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Ref: 10CFR50.90

CPSES-200501537
Log # TXX-05132
File # 00236

December 12, 2005

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
LICENSE AMENDMENT REQUEST (LAR) 05-001
REVISION TO TECHNICAL SPECIFICATION SURVEILANCE REQUIREMENTS 3.3.1.2 AND 3.3.1.3, "REACTOR TRIP SYSTEM INSTRUMENTATION" (RTS)

Dear Sir or Madam:

Pursuant to 10CFR50.90, TXU Generation Company LP (TXU Power) hereby requests an amendment to the CPSES Unit 1 Operating License (NPF-87) and CPSES Unit 2 Operating License (NPF-89) by incorporating the attached change into the CPSES Unit 1 and 2 Technical Specifications. This change request applies to both Units.

The proposed changes are based on the NRC-approved Technical Specifications Task Force Improved Standard Technical Specifications Change Traveler 371-A, Rev.1, "NIS Power Range Channel Daily SR TS Change to Address Low Power Decalibration" (TSTF 371-A). NUREG-1431, Revision 3.0, "Standard Technical Specifications, Westinghouse Plants" (STS) has incorporated TSTF 371-A. The proposed Technical Specifications (TS) changes to SR 3.3.1.2 and SR 3.3.1.3 are consistent with the wording in STS except where modified to account for plant specific differences. Additionally, the proposed changes to the TS Bases correspond and support the proposed changes to TS SR 3.3.1.2 and SR 3.3.1.3 and are similar to the wording in STS to account for plant specific differences.

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Attachment 1 provides a detailed description of the proposed changes, a technical analysis of the proposed changes, TXU Power's determination that the proposed changes do not involve a significant hazard consideration, a regulatory analysis of the proposed changes, and an environmental evaluation. Attachment 2 provides the affected Technical Specification (TS) pages marked-up to reflect the proposed changes. Attachment 3 provides proposed changes to the Technical Specification Bases for information only. These changes will be processed per CPSES site procedures. Attachment 4 provides retyped Technical Specification pages which incorporate the requested changes. Attachment 5 provides retyped Technical Specification Bases pages which incorporate the proposed changes.

TXU Power requests approval of the proposed License Amendment by December 12, 2006 to be implemented within 120 days of the issuance of the license amendment. The approval date was administratively selected to allow for NRC review but the plant does not require this amendment to allow continued safe full power operations.

In accordance with 10CFR50.91(b), TXU Power is providing the State of Texas with a copy of this proposed amendment.

This communication contains no new or revised commitments.

Should you have any questions, please contact Ms. Tamera J. Ervin at (254) 897-6902.

I state under penalty of perjury that the foregoing is true and correct.

Executed on December 12, 2005.

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC
Its General Partner

Mike Blevins

By: [signature]
R. Flores
Site Vice President

TJE

Attachments
1. Description and Assessment
2. Markup of Technical Specifications pages
3. Markup of Technical Specifications Bases pages (for information)
4. Retyped Technical Specification Pages
5. Retyped Technical Specification Bases Pages (for information)

c - B. S. Mallett, Region IV
M. C. Thadani, NRR
Resident Inspectors, CPSES

Ms. Alice Rogers
Bureau of Radiation Control
Texas Department of Public Health
1100 West 49th Street
Austin, Texas 78756-3189

ATTACHMENT 1 to TXX-05132

DESCRIPTION AND ASSESSMENT

LICENSEE'S EVALUATION

1.0 DESCRIPTION

By this letter, TXU Generation Company LP (TXU Power) requests an amendment to the CPSES Unit 1 Operating License (NPF-87) and CPSES Unit 2 Operating License (NPF-89) by incorporating the attached changes into the CPSES Unit 1 and 2 Technical Specifications.

Proposed change LAR 05-001 is a request to revise Technical Specifications (TS), "Reactor Trip System Instrumentation" (RTS) Surveillance Requirements (SR) 3.3.1.2 and SR 3.3.1.3 for Comanche Peak Steam Electric Station (CPSES) Units 1 and 2. The proposed changes are based on the NRC-approved Technical Specifications Task Force Improved Standard Technical Specifications Change Traveler 371-A, Rev.1, "NIS Power Range Channel Daily SR TS Change to Address Low Power Decalibration" (TSTF 371-A). NUREG-1431, Revision 3, "Standard Technical Specifications, Westinghouse Plants" (STS) has incorporated TSTF 371-A. The proposed changes to SR 3.3.1.2 and SR 3.3.1.3 are consistent with the wording in STS except where modified to account for plant specific differences. Additionally, the proposed changes to the TS Bases correspond to and support the proposed changes to SR 3.3.1.2 and SR 3.3.1.3 and are similar to the wording in STS to account for plant specific differences.

Currently, when operating above 15% Rated Thermal Power (RTP), TS SR 3.3.1.2 requires the daily adjustment of the Nuclear Instrumentation System (NIS) Power Range channel outputs when the absolute difference between NIS Power Range channel outputs and secondary side calorimetric power is greater than 2% RTP. Additionally, this same SR requires the daily adjustment of N-16 Power Monitor channel outputs when the absolute difference between N-16 Power Monitor channel outputs and secondary side calorimetric power is greater than 2% RTP. Compliance with these TS requirements may result in a non-conservative channel calibration during reduced power operations. The proposed changes resolve this undesirable condition by requiring adjustment of the NIS Power Range and N-16 Power Monitor channel outputs only when the calorimetric heat balance calculated power is greater than either the NIS Power Range channel or N-16 Power Monitor channel outputs by +2% RTP.

No changes to the CPSES Final Safety Analysis Report are anticipated at this time as a result of this License Amendment Request.

2.0 PROPOSED CHANGE

The proposed changes would revise TS SR 3.3.1.2, which reads, "Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) and N-16 Power Monitor channel output." SR 3.3.1.2 Note number 1 states, "Adjust NIS and N-16 Power Monitor channel if absolute difference is > 2%." SR 3.3.1.2 Note 2 states, "Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP." This surveillance is only applicable to RTS functions 2.a, 6, and 7 of TS Table 3.3.1-1, Power Range Neutron Flux - High, Overtemperature N-16, and Overpower N-16, respectively. The proposed changes will revise SR 3.3.1.2 to move the contents of Note 1 to the SR. The SR will be revised to state, "Compare results of calorimetric heat balance calculation to NIS Power Range channel and N-16 Power Monitor channel outputs. Adjust NIS Power Range channel outputs if calorimetric heat balance calculation exceeds NIS Power Range channel outputs by more than +2% RTP. Adjust N-16 Power Monitor channel outputs if calorimetric heat balance calculation exceeds N-16 Power Monitor channel outputs by more than +2% RTP."

The proposed changes to the TS Bases are provided for information only.

The proposed changes to the TS Bases for SR 3.3.1.2 provide a summary justification for the surveillance and clarification when channel adjustments must be made.
Currently, the second sentence within the first paragraph of the TS Bases SR 3.3.1.2 reads, "If the calorimetric exceeds the NIS and N-16 power indications by > 2% RTP, the NIS and N-16 functions are not declared inoperable, but the channel gains must be adjusted consistent with the calorimetric power." This sentence will be revised to read, "If the calorimetric exceeds the NIS or N-16 power indications by more than +2% RTP, the affected NIS and N-16 functions are not declared inoperable, but the channel gains must be adjusted consistent with the calorimetric power."

The proposed changes to the TS Bases SR 3.3.1.2 also include the following five new paragraphs to be inserted after the existing first paragraph.

"If the NIS and N-16 power indications are normalized to within 2% RTP of the calorimetric power, and reactor power is then reduced, the NIS power indication will be lower than actual due to downcomer temperature shielding and neutron flux redistribution effects. The N-16 power indication will not be influenced by these effects. If a calorimetric measurement is then performed, using the Leading Edge Flow Meter (LEFM) to determine the feedwater flow, the NIS power indication may be normalized to the calorimetric power. Upon a subsequent return to near full power, the NIS power indication may become higher than actual due to the same downcomer temperature shielding and neutron flux redistribution effects. Again, the N-16 power indication will not be influenced by these effects.

The uncertainty associated with the calorimetric power measurement using the LEFM is independent of the reactor power level down to less than 20% RTP. However, if the LEFM is unavailable, and the calorimetric power measurement is performed using the feedwater venturis as the source of the feedwater flow information, additional considerations are required.

If the venturi-based calorimetric is performed at reduced power (< 55% RTP), adjusting the Power Range indication in the increasing power direction will assure a reactor trip below the safety analysis limit. Making no adjustment to the Power Range channel in the decreasing power direction due to a reduced power venturi-based calorimetric assures a reactor trip consistent with the safety analyses. Based on plant calculations, 55% RTP is the lowest power at which the calorimetric uncertainty, performed with the feedwater venturis and the precision set of transmitters, results in an uncertainty of less than 2%.

This allowance does not preclude making indicated power adjustments, if desired, when the venturi-based calorimetric heat balance calculation is less than the NIS or N-16 channel outputs. To provide close agreement between indicated power and to preserve operating margin, the NIS and N-16 power indications are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the NIS or N-16 power indications are adjusted in the decreasing power direction based on a reduced power venturi-based calorimetric (< 55% RTP). This action may introduce a non-conservative bias at higher power levels which may result in a reactor trip above the safety analysis limit. The most significant cause of the potential non-conservative bias is the decreased accuracy of the venturi-based calorimetric measurement at reduced power conditions. The primary error contributor to the instrument uncertainty for a secondary side venturi-based power calorimetric measurement is the feedwater flow measurement, which is a differential pressure (ΔP) measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP as power decreases, when translated into flow, the uncertainty increases as a square term. Thus, a 1% flow error at 100% power can approach a 10% flow error at 30% RTP even though the ΔP error has not changed.

An evaluation of extended operations at reduced power conditions would likely conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux - High bistables to ≤ 90% RTP when: 1) the Power Range channel output is adjusted in the decreasing power direction due to a reduced power venturi-based calorimetric below 55% RTP; or 2) for a post refueling startup (consistent with the Bases for SR 3.4.1.4). The evaluation of extended operation at reduced power conditions would also likely conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the intermediate range about P-10 (nominally 10% RTP) to allow enabling of the Power Range Neutron Flux – Low setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux – High bistables are reset to their nominal value high setpoint, the NIS or N-16 power indication adjustment must be confirmed based on a LEFM-based calorimetric or on a venturi-based calorimetric performed at ≥ 55% RTP."

Additionally in TS Bases for SR 3.3.1.2, the proposed changes will delete the first two sentences of the existing second paragraph which read, "Two Notes modify SR 3.3.1.2. The first Note indicates that the NIS or N-16 power indications shall be adjusted consistent with the calorimetric results if the absolute difference between the NIS or N-16 power indications and the calorimetric is > 2% RTP." In the third sentence of the same paragraph, the word "second" will be deleted by the proposed changes. Presently, the fourth sentence in the same paragraph reads, "At lower power levels, calorimetric data are inaccurate." The proposed changes will replace the fourth sentence with, "A power level of 15% RTP is chosen based on plant stability; i.e., the turbine generator is synchronized to the grid and rod control is in the automatic mode." Currently, the last sentence in the third paragraph reads, "Together these factors demonstrate the change in the absolute difference between NIS, N-16 and heat balance calculated powers rarely exceed 2% in any 24 hour period." The last sentence will be revised by the proposed changes to read, "Together these factors demonstrate that a difference of more than +2% RTP between the calorimetric heat balance calculation and NIS Power Range channel output or N-16 Power Monitor output is not expected in any 24 hour period."

The proposed changes would also revise TS SR 3.3.1.3 to move the text of Note 1 to the SR. This proposed change provides consistency with the change made in TS SR 3.3.1.2 for moving Note 1. The SR is revised to state, "Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%."

The proposed changes would revise TS Bases SR 3.3.1.3 to reflect moving the text of Note 1 to the SR. At the end of the first paragraph, add the sentence, "The excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%." The proposed changes also delete the first two sentences in the third paragraph, which currently read, "Two Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%." Also in the third paragraph, the third and fourth sentences read, "Note 2 clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 50% RTP. Note 2 allows power ascensions and associated testing to be conducted in a controlled and orderly manner, at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be OPERABLE." The proposed changes will revise these two sentences as follows, "A Note clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 50% RTP. The Note allows power ascensions and associated testing to be conducted in a controlled and orderly manner, at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be OPERABLE."

No changes to the CPSES Final Safety Analysis Report are anticipated at this time as a result of this License Amendment Request.

In summary, the proposed changes are based on the NRC-approved Technical Specifications Task Force Improved Standard Technical Specifications Change Traveler 371-A, Rev.1, "NIS Power Range Channel Daily SR TS Change to Address Low Power Decalibration" (TSTF 371-A). NUREG-1431, Revision 3.0, "Standard Technical Specifications, Westinghouse Plants" (STS) has incorporated TSTF 371-A. The proposed Technical Specifications (TS) changes to SR 3.3.1.2 and SR 3.3.1.3 are consistent with the wording in STS except where modified to account for plant specific differences. Additionally, the proposed changes to the TS Bases correspond to and support the proposed changes to TS SR 3.3.1.2 and SR 3.3.1.3 and are similar to the wording in STS.

3.0 BACKGROUND

The NIS Power Range and N-16 Power Monitor channels provide continuous relative indications of the reactor power. These power indications are compared and normalized to a secondary plant calorimetric heat balance measurement on a daily basis. The uncertainty associated with the secondary plant calorimetric measurement is explicitly considered in the safety analyses.

The predominant contribution to the secondary plant calorimetric measurement uncertainty is the uncertainty associated with the feedwater flow measurement. Traditionally, a differential pressure (ΔP) transmitter across a venturi in each main feedwater line has been used to provide the feedwater flow. However, the uncertainty associated with the flow derived from the ΔP indication can be large and increases as the flow deviates from the optimum conditions for which the ΔP transmitter was calibrated (i.e., conditions corresponding to 100% power). In other words, the uncertainty at low power levels (low feedwater flow rates) is significantly greater than at full power conditions.

More recently, leading edge flow meters (LEFMs) have been used to provide the feedwater flow input to the secondary plant calorimetric measurement. The uncertainty associated with the LEFM is relatively small and is relatively independent of the actual feedwater flow.

If the NIS Power Range or N-16 Power Monitor power indications are normalized to a secondary plant calorimetric measurement performed at reduced powers and which is based on the use of the feedwater flow venturis, the potential exists to introduce relatively large calibration errors. If a transient or accident that required a reactor trip on a NIS or N-16-based reactor trip function were then assumed to occur, these calibration errors could preclude the occurrence of a reactor trip at conditions consistent with those conditions bounded by the safety analyses.

The NIS Power Range and N-16 Power Monitor indications provide input to the Reactor Trip System; specifically, the Power Range Neutron Flux – High, Overtemperature N-16, and Overpower N-16 reactor trip functions. Included in the uncertainty analyses used to develop the Nominal Trip Setpoints and the Allowable Values for each of these functions is an allowance of 2% RTP for the difference between the indicated power and the calorimetric power.

Currently, SR 3.3.1.2 requires comparing the results of the calorimetric heat balance calculation to the NIS Power Range and N-16 Power Monitor channel outputs. Specifically, SR 3.3.1.2 Note 1 requires that the NIS Power Range and N-16 Power Monitor channel outputs be adjusted if the absolute difference of either output is > 2% RTP. SR 3.3.1.2 is required to be performed every 24 hours (daily). Then the NIS and N-16 power indications must be normalized to indicate within at least ± 2% RTP of the calorimetric measurement. Compliance with this TS requirement may result in a non-conservative NIS and N-16 power indications if these indications are normalized to a venturi-based calorimetric measurement performed during reduced power operations. The proposed change will resolve this potential condition by requiring adjustment of the NIS Power Range channel and the N-16 Power Monitor channel outputs only when the calorimetric heat balance calculated power is greater than the indicated power by +2% RTP.

4.0 TECHNICAL ANALYSIS

The purpose of this analysis is to assess the impact of the proposed Nuclear Instrumentation System (NIS) Power Range and Nitrogen-16 (N-16) Power Monitor surveillance change on the licensing basis and demonstrate that these changes will not adversely affect the subsequent safe operation of the plant.

Note that the NRC-approved Technical Specifications Task Force Improved Standard Technical Specifications Change Traveler 371-A, Rev.1, "NIS Power Range Channel Daily SR TS Change to Address Low Power Decalibration" (TSTF 371-A) only addresses the NIS Power Range indications. Because Comanche Peak Steam Electric Station (CPSES) also utilizes a N-16 Power Monitor System as part of the Reactor Trip System Instrumentation, CPSES Technical Specifications differ from Standard Technical Specifications to include calibration requirements for the N-16 Power Monitor indications as well as the NIS Power Range indications. Therefore, CPSES has deviated from TSTF 371-A when necessary to include reference to the N-16 Power Monitor indications.

When operating above 15% Rated Thermal Power (RTP), each NIS Power Range and N-16 Power Monitor indication is compared to thermal power calculations based on a secondary heat balance (i.e., calorimetric measurement), and normalized (i.e., calibrated) to that measurement as required by Technical Specifications (TS) Surveillance Requirement (SR) 3.3.1.2. The normalization is accomplished by adjusting the gain of each channel summing amplifier such that the indicated power matches the calorimetric power. The amplifier output provides the input signal to the associated reactor trip channel as well as other permissive and control interlock bistables and associated indicators.

If the NIS Power Range and N-16 Power Monitor indications are normalized to a calorimetric measurement using the feedwater venturis and performed at a low power condition, the relatively large uncertainty associated with the calorimetric measurement could result in a non-conservative power indication. In other words, the NIS and N-16 power indications could be more than 2% lower than the actual power. If a transient or accident that required a reactor trip on a NIS or N-16-based reactor trip function were then assumed to occur, a reactor trip signal may not be generated as assumed in the safety analyses. The proposed changes would alleviate this potential condition by only requiring NIS or N-16 normalizations if the indicated power is to be increased. In this situation, the indicated power would be greater than or equal to the actual power, and an ensuring transient or accident would result in a reactor trip signal within the assumptions of the safety analyses.

During normal operation at full power conditions, the revision to the normalization criteria for the daily surveillance will have no effect. During operation following a refueling outage, existing administrative controls (see, e.g., the Bases to SR 3.4.1.4) provide adequate protection while operating at reduced power levels. During short-term operation at reduced power levels, the revision to the criteria for implementation of the daily surveillance will have a conservative effect on the NIS and N-16 power indications (i.e., indicated power will be greater than actual power), thereby preserving the validity of the safety analyses. The proposed change has no other effects on the plant design and licensing bases or on plant operations.

<u>Conclusion</u>

Based on the above, the proposed changes can be implemented without adverse impact to the safe operation of the plant.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

TXU Power has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10CFR50.92, "Issuance of amendment," as discussed below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No

   Overall protection system performance will remain within the bounds of the previously performed accident analyses since there are no hardware changes. The Reactor Trip System (RTS) Instrumentation will be unaffected. Protection systems will continue to function in a manner consistent with the plant design basis. All design, material, and construction standards that were applicable prior to the request are maintained.

   The probability and consequences of accidents previously evaluated in the Final Safety Analysis Report (FSAR) are not adversely affected because the change to the daily surveillance for the normalization of the Nuclear Instrumentation System (NIS) Power Range and Nitrogen-16 (N-16) Power Monitor indications assures the conservative response of the channel even at reduced power levels.

   The proposed changes will not affect the probability of any event initiators. There will be no degradation in the performance of, or an increase in the number of challenges imposed on, safety-related equipment assumed to function during an accident situation. There will be no change to normal plant operating parameters or accident mitigation performance.

   The proposed changes will not alter any assumptions or change any mitigation actions in the radiological consequence evaluations in the FSAR.

   Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No

   There are no hardware changes nor are there any changes in the method by which any safety-related plant system performs its safety function. This amendment will not affect the normal method of plant operation or change any operating parameters. No performance requirements or response time limits will be affected.

   No new accident scenarios, transient precursors, failure mechanisms, or limiting single failures are introduced as a result of this amendment. There will be no adverse effect or challenges imposed on any safety-related system as a result of this amendment.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

   Response: No

   The proposed changes require a revision to the criteria for implementation of NIS Power Range and N-16 Power Monitor indication adjustments based on secondary power calorimetric calculations; however, the changes do not eliminate any RTS surveillances or alter the frequency of surveillances required by the TS. The revision to the criteria for implementation of the daily surveillance will remove a requirement for normalization of the NIS Power Range and N-16 Power Monitor indications at reduced power conditions that could result in safety performance outside the bounds of the safety analyses. Therefore, the Nominal Trip Setpoints and Allowable Values for the Reactor Trip System functions, as specified in the TS and related Bases, as well as the safety analysis limits assumed in the transient and accident analyses, are unchanged. None of the acceptance criteria for any accident analysis is changed.

   There will be no effect on the manner in which safety limits or limiting safety systems settings are determined nor will there be any effect on those plant systems necessary to assure the accomplishment of protection functions. There will be no impact on the overpower limit, departure from nucleate boiling ratio (DNBR) limits, heat flux hot channel factor (F_Q), nuclear enthalpy rise hot channel factor ($F\Delta H$), loss of coolant accident peak cladding temperature (LOCA PCT), peak local power density, or any other margin of safety. The radiological dose consequences are unaffected by this proposed change.

The imposition of appropriate surveillance testing requirements will not reduce any margin of safety since the changes will assure that safety analysis assumptions on equipment operability are verified on a periodic frequency.

Therefore the proposed change does not involve a reduction in a margin of safety.

Based on the above evaluations, TXU Power concludes that the proposed amendment(s) present no significant hazards under the standards set forth in 10CFR50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

The regulatory bases and guidance documents associated with the systems discussed in this amendment application include:

General Design Criterion (GDC) 13 requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems.

GDC 20 requires that the protection system(s) shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

GDC 21 requires that the protection system(s) shall be designed for high functional reliability and testability.

GDC 22 through GDC 25 and GDC 29 require various design attributes for the protection system(s), including independence, safe failure modes, separation from control systems, requirements for reactivity control malfunctions, and protection against anticipated operational occurrences.

Regulatory Guide (RG) 1.22 discusses an acceptable method of satisfying GDC 20 and GDC 21 regarding the periodic testing of protection system actuation functions. These periodic tests should duplicate, as closely as practicable, the performance that is required of the actuation devices in the event of an accident.

10 CFR 50.55a(h) requires that the protection systems meet IEEE 279-1971. Sections 4.9 – 4.11 of IEEE 279-1971 discuss testing provisions for protection systems.

There have been no changes to the RTS instrumentation design that could affect compliance with the above regulatory requirements and guidance. This proposed amendment revises surveillance testing requirements on the NIS Power Range neutron flux channels and N-16 Power Monitor channels consistent with those requirements and guidance documents. Therefore, the requirements and guidelines in GDC 13, GDC 20, GDC 21, GDC 22, GDC 23, GDC 24, GDC 25, GDC 29, RG 1.22, and 10 CFR 50.55a(h) will continue to be met.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

CPSES has determined that the proposed amendment would change requirements with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. CPSES has evaluated the proposed amendment and has determined that the amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion 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 amendment is not required.

7.0. PRECEDENTS

7.1 Based on TSTF-371-A, license amendments were approved for Vogtle Electric Generating Plant, Units 1 and 2 (ML040480089). The Vogtle TS changes proposed by the TSTF were incorporated as written. The Vogtle TS Bases changes were similar to the TSTF except where modified due to for plant specific differences.

7.2 Based on TSTF-371-A, a license amendment was issued for Wolf Creek Nuclear Operation Corporation (WCNOC) (ML022250433). The WCNOC TS changes proposed by the TSTF were incorporated as written. The WCNOC TS Bases changes were similar to the TSTF except where modified to account for plant specific differences.

7.3 Based on TSTF-371 and prior to NRC approval of TSTF-371-A, a License amendment was approved for Callaway Plant, Unit 1 (ML013460493). The Calloway TS changes proposed by the TSTF were incorporated as written. The Calloway TS Bases changes were similar to the TSTF except where modified due to plant specific differences.

7.4 Based on TSTF-371-A, License amendments were issued to Diablo Canyon (ML031550405). The Diablo Canyon TS and TS Bases changes were not incorporated as written, but similar to those proposed by the TSTF to account for plant specific differences.

8.0. REFERENCES

8.1 Industry/TSTF Standard Technical Specification Change Traveler TSTF-371-A, Revision 1, "NIS Power Range Channel Daily SR TS Change to Address Low Power Decalibration," dated March 2, 2001.

8.2 NUREG-1431, Revision 3.0, "Standard Technical Specifications, Westinghouse Plants," March 2004.

8.3 Vogtle Electric Generating Plant, Units 1 and 2 License Amendments 131 and 110, Dockets 50-424 and 50-425, "Issuance of Amendments," dated April 1, 2004.

8.4 Wolf Creek Nuclear Operating Corporation, License Amendment 148, Docket 50-482, "Issuance of Amendment," dated October 2, 2002.

8.5 Calloway Plant, License Amendment 148, Docket 50-483, "Issuance of Amendment," dated February 5, 2002.

8.6 Diablo Canyon, Units 1 and 2 License Amendments 157 and 175, Dockets 50-275 and 50-323, "Issuance of Amendments," dated June 2, 2003.

ATTACHMENT 2 to TXX-05132

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)

Pages 3.3-10
INSERTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.2 INSERT 1	-------------------NOTES------------------- 1. Adjust NIS and N-16 Power Monitor channel if absolute difference is > 2%. 2. Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. --- Compare results of calorimetric heat balance calculation to Nuclear Instrumentation System (NIS) and N-16 Power Monitor channel output.	24 hours
SR 3.3.1.3 INSERT 2	-------------------NOTES------------------- 1. Adjust NIS channel if absolute difference is ≥ 3%. 2. Not required to be performed until 24 hours after THERMAL POWER is ≥ 50% RTP. --- Compare results of the incore detector measurements to NIS AFD.	31 effective full power days (EFPD)
SR 3.3.1.4	-------------------NOTE------------------- This Surveillance must be performed on the reactor trip bypass breaker for the local manual shunt trip only prior to placing the bypass breaker in service. --- Perform TADOT.	62 days on a STAGGERED TEST BASIS

(continued)

INSERTS

INSERT 1

NIS Power Range channel and N-16 Power Monitor channel outputs. Adjust NIS Power Range channel outputs if calorimetric heat balance calculation exceeds NIS Power Range channel outputs by more than +2% RTP. Adjust N-16 Power Monitor channel outputs if calorimetric heat balance calculation exceeds N-16 Power Monitor channel outputs by more than +2% RTP.

INSERT 2

Nuclear Instrumentation System (NIS)

ATTACHMENT 3 to TXX-05132

PROPOSED TECHNICAL SPECIFICATIONS BASES CHANGES
(Markup For Information Only)

Pages B 3.3-53
B 3.3-54
INSERTS

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1 (continued)

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 excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

INSERT 1

SR 3.3.1.2

INSERT 2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the NIS and N-16 power indications every 24 hours. If the calorimetric exceeds the NIS and N-16 power indications by > 2% RTP, the NIS and N-16 functions are not declared inoperable, but the channel gains must be adjusted consistent with the calorimetric power. If the NIS or N-16 channel outputs cannot be properly adjusted, the channel is declared inoperable.

Two Notes modify SR 3.3.1.2. The first Note indicates that the NIS or N-16 power indications shall be adjusted consistent with the calorimetric results if the absolute difference between the NIS or N-16 power indications and the calorimetric is ≥ 2% RTP. The second Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 24 hours are allowed for performing the first Surveillance after reaching 15% RTP. At lower power levels, calorimetric data are inaccurate. The 24-hour allowance after increasing THERMAL POWER above 15% RTP provides a reasonable time to attain a scheduled power plateau, establish the requisite conditions, perform the required calorimetric measurement and make any required adjustments in a controlled, orderly manner and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be acceptable for subsequent use.

INSERT 3

The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate the

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

INSERT 4

change in the absolute difference between NIS, N-16 and heat balance calculated powers rarely exceeds 2% in any 24 hour period.

In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.

INSERT 5

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted.

INSERT 6

If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This Surveillance is performed to verify the f(Δq) input to the overtemperature N-16 Function.

INSERT 7

Two Notes modify SR 3.3.1.3. Note 1 indicates that the excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%. Note 2 clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 50% RTP. Note 2 allows power ascensions and associated testing to be conducted in a controlled and orderly manner, at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be OPERABLE. Due to such effects as shadowing from the relatively deep control rod insertion and, to a lesser extent, the dependency of the axially-dependent radial leakage on the power level, the relationship between the incore and excore indications of axial flux difference (AFD) at lower power levels is variable. Thus, it is acceptable to defer the calibration of the excore AFD against the incore AFD until more stable conditions are attained (i.e, withdrawn control rods and a higher power level). The AFD is used as an input to the Overtemperature N-16 reactor trip function and for assessing compliance with LCO 3.2.3, "Axial Flux Difference." Due to the DNB benefits gained by administratively restricting the power level to 50% RTP, no limits on AFD are imposed below 50% RTP by LCO 3.2.3; thus, the proposed change is consistent with the LCO 3.2.3 requirements below 50% RTP. Similarly, sufficient DNB margins are realized through operation below 50% RTP that the intended function of the Overtemperature N-16 reactor trip function is maintained, even though the excore AFD indication may not exactly match the incore AFD indication. Based on plant operating experience, 24 hours is a reasonable time frame to limit operation above 50% RTP while completing the procedural steps associated with the surveillance in an orderly manner.

The Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval.

(continued)

INSERTS FOR TS BASES

INSERT 1

If the calorimetric exceeds the NIS or N-16 power indications by more than +2% RTP, the affected NIS and N-16 functions are not declared inoperable, but the channel gains must be adjusted consistent with the calorimetric power.

INSERT 2

If the NIS and N-16 power indications are normalized to within 2% RTP of the calorimetric power, and reactor power is then reduced, the NIS power indication will be lower than actual due to downcomer temperature shielding and neutron flux redistribution effects. The N-16 power indication will not be influenced by these effects. If a calorimetric measurement is then performed, using the Leading Edge Flow Meter (LEFM) to determine the feedwater flow, the NIS power indication may be normalized to the calorimetric power. Upon a subsequent return to near full power, the NIS power indication may become higher than actual due to the same downcomer temperature shielding and neutron flux redistribution effects. Again, the N-16 power indication will not be influenced by these effects.

The uncertainty associated with the calorimetric power measurement using the LEFM is independent of the reactor power level down to less than 20% RTP. However, if the LEFM is unavailable, and the calorimetric power measurement is performed using the feedwater venturis as the source of the feedwater flow information, additional considerations are required.

If the venturi-based calorimetric is performed at reduced power (< 55% RTP), adjusting the Power Range indication in the increasing power direction will assure a reactor trip below the safety analysis limit. Making no adjustment to the Power Range channel in the decreasing power direction due to a reduced power venturi-based calorimetric assures a reactor trip consistent with the safety analyses. Based on plant calculations, 55% RTP is the lowest power at which the calorimetric uncertainty, performed with the feedwater venturis and the precision set of transmitters, results in an uncertainty of less than 2%.

This allowance does not preclude making indicated power adjustments, if desired, when the venturi-based calorimetric heat balance calculation is less than the NIS or N-16 channel outputs. To provide close agreement between indicated power and to preserve operating margin, the NIS and N-16 power indications are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the NIS or N-16 power indications are adjusted in the decreasing power direction based on a reduced power venturi-based calorimetric (< 55% RTP). This action may introduce a non-conservative bias at higher power levels which may result in a reactor trip above the safety analysis limit. The most significant cause of the potential non-conservative bias is the decreased accuracy of the venturi-based calorimetric measurement at reduced power conditions. The primary error contributor to the instrument uncertainty for a secondary side venturi-based power calorimetric measurement is the feedwater flow measurement, which is a differential pressure (ΔP) measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP as power decreases, when translated into flow, the uncertainty increases as a square term. Thus, a 1% flow error at 100% power can approach a 10% flow error at 30% RTP even though the ΔP error has not changed.

An evaluation of extended operations at reduced power conditions would likely conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux - High bistables to ≤ 90% RTP when: 1) the Power Range channel output is adjusted in the decreasing power direction due to a reduced power venturi-based calorimetric below 55% RTP; or 2) for a post refueling startup (consistent with the Bases for SR 3.4.1.4). The evaluation of extended operation at reduced power conditions would also likely conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the *intermediate range about P-10 (nominally 10% RTP) to allow enabling of the Power* Range Neutron Flux – Low setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux – High bistables are reset to their nominal value high setpoint, the NIS or N-16 power indication adjustment must be confirmed based on a LEFM-based calorimetric or on a venturi-based calorimetric performed at ≥ 55% RTP.

INSERT 3

A power level of 15% RTP is chosen based on plant stability; i.e., the turbine generator is synchronized to the grid and rod control is in the automatic mode.

INSERT 4

that a difference of more than +2% RTP between the calorimetric heat balance calculation and NIS Power Range channel output or N-16 Power Monitor output is not expected in any 24 hour period.

INSERT 5

The excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%.

INSERT 6

A Note

INSERT 7

The Note

ATTACHMENT 4 to TXX-05132

RETYPED TECHNICAL SPECIFICATION PAGES

Pages 3.3-10

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.1.2	-----NOTE----- Not required to be performed until 24 hours after THERMAL POWER is ≥ 15% RTP. -----	
	Compare results of calorimetric heat balance calculation to NIS Power Range channel and N-16 Power Monitor channel outputs. Adjust NIS Power Range channel outputs if calorimetric heat balance calculation exceeds NIS Power Range channel outputs by more than +2% RTP. Adjust N-16 Power Monitor channel outputs if calorimetric heat balance calculation exceeds N-16 Power Monitor channel outputs by more than +2% RTP.	24 hours
SR 3.3.1.3	-----NOTE----- Not required to be performed until 24 hours after THERMAL POWER is ≥ 50% RTP. -----	
	Compare results of the incore detector measurements to Nuclear Instrumentation System (NIS) AFD. Adjust NIS channel if absolute difference is ≥ 3%.	31 effective full power days (EFPD)
SR 3.3.1.4	-----NOTE----- This Surveillance must be performed on the reactor trip bypass breaker for the local manual shunt trip only prior to placing the bypass breaker in service. -----	
	Perform TADOT.	62 days on a STAGGERED TEST BASIS

(continued)

ATTACHMENT 5 to TXX-05132

RETYPED TECHNICAL SPECIFICATION BASES PAGES

Pages B 3.3-53
B 3.3-54
B 3.3-54a

SURVEILLANCE REQUIREMENTS

SR 3.3.1.1 (continued)

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 excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying that the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Agreement criteria are determined by the unit staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the sensor or the signal processing equipment has drifted outside its limit.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of the displays associated with the LCO required channels.

SR 3.3.1.2

SR 3.3.1.2 compares the calorimetric heat balance calculation to the NIS and N-16 power indications every 24 hours. If the calorimetric exceeds the NIS or N-16 power indications by more than +2% RTP, the affected NIS and N-16 functions are not declared inoperable, but the channel gains must be adjusted consistent with the calorimetric power. If the NIS or N-16 channel outputs cannot be properly adjusted, the channel is declared inoperable.

If the NIS and N-16 power indications are normalized to within 2% RTP of the calorimetric power, and reactor power is then reduced, the NIS power indication will be lower than actual due to downcomer temperature shielding and neutron flux redistribution effects. The N-16 power indication will not be influenced by these effects. If a calorimetric measurement is then performed, using the Leading Edge Flow Meter (LEFM) to determine the feedwater flow, the NIS power indication may be normalized to the calorimetric power. Upon a subsequent return to near full power, the NIS power indication may become higher than actual due to the same downcomer temperature shielding and neutron flux redistribution effects. Again, the N-16 power indication will not be influenced by these effects.

The uncertainty associated with the calorimetric power measurement using the LEFM is independent of the reactor power level down to less than 20% RTP. However, if the LEFM is unavailable, and the calorimetric power measurement is performed using the feedwater venturis as the source of the feedwater flow information, additional considerations are required.

If the venturi-based calorimetric is performed at reduced power (< 55% RTP), adjusting the Power Range indication in the increasing power direction will assure a reactor trip below the safety analysis limit. Making no adjustment to the Power Range channel in the decreasing power direction due to a reduced power venturi-based calorimetric assures a

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

reactor trip consistent with the safety analyses. Based on plant calculations, 55% RTP is the lowest power at which the calorimetric uncertainty, performed with the feedwater venturis and the precision set of transmitters, results in an uncertainty of less than 2%.

This allowance does not preclude making indicated power adjustments, if desired, when the venturi-based calorimetric heat balance calculation is less than the NIS or N-16 channel outputs. To provide close agreement between indicated power and to preserve operating margin, the NIS and N-16 power indications are normally adjusted when operating at or near full power during steady-state conditions. However, discretion must be exercised if the NIS or N-16 power indications are adjusted in the decreasing power direction based on a reduced power venturi-based calorimetric (< 55% RTP). This action may introduce a non-conservative bias at higher power levels which may result in a reactor trip above the safety analysis limit. The most significant cause of the potential non-conservative bias is the decreased accuracy of the venturi-based calorimetric measurement at reduced power conditions. The primary error contributor to the instrument uncertainty for a secondary side venturi-based power calorimetric measurement is the feedwater flow measurement, which is a differential pressure (ΔP) measurement across a feedwater venturi. While the measurement uncertainty remains constant in ΔP as power decreases, when translated into flow, the uncertainty increases as a square term. Thus, a 1% flow error at 100% power can approach a 10% flow error at 30% RTP even though the ΔP error has not changed.

An evaluation of extended operation at reduced power conditions would likely conclude that it is prudent to administratively adjust the setpoint of the Power Range Neutron Flux - High bistables to ≤ 90% RTP when: 1) the Power Range channel output is adjusted in the decreasing power direction due to a reduced power venturi-based calorimetric below 55% RTP; or 2) for a post refueling startup (consistent with the Bases for SR 3.4.1.4). The evaluation of extended operation at reduced power conditions would also likely conclude that the potential need to adjust the indication of the Power Range Neutron Flux in the decreasing power direction is quite small, primarily to address operation in the intermediate range about P-10 (nominally 10% RTP) to allow enabling of the Power Range Neutron Flux – Low setpoint and the Intermediate Range Neutron Flux reactor trips. Before the Power Range Neutron Flux – High bistables are reset to their nominal value high setpoint, the NIS or N-16 power indication adjustment must be confirmed based on a LEFM-based calorimetric or on a venturi-based calorimetric performed at ≥ 55% RTP.

The Note clarifies that this Surveillance is required only if reactor power is ≥ 15% RTP and that 24 hours are allowed for performing the first Surveillance after reaching 15% RTP. A power level of 15% RTP is chosen based on plant stability; i.e., the turbine generator is synchronized to the grid and rod control is in the automatic mode. The 24-hour allowance after increasing THERMAL POWER above 15% RTP provides a reasonable time to attain a scheduled power plateau, establish the requisite conditions, perform the required calorimetric measurement and make any required adjustments in a controlled, orderly manner and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be acceptable for subsequent use.

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.1.2 (continued)

The Frequency of every 24 hours is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Together these factors demonstrate that a difference of more than +2% RTP between the calorimetric heat balance calculation and NIS Power Range channel output or N-16 Power Monitor output is not expected in any 24 hour period.

In addition, control room operators periodically monitor redundant indications and alarms to detect deviations in channel outputs.

SR 3.3.1.3

SR 3.3.1.3 compares the incore system to the NIS channel output every 31 EFPD. If the absolute difference is ≥ 3%, the NIS channel is still OPERABLE, but must be readjusted. The excore NIS channel shall be adjusted if the absolute difference between the incore and excore AFD is ≥ 3%.

If the NIS channel cannot be properly readjusted, the channel is declared inoperable. This Surveillance is performed to verify the f(Δq) input to the overtemperature N-16 Function.

A Note clarifies that the Surveillance is required only if reactor power is ≥ 50% RTP and that 24 hours is allowed for performing the first Surveillance after reaching 50% RTP. The Note allows power ascensions and associated testing to be conducted in a controlled and orderly manner, at conditions that provide acceptable results and without introducing the potential for extended operation at high power levels with instrumentation that has not been verified to be OPERABLE. Due to such effects as shadowing from the relatively deep control rod insertion and, to a lesser extent, the dependency of the axially-dependent radial leakage on the power level, the relationship between the incore and excore indications of axial flux difference (AFD) at lower power levels is variable. Thus, it is acceptable to defer the calibration of the excore AFD against the incore AFD until more stable conditions are attained (i.e, withdrawn control rods and a higher power level). The AFD is used as an input to the Overtemperature N-16 reactor trip function and for assessing compliance with LCO 3.2.3, "Axial Flux Difference." Due to the DNB benefits gained by administratively restricting the power level to 50% RTP, no limits on AFD are imposed below 50% RTP by LCO 3.2.3; thus, the proposed change is consistent with the LCO 3.2.3 requirements below 50% RTP. Similarly, sufficient DNB margins are realized through operation below 50% RTP that the intended function of the Overtemperature N-16 reactor trip function is maintained, even though the excore AFD indication may not exactly match the incore AFD indication. Based on plant operating experience, 24 hours is a reasonable time frame to limit operation above 50% RTP while completing the procedural steps associated with the surveillance in an orderly manner.

The Frequency of every 31 EFPD is adequate. It is based on unit operating experience, considering instrument reliability and operating history data for instrument drift. Also, the slow changes in neutron flux during the fuel cycle can be detected during this interval.

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