should begin boration with the best source available for the plant conditions. Boration will be continued until SDM is within limit.

Suspension of PHYSICS TESTS exceptions requires restoration of each of the applicable LCOs to within specification.

B.1

When THERMAL POWER is >5% RTP, the only acceptable action is to open the reactor trip breakers (RTBs) to prevent operation of the reactor beyond its design limits. Immediately opening the RTBs will shut down the reactor and prevent operation of the reactor outside of its design limits.

(continued)

BASES

ACTIONS (continued)

C.1

When the RCS lowest T_{avg} is < 541°F, the appropriate action is to restore T_{avg} to within its specified limit. The allowed Completion Time of 15 minutes provides time for restoring T_{avg} to within limits without allowing the plant to remain in an unacceptable condition for an extended period of time. Operation with the reactor critical and with temperature below 541°F could violate the assumptions for accidents analyzed in the safety analyses.

D.1

If the Required Actions cannot be completed within the associated Completion Time, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within an additional 15 minutes. The Completion Time of 15 additional minutes is reasonable, based on operating experience, for reaching MODE 3 in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.10.1

The power range and intermediate range neutron detectors must be verified to be OPERABLE in MODE 2 by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation." A CHANNEL OPERATIONAL TEST is performed on each power range and intermediate range channel ~~within 12 hours~~ prior to initiation of the PHYSICS TESTS. This will ensure that the RTS is properly aligned to provide the required degree of core protection during the performance of the PHYSICS TESTS. ~~The 12 hour time limit is sufficient to ensure that the instrumentation is OPERABLE shortly before initiating PHYSICS TESTS.~~

SR 3.1.10.2

Verification that the RCS lowest loop T_{avg} is $\geq$ 541°F (value does not account for instrument error, Ref. 7) will ensure that the unit is not operating in a condition that could invalidate the safety analyses. Verification of the RCS temperature at a Frequency of 30 minutes during the performance of the PHYSICS TESTS will ensure that the initial conditions of the safety analyses are not violated.

(continued)

ENCLOSURE 3
REVISED TECHNICAL SPECIFICATION PAGES

AFFECTED PAGES

Technical Specification

3.1-23
3.1-24

Technical Specification Bases

B 3.1-67
B 3.1-68
B 3.1-69

3.1 REACTIVITY CONTROL SYSTEMS

3.1.10 PHYSICS TESTS Exceptions—MODE 2

LCO 3.1.10 During the performance of PHYSICS TESTS, the requirements of

LCO 3.1.4, "Moderator Temperature Coefficient (MTC)";
LCO 3.1.5, "Rod Group Alignment Limits";
LCO 3.1.6, "Shutdown Bank Insertion Limits";
LCO 3.1.7, "Control Bank Insertion Limits"; and
LCO 3.4.2, "RCS Minimum Temperature for Criticality"

may be suspended, and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels provided:

a. RCS lowest loop average temperature is $\geq$ 541°F; and

b. SDM is $\geq$ 1.6% $\Delta k/k$.

APPLICABILITY: MODE 2 during PHYSICS TESTS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SDM not within limit.	A.1 Initiate boration to restore SDM to within limit. AND A.2 Suspend PHYSICS TESTS exceptions.	15 minutes 1 hour
B. THERMAL POWER not within limit.	B.1 Open reactor trip breakers.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. RCS lowest loop average temperature not within limit.	C.1 Restore RCS lowest loop average temperature to within limit.	15 minutes
D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3.	15 minutes

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.10.1	Perform a CHANNEL OPERATIONAL TEST on power range and intermediate range channels per SR 3.3.1.7, SR 3.3.1.8, and Table 3.3.1-1.	Prior to initiation of PHYSICS TESTS
SR 3.1.10.2	Verify the RCS lowest loop average temperature is $\geq$ 541°F.	30 minutes
SR 3.1.10.3	Verify SDM is $\geq$ 1.6% $\Delta k/k$.	24 hours

BASES

APPLICABLE SAFETY ANALYSES (continued)

problems, may require the operating control or process variables to deviate from their LCO limitations.

The FSAR defines requirements for initial testing of the facility, including PHYSICS TESTS. Table 14.2-2 summarizes the zero, low power, and power tests. Requirements for reload fuel cycle PHYSICS TESTS are defined in ANSI/ANS-19.6.1-1985 (Ref. 4). Although these PHYSICS TESTS are generally accomplished within the limits for all LCOs, conditions may occur when one or more LCOs must be suspended to make completion of PHYSICS TESTS possible or practical. This is acceptable as long as the fuel design criteria are not violated. When one or more of the requirements specified in LCO 3.1.4, "Moderator Temperature Coefficient (MTC)," LCO 3.1.5, LCO 3.1.6, LCO 3.1.7, and LCO 3.4.2 are suspended for PHYSICS TESTS, the fuel design criteria are preserved as long as the power level is limited to $\leq$ 5% RTP, the reactor coolant temperature is kept $\geq$ 541°F, and SDM is $\geq$ 1.6% $\Delta k/k$.

The PHYSICS TESTS include measurement of core nuclear parameters or the exercise of control components that affect process variables. Among the process variables involved are AFD and QPTR, which represent initial conditions of the unit safety analyses. Also involved are the movable control components (control and shutdown rods), which are required to shut down the reactor. The limits for these variables are specified for each fuel cycle in the COLR. PHYSICS TESTS meet the criteria for inclusion in the Technical Specifications, since the components and process variable LCOs suspended during PHYSICS TESTS meet Criteria 1, 2, and 3 of the NRC Policy Statement.

Reference 6 allows special test exceptions (STEs) to be included as part of the LCO that they affect. It was decided, however, to retain this STE as a separate LCO because it was less cumbersome and provided additional clarity.

LCO

This LCO allows the reactor parameters of MTC and minimum temperature for criticality to be outside their specified limits. In addition, it allows selected control and shutdown rods to be positioned outside of their specified alignment and insertion limits. One Power Range Neutron Flux channel may be bypassed, reducing the number of required channels from "4" to "3". Operation beyond specified

(continued)

BASES

LCO (continued)

limits is permitted for the purpose of performing PHYSICS TESTS and poses no threat to fuel integrity, provided the SRs are met.

The requirements of LCO 3.1.4, LCO 3.1.5, LCO 3.1.6, LCO 3.1.7, and LCO 3.4.2 may be suspended and the number of required channels for LCO 3.3.1, "RTS Instrumentation," Functions 2, 3, 6, and 16.e, may be reduced to "3" required channels during the performance of PHYSICS TESTS provided:

a. RCS lowest loop average temperature is $\geq$ 541°F; and

b. SDM is $\geq$ 1.6% Δ k/k.

APPLICABILITY

This LCO is applicable in MODE 2 when performing low power PHYSICS TESTS. The applicable PHYSICS TESTS are performed in MODE 2 at HZP. Other PHYSICS TESTS are performed in MODE 1 and are addressed in LCO 3.1.9, "PHYSICS TESTS Exceptions - MODE 1."

ACTIONS

A.1 and A.2

If the SDM requirement is not met, boration must be initiated promptly. A Completion Time of 15 minutes is adequate for an operator to correctly align and start the required systems and components. The operator should begin boration with the best source available for the plant conditions. Boration will be continued until SDM is within limit.

Suspension of PHYSICS TESTS exceptions requires restoration of each of the applicable LCOs to within specification.

B.1

When THERMAL POWER is >5% RTP, the only acceptable action is to open the reactor trip breakers (RTBs) to prevent operation of the reactor beyond its design limits. Immediately opening the RTBs will shut down the reactor and prevent operation of the reactor outside of its design limits.

(continued)

BASES

ACTIONS (continued)

C.1

When the RCS lowest T_{avg} is < 541°F, the appropriate action is to restore T_{avg} to within its specified limit. The allowed Completion Time of 15 minutes provides time for restoring T_{avg} to within limits without allowing the plant to remain in an unacceptable condition for an extended period of time. Operation with the reactor critical and with temperature below 541°F could violate the assumptions for accidents analyzed in the safety analyses.

D.1

If the Required Actions cannot be completed within the associated Completion Time, the plant must be brought to a MODE in which the requirement does not apply. To achieve this status, the plant must be brought to at least MODE 3 within an additional 15 minutes. The Completion Time of 15 additional minutes is reasonable, based on operating experience, for reaching MODE 3 in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.10.1

The power range and intermediate range neutron detectors must be verified to be OPERABLE in MODE 2 by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation." A CHANNEL OPERATIONAL TEST is performed on each power range and intermediate range channel prior to initiation of the PHYSICS TESTS. This will ensure that the RTS is properly aligned to provide the required degree of core protection during the performance of the PHYSICS TESTS.

SR 3.1.10.2

Verification that the RCS lowest loop T_{avg} is $\geq$ 541°F (value does not account for instrument error, Ref. 7) will ensure that the unit is not operating in a condition that could invalidate the safety analyses. Verification of the RCS temperature at a Frequency of 30 minutes during the performance of the PHYSICS TESTS will ensure that the initial conditions of the safety analyses are not violated.

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