TU ELECTRIC

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10CFR50.36

William J. Cahill, Jr.
Group Vice President

August 9, 1994

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
SUBMITTAL OF LICENSE AMENDMENT REQUEST 94-013
ELIMINATION OF THE HIGH NEGATIVE NEUTRON FLUX RATE TRIP

Gentlemen:

Pursuant to 10CFR50.90, TU Electric 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 changes into the CPSES Units 1 and 2 Technical Specifications. These changes apply equally to CPSES Units 1 and 2.

The "High Negative Neutron Flux Rate" reactor trip function has been identified as a potential source for inadvertent or unnecessary reactor trips. TU Electric proposes to eliminate this trip function based on analyses which demonstrate that the protection provided by the reactor trip function is not required.

Attachment 2 provides a detailed description of the proposed changes, a safety analysis of the changes, and TU Electric's determination that the proposed changes do not involve a significant hazard consideration. Attachment 3 provides the affected Technical Specification pages (NUREG-1468), marked-up to reflect the proposed changes.

In order to take advantage of the reduced likelihood of inadvertent plant trips, TU Electric requests approval of this proposed license amendment as soon as reasonable, subsequent to the completion of the first refueling outage for Unit 2 (December 1994), with implementation of the Technical Specification changes to occur within 30 days after NRC approval.

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

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Should you have any questions, please contact Mr. Bob Dacko at (214) 812-8228.

Sincerely,

William J. Cahill, Jr.

William J. Cahill, Jr.
Group Vice President, Nuclear

By: Roger D. Walker
Roger D. Walker
Regulatory Affairs Manager

BSD
Attachments: 1. Affidavit
2. Description and Assessment
3. Affected Technical Specification page (NUREG-1468) as revised by all approved license amendments

c - Mr. L. J. Callan, Region IV
Mr. T. A. Bergman, NRR
Ms. M. A. Miller, Region IV
Resident Inspectors, CPSES (2)

Mr. D. K. Lacker
Bureau of Radiation Control
Texas Department of Public Health
1100 West 49th Street
Austin, Texas 78704

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Texas Utilities Electric Company	)	Docket Nos. 50-445
	)	50-446
(Comanche Peak Steam Electric	)	License Nos. NPF-87
Station, Units 1 & 2)	)	NPF-89

AFFIDAVIT

Roger D. Walker being duly sworn, hereby deposes and says that he is Regulatory Affairs Manager for TU Electric, the licensee herein; that he is duly authorized to sign and file with the Nuclear Regulatory Commission this License Amendment Request 94-013; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

Roger D. Walker

Roger D. Walker
Regulatory Affairs Manager

STATE OF TEXAS)
)
COUNTY OF DALLAS)

Subscribed and sworn to before me, on this 8th day of August, 1994.

Gayle R. Peck

Notary Public

Gayle R. Peck
Notary Public, State of Texas
My Comm. Expires 01/06/98

DESCRIPTION AND ASSESSMENT

I. BACKGROUND

TU Electric has several ongoing programs to review the plant design and operations of CPSES in order to improve plant safety by minimizing the potential for inadvertent or unnecessary reactor trips. In one of these programs, the "High Negative Neutron Flux Rate" reactor trip function was identified as a candidate for deletion from the Reactor Protection System. The requirement for this trip function was based on an early Westinghouse analysis methodology (Reference 1) which took credit for this trip function to protect against localized Departure from Nucleate Boiling (DNB) following the inadvertent drop of one or more Rod Cluster Control Assemblies (RCCAs). Through the use of more advanced analytical techniques, it has been shown that this protection is not required to prevent DNB. In the current design basis for CPSES Unit 1 and for fuel cycles after the completion of the first fuel cycle for Unit 2, this trip function is not credited in any of the accident analyses nor is it relied upon to provide a diverse reactor trip function.

The inclusion of this function in the Reactor Trip System requires that periodic surveillance be performed to ensure the operability of the trip function. In addition to the expenditure of plant resources to perform the surveillance, the risk of an inadvertent reactor trip is increased. Current procedures require that a channel be put in the tripped condition during testing, thereby reducing the effective trip logic from 2-out-of-4 to 1-out-of-3 coincident logic. The 1-out-of-3 coincident logic is significantly more susceptible to spikes, noise, or personnel errors. By removing this trip function from the Reactor Trip System, the potential for inadvertent plant trips can be reduced with no impact on plant safety.

II. DESCRIPTION OF TECHNICAL SPECIFICATIONS CHANGE REQUEST

The affected Technical Specifications are: 2.2.1, "Reactor Trip System Instrumentation Setpoints," and 3/4.3.1, "Reactor Trip System Instrumentation." In Tables 2.2-1, 3.3-1, and 4.3-1, change the FUNCTIONAL UNIT column entries for item 4 from "Power Range, Neutron Flux, High Negative Rate" to "Not used" and delete the entries in the remaining columns for these items. Also affected is BASES section 2.2.1. The second paragraph under the subsection entitled "Power Range, Neutron Flux, High Rates" is deleted. These changes delete the High Negative Neutron Flux Power Range reactor trip function from the CPSES technical specifications.

III. ANALYSIS

The High Negative Neutron Flux Rate reactor trip function was originally provided to protect against the dropped RCCA events described in FSAR Section 15.4.3. For these events, it was assumed that the reactor was at full power with the RCCAs inserted to the power-dependent insertion limits.

Following the drop of one or more RCCAs from the same group, the reactor power rapidly decreases due to the negative reactivity insertion of the dropped RCCA(s). If the negative reactivity insertion was sufficiently large, a reactor trip would be initiated on the high negative flux rate reactor trip function. If no reactor trip on the high negative flux rate occurred, the Reactor Coolant System (RCS) would cool down and depressurize due to the turbine/core power mismatch. Departure from Nucleate Boiling (DNB) was not expected to occur at this point due to the lower power and reduced RCS temperatures; thus the specified fuel design limits were not exceeded.

For the analysis of scenarios using the the new analytical methods, the high negative flux rate trip is not credited. In the following discussions, operation of the automatic rod control system is assumed, as it makes the ensuing transients more severe. If the magnitude of the negative reactivity insertion due to the dropped RCCA(s) was large relative to the combined effects of the moderator temperature defect and the automatic Rod Control System operation, the reactor may trip on low pressurizer pressure. Conversely, if the combined reactivity effects of the moderator temperature reactivity feedback and the automatic Rod Control System operation were greater than the worth of the dropped RCCA(s), then the reactor could return to the pre-event power level. For this scenario, power operations could continue in accordance with the requirements of Technical Specification 3.1.3. If a single failure in the Rod Control System is then postulated, the operation of the Rod Control System could result in a final power level greater than the pre-event condition. The relatively high power level, coupled with the adverse core peaking factors induced by the dropped rod(s), could cause localized DNB. Based on the above scenario, the original Westinghouse analysis methodology (Reference 1) credited the use of the High Negative Neutron Flux Rate trip function.

For CPSES, the accident analysis for this event can be performed using either of two advanced methodologies, Reference 2 (Westinghouse) or Reference 3 (TU Electric). The analyses for CPSES Unit 1, Cycle 4 and Unit 2, Cycle 2 are performed using the Westinghouse analysis methodology; however, analyses supporting Unit 1, Cycle 5 and Unit 2, Cycle 3 and later are expected to be performed using the TU Electric methodology.

Neither of these methodologies take credit for the high negative flux rate reactor trip function. If the negative reactivity insertion following a dropped rod is sufficiently large, a reactor trip will be generated on low pressurizer pressure. For this case, it has been shown that no DNB occurs.

In addition, it has been shown that no DNB occurs during the return to full power conditions due to the actions of the automatic Rod Control System and moderator temperature reactivity feedback mechanisms. Thus, for scenarios that do not result in a low pressurizer pressure trip, a reactor trip is unnecessary.

Through the deletion of this trip function from the Reactor Trip System, the potential for inadvertent plant trips is reduced. The deletion of the trip function removes the potential for spurious reactor trips generated within

the High Negative Neutron Flux Rate circuitry. In addition, the current Technical Specifications require that each of the four channels be tested quarterly to ensure operability. During the period of surveillance testing, the affected channel is placed in the "TRIP" condition, thereby reducing the coincident logic required for plant trip from 2-out-of-4 to 1-out-of-3. The 1-out-of-3 coincident logic is much more susceptible to inadvertent actuation due to spurious signals or spikes, excessive signal noise, or personnel errors. Through the deletion of this trip function from the Technical Specifications, the need to perform the surveillance testing is deleted.

In summary, the High Negative Neutron Flux Rate reactor trip function is not credited in any of the CPSES accident analyses. All potential dropped rod events have been shown to either result in a low pressurizer pressure reactor trip or do not require any automatic protective action from the Reactor Protection System. Further, the deletion of this trip function will decrease the potential for inadvertent or unnecessary reactor trips by removing a source of potential spurious signals and eliminating the possibility of inadvertent trips during the performance of required surveillance testing.

IV. SIGNIFICANT HAZARDS CONSIDERATIONS ANALYSIS

TU Electric has evaluated whether or not a significant hazards consideration is involved with the proposed changes by focusing on the three standards set forth in 10CFR50.92(c) as discussed below:

Do the proposed changes:

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

The deletion of the High Negative Neutron Flux Rate trip does not adversely affect the probability of any accident. In fact, the deletion of this reactor trip is expected to reduce the probability of inadvertent reactor trips during surveillance testing.

The only previously evaluated accidents whose consequences could be potentially affected by this change are the dropped rod events. Presently the High Negative Neutron Flux Rate trip function responds to these events by initiating a reactor trip. Analyses of these events, using currently licensed analysis methodologies have demonstrated that this trip function is not necessary. Although the scenarios for the various rod drop events without this trip function differ from the existing event scenarios, the unit will either be safely shutdown or return to an acceptable reactor power level, and as before, DNB does not occur. Therefore, the proposed changes would not have a significant effect on the consequences of an accident previously evaluated.

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

The proposed changes remove a feature from the Reactor Trip System that is a potential source of inadvertent or unnecessary reactor trips.

While the changes delete an accident mitigation feature, they do not add new hardware to the units and do not change plant operations; consequently, no new failure modes are introduced. Therefore, the removal of this trip function can not create the possibility of an new or different kind of accident from any accident previously evaluated.

3) Involve a significant reduction in a margin of safety?

Because the changes only delete an unnecessary reactor trip and do not actually alter the plant, the proposed changes do not affect the failure values for any system or component. Accident analyses have shown that all relevant, existing event acceptance criteria have been satisfied without taking credit for the deleted reactor trip; therefore, the event acceptance criteria are not being revised. Because neither the failure values nor the acceptance criteria are affected, the proposed changes have no affect on the margin of safety.

Based on the above evaluations, TU Electric concludes that the activities associated with the proposed changes satisfy the no significant hazards consideration standards of 10CFR50.92(c) and accordingly, a no significant hazards consideration finding is justified.

V. ENVIRONMENTAL EVALUATION

TU Electric has evaluated the proposed changes and has determined that the changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed changes meet the eligibility criterion for categorical exclusion set forth in 10CFR51.22(c)(9). Therefore, pursuant to 10CFR51.22(b), an environmental assessment of proposed the change is not required.

VI. PRECEDENTS

Catawba Units 1 and 2 (57 FR 32240 and 58 FR 11260)

VII. REFERENCES

1. "Dropped Rod Methodology for Negative Flux Rate Trip Plants," Westinghouse Electric Corporation, WCAP-10297-P-A, June 1983

2. "Methodology for the Analysis of the Dropped Rod Event," Westinghouse Electric Corporation, WCAP-11394-P-A, January 1990

3. "Reactivity Anomaly Events Methodology for Comanche Peak Steam Electric Station Licensing Applications," TU Electric, RXE-91-002-A, October, 1993

ATTACHMENT 3 to TXX-94211

AFFECTED TECHNICAL SPECIFICATION PAGES
(NUREG-1468)

(Pages 2-5, B 2-4, 3/4 3-2 & 3/4 3-8)