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October 12, 1985
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File No.: G9.17

Mr. George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Responses to DSER/FSAR Items;
Concerning MSIV Closure on SI

Dear Mr. Knighton:

The attachments enclosed provide STP's response to Draft Safety Evaluation Report (DSER) or Final Safety Analysis Report (FSAR) items.

The item numbers listed below correspond to those assigned on STP's internal list of items for completion which includes open and confirmatory DSER items, STP FSAR open items and open NRC questions. This list was given to your Mr. N. Prasad Kadambi on October 8, 1985 by our Mr. M. E. Powell.

The attachment includes mark-ups of FSAR pages which will be incorporated in a future FSAR amendment unless otherwise noted below.

The item which is attached to this letter is:

Attachment	Item No.*	Subject
1	C 0.0-2, C 0.2-6	MSIV Closure on SI

* Legend
D - DSER Open Item
F - FSAR Open Item
C - DSER Confirmatory Item
Q - FSAR Question Response Item

L1/DSER/f

B001
1/1

If you should have any questions concerning this matter, please contact Mr. Powell at (713) 993-1328.

Very truly yours,

M. R. Wisenburg
Manager, Nuclear Licensing

MEP/eb

Attachments: See above

L1/DSER/f

cc:

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Revised 9/25/85

Question 440.57N

In Amendment 43, Figure 15.0-9 and the information in Sections 15.1.4 and 15.1.5, and the revised response to Question 440.01 (Amendment 44) all indicate that the MSIVs are closed on any SI signal. Amendment 44 indicates that this includes SI actuation on low RCS pressure. The previous FSAR version indicated that the MSIV would close on high containment pressure or evidence of steam line break, which is typical of most Westinghouse plants. Closure of the intact steam generator MSIVs on any SI signal would prevent utilization of condenser steam dump in the event of steam generator tube rupture (SGTR) or a small break LOCA when offsite power is available. This would probably result in slower mitigation of the accident and increase the offsite dose. The Westinghouse Emergency Response Guidelines (ERGs) which have been approved by NRC take credit for condenser steam dump when it is available. Therefore, please justify this design change on the basis of increased safety.

Response

The automatic closure of the main steam isolation valves (MSIVs) on ~~an~~ safety injection (SI) signal is not expected to have any adverse impact on the mitigation or recovery from a steam generator tube rupture (SGTR) or small break Loss-of-Coolant Accident (LOCA). The Emergency Response Guideline (ERG) for SGTR recovery requires that the operator isolate the ruptured steam generator (SG) from the intact SGs prior to the initial cooldown of the Reactor Coolant System (RCS). This isolation step is accomplished by either closing the MSIV for the ruptured SG or the MSIVs for the intact SGs. If the MSIVs are automatically closed on an SI signal, the operator will not have to perform this step. If the condenser is not available, as assumed in the design basis analysis, the RCS cooldown can be accomplished by using the power-operated relief valves (PORVs) on the intact SGs, and the MSIVs would not have to be opened. If the condenser is available, the MSIVs or bypass valves for the intact SGs would have to be opened to permit steam dump to the condenser. However, the time required for opening the MSIVs would be offset by the time saved by not having to perform the isolation step initially. Thus, it is concluded that the automatic closure of the MSIVs on an SI signal would not adversely affect the SGTR recovery actions.

For a small break LOCA, steam dump is utilized for the RCS cooldown in the post-LOCA cooldown ERG. If the condenser is available, the MSIVs can be opened to permit steam dump to the condenser for the RCS cooldown, or alternatively, the cooldown can be performed using the SG PORVs. Since the time required to perform the post-LOCA cooldown is not critical to the recovery operation, the time required to open the MSIVs would not adversely affect the recovery.

Since the ERGs were developed for a reference plant which does not have automatic closure of the MSIVs on an SI signal, the changes required to accommodate this design feature will be incorporated in the conversion of the ERGs to plant specific Emergency Operating Procedures (EOPs) for STP.

Insert →

Insert for Q440.57N Pg. 1 of 2

In addition, the non-LOCA events of FSAR Chapter 15 are not adversely impacted by automatic closure of the MSIVs on an SI signal. For the credible steamline break event (FSAR Section 15.1.4), the SI initiated MSIV closure results in earlier steamline isolation than with the logic typical of most Westinghouse plants. Therefore, a less severe transient would result. For the credible steamline break analysis of the STP FSAR, reactor trip is assumed to occur immediately. The primary side depressurizes to the low pressurizer pressure SI setpoint. This initiates SI and causes the feedwater isolation valves to close and the main feedwater pumps to trip. In the STP FSAR analysis, as would be required with analyses for logic typical of most Westinghouse plants, credit is not taken for steamline isolation (MSIV closure) at this point. The MSIV closure is assumed to occur later at the low steamline pressure setpoint. The current STP FSAR analysis meets all the applicable acceptance criteria. The STP isolation of the steamline (MSIV closure) following low pressurizer pressure SI provides earlier mitigation of the event than that of logic typical of most Westinghouse plants.

For the hypothetical steamline break (FSAR Section 15.1.5), the low steamline pressure signal would initiate SI/MSIV closure for STP and, in the logic of most Westinghouse plants, would initiate both MSIV closure and SI. For this transient there would be no differences in the current STP FSAR analysis.

Insert for Q440.57N Pg. 2 of 2

A spurious SI signal and subsequent MSIV closure would result in a Loss of Load/Turbine Trip event. As discussed in FSAR Section 15.5.1, introduction of borated water into the reactor coolant system following a spurious SI signal is not a credible event. This event, if there was no immediate reactor trip due to the SI signal, would be bounded by the Turbine Trip of FSAR Section 15.2.3 which assumes a late reactor trip on an OTΔT or high pressurizer pressure signal following turbine trip. Because the immediate reactor trip due to the SI signal mitigates the transient earlier, it is not as severe as that analyzed in FSAR Section 15.2.3.