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June 26, 1984

Nicholas A. Petrick
Executive Director

SLNRC 84-0096 FILE: 0543/0278
SUBJ: Instrumentation and Control Systems Branch Technical Specification Questions

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket Nos.: STN 50-482 and STN 50-483

Reference: SLNRC 84-84, dated May 18, 1984: Same Subject

Dear Mr. Denton:

SNUPPS committed in the reference to pursue resolution of item 2 regarding environmental errors for setpoint calculations related to diverse (backup) protection trip functions prior to operation above 5% power at Callaway. This letter documents additional evaluation by SNUPPS and Westinghouse which provides an appropriate basis for resolution.

Westinghouse does not take credit for backup, or diverse, trip functions in the plant accident analyses. Explicit modeling of any trip function other than the primary trip function is outside the plant design basis. Trip setpoints for backup functions are not calculated, and do not have any analytical basis. Therefore, it is not possible to include an allowance for environmental errors in a backup trip function setpoint.

If a trip function is used in the safety analysis as a primary trip for an event, the trip setpoint is based on the requirements of that event. If that event includes adverse environmental conditions in the vicinity of the sensor/transmitter, an environmental allowance is included in the determination of the primary trip setpoint.

If a trip function is not used anywhere in the safety analysis as a primary trip, the setpoint for the function is based solely upon reasonable engineering judgment.

If a backup trip function happens to be a primary trip function for another event which generates adverse environmental conditions, the trip setpoint for the backup function would be based on the primary trip setpoint. In that particular case the setpoint would include an allowance for environmental errors.

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The above analysis and trip setpoint basis is the Westinghouse interpretation of the applicable General Design Criteria, Regulatory Guides, and industry standards. This basis has been used for the determination of trip setpoints for all affected plants with a Westinghouse NSSS licensed to date.

To address the expressed NRC concerns about plant specific environmental allowances it should be noted that SNUPPS has purchased qualified transmitters from Westinghouse. The environmental allowances noted for those protection functions which may experience adverse environmental conditions are bounding values determined by Westinghouse for the type of transmitter and its function and are generic uncertainties for that type of transmitter. Thus the magnitudes of the environmental allowances for the transmitters are fixed and are not plant specific. The major determination of the generic environmental allowance is whether a primary trip function transmitter will experience adverse environmental conditions during the event.

For those transients which result in adverse environmental conditions for Reactor Trip or Engineered Safety Features actuation equipment (i.e., steambreak, feedbreak, and LOCA), backup trip functions are not required to have the capability to withstand those conditions. This conclusion is based on the fact that for transients that occur inside containment, actuation functions with transmitters outside containment exist that could serve as backup functions. For transients that occur outside containment, actuation functions with transmitters/ sensors inside containment exist. Thus there is no explicit need to include environmental allowances in the determination of backup trip functions.

To verify this conclusion, an evaluation of Table 15.0-6 from the SNUPPS FSAR was performed. For this evaluation the location of the sensor/-transmitter was determined and compared to the location of the adverse environmental conditions, i.e., break inside containment vs. location of transmitter (inside or outside containment). The attached table addresses the three events that would be expected to generate adverse environmental conditions in the vicinity of a transmitter and the location of the transmitter. The actuation functions listed may be primary or backup trip functions depending on break size and location.

As can be seen from the attached table, given the primary trip functions identified in FSAR Chapter 15, for each event there is at least one actuation function available as a backup which is not located in the vicinity of the break and thus is not subject to adverse environmental conditions. This confirms the validity of the conclusion that it is not necessary to include errors due to adverse environmental conditions when evaluating the adequacy of setpoints for possible backup trip functions.

SNUPPS considers the above response a sufficient basis to conclude that no additional allowance for environmental errors for setpoint calculations related to diverse (backup) protection trip functions is required.

Very truly yours,

Nicholas A. Petrick

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Attachment

cc:

G. L. Koester	KGE	H. Bundy	KGE/WC
D. T. McPhee	KCPL	B. L. Forney	USNRC/RIII
D. F. Schnell	UE	E. H. Johnson	USNRC/RIV
J. Neisler/B. Little	UE/CAL		

Attachment to SLNRC 84-0096
Table: Summary of Events Generating Adverse Environmental Conditions

EVENT	ACTUATION FUNCTION	LOCATION
15.1 Increase in Heat Removal by the Secondary System		
a. Steam System Piping Failure		
1. Inside Containment	Pressurizer Pressure-Lo Reactor Trip	Inside
	Pressurizer Pressure-Lo SI	Inside
	Steamline Pressure-Lo	Outside
	Containment Pressure-Hi 1	Outside
	Containment Pressure-Hi 2	Outside
2. Outside Containment	Steamline Pressure-Lo	Outside
	Pressurizer Pressure-Lo Reactor Trip	Inside
	Pressurizer Pressure-Lo SI	Inside
15.2 Decrease in Heat Removal by the Secondary System		
a. Feedwater System Pipe Break		
1. Inside Containment	Steam Generator Water Level - Lo-Lo	Inside
	Pressurizer Pressure-Hi	Inside
	Steamline Pressure-Lo	Outside
	Containment Pressure-Hi 1	Outside
	Containment Pressure-Hi 2	Outside
2. Outside Containment	Steamline Pressure-Lo	Outside
	Steam Generator Water Level - Lo-Lo	Inside
	Pressurizer Pressure-Hi	Inside
15.6 Decrease in Reactor Coolant Inventory		
a. Loss of Coolant Accidents resulting from the spectrum of postulated piping breaks within the reactor coolant pressure boundary		
1. Inside Containment	Pressurizer Pressure-Lo Reactor Trip	Inside
	Pressurizer Pressure-Lo SI	Inside
	Containment Pressure-Hi 1	Outside
	Containment Radiation-Air	Outside*

* Not noted on Table 15.0-5 but can be expected to initiate Containment Ventilation and Purge Isolation, thus alerting the operator for those breaks too small to increase Containment Pressure to the Hi 1 setpoint

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