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egional Administrator, Region IV
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11 Ryan Plaza Drive, Suite 1000
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South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Final Report Concerning the Nuclear Instrumentation System

ear Mr. Martin:

On February 27, 1986, pursuant to 10CFR50.55(e), Houston Lighting & Power ompany (HL&P) notified your office of a potentially reportable item oncerning the Nuclear Instrumentation System. Under certain conditions a ailure in the P-10 permissive circuit could prevent automatic unblocking of he source range, intermediate range, and power range low setpoint reactor rips. Attached is the final report concerning this subject, which has been etermined to be not reportable.

If you should have any questions on this matter, please contact r. C. A. Ayala at (512) 972-8628.

Very truly yours,

J. H. Goldberg
Group Vice President, Nuclear

HC/yd

ttachment: Final Report Concerning
the Nuclear Instrumentation System

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South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Final Report Concerning the Nuclear Instrumentation System

I. Summary

Pursuant to 10CFR50.55(e), HL&P notified your office on February 27, 1986 of a potentially reportable item concerning the Nuclear Instrumentation System. The P-10 permissive could fail to reset during power reduction t' below the P-10 setpoint when one power range neutron flux channel is out of service and in a tripped condition and another channel subsequently fails. This would prevent automatic unblocking of the source range, intermediate range and power range low setpoint reactor trips. Accidents which might occur below 10% power are analyzed taking credit for these trips.

This deficiency was identified and reported to the NRC by Westinghouse on February 26, 1986. Westinghouse letter NS-NRC-86-3108 dated February 27, 1986 to the NRC confirmed their initial report.

We have determined that this item is not reportable pursuant to 10CFR50.55(e).

II. Description of Deficiency

The P-10 permissive is comprised of a two-out-of-four coincidence logic of the four power range neutron flux channels. The permissive is enabled (set) when at least two of the four power range neutron flux channels sense a reactor power level greater than approximately 10%.

The first function of the permissive is to enable the following actions during power ascension:

a. automatic block of source range high neutron flux reactor trip,

b. automatic deenergization of source range high voltage (and source range indication),

c. manual block of intermediate range high neutron flux reactor trip, and

d. manual block of power range (low setpoint) high neutron flux reactor trip.

The second function of the permissive is to provide an automatic reinstatement of these trips and reenergization of the source range voltage when the power level is reduced below the setpoint.

The issue concerns the function of the permissive during operation with one or more of the power range neutron flux measurement channels inoperable or removed from service. Standard Technical Specifications authorize plant operation with one instrumentation channel inoperable provided that the associated trip bistables are placed in the tripped condition. The typical practice would be to place the bistables associated with the Nuclear Instrumentation System (NIS) trips (power range high neutron flux trip, positive and negative flux rate trips) and the P-10 permissive function in the tripped condition by removing power from the affected channel. The coincidence logic of the NIS trips and P-10 permissive would then require only one additional channel trip to generate a protection system actuation or to enable (set) the P-10 permissive.

Should an additional failure occur in the P-10 circuit from one of the other three power range neutron flux measurement channels, when power is subsequently reduced to below the P-10 setpoint the P-10 permissive may not correctly change state due to the fact that the two out of four logic could remain in effect. As a result, the protection system functions of the power range high neutron flux trip (low setpoint), intermediate range high neutron flux trip and source range high neutron flux trip would be disabled.

III. Corrective Action

HL&P will review Westinghouse's final set of recommendations and determine their applicability to STP.

IV. Recurrence Control

A review of other Westinghouse permissive logics was performed and this was determined to be an isolated instance; no recurrence control is necessary.

V. Safety Analysis

The P-10 circuit failure could occur either before or after the P-10 setpoint is reached while reducing power. If it occurs after the setpoint is reached, the failure would cause the permissive to be reset. Only the source range high neutron flux trip would be disabled in this case, since the other trips require manual blocks. Therefore, only the case where the single failure occurs prior to dropping below the P-10 setpoint is of concern.

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Standard operating practices and Technical Specifications provide guidance to prevent this event from being a safety concern by requiring the control room operator to verify automatic actions through his indications. The operator would be expected to identify the P-10 circuit failure and implement the requirements of Technical Specification Table 3.3-1 item 18.e Action 8 (i.e., to verify within one hour that the P-10 permissive is in the required state for the existing plant condition or to begin a plant shutdown).

The accidents in the FSAR which take credit for the P-10 functions are uncontrolled bank withdrawal from a subcritical condition and rod ejection at hot, zero power. Westinghouse has evaluated these events assuming that the functions would be unavailable. For the rod ejection event, the power increase is sufficiently rapid and large enough such that the high setpoint of the power range high neutron flux trip would be reached and reactor trip would occur such that the FSAR analysis would remain valid for this event.

In the unlikely case of an undetected P-10 failure, followed by an uncontrolled bank withdrawal from subcriticality, the FSAR licensing basis for the departure from nucleate boiling ratio (DNBR) might not be met. However, no fuel failure is predicted, there is no postulated uncontrolled leakage, and thus there are no resulting offsite doses.

The boron dilution accident discussed in the Westinghouse generic report does not apply to STP.

For these reasons, there is no adverse effect on the safety of plant operations and this issue is considered to be "not reportable" pursuant to 10CFR50.55(e).