

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

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SUBJECT: Responds to NRC 900406 ltr re inadequacies of SPDS, per audit  
on 900221-22.

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Donald C. Cook Nuclear Plant Units 1 and 2  
Docket Nos. 50-315 and 50-316  
License Nos. DPR-58 and DPR-74  
RESPONSE TO NRC AUDIT OF COOK NUCLEAR PLANT SAFETY PARAMETER DISPLAY  
SYSTEM (SPDS) INADEQUACIES

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

Attn: T. E. Murley

May 9, 1990

Dear Dr. Murley:

This letter responds to your April 6, 1990, letter and provides the corrective actions we have taken, or plan to take, to correct the findings regarding the on-site audit of the SPDS.

On February 21-22, 1990, the NRC audited the SPDS using the criteria given in NUREG-0737 Supplement 1. The NRC audit team determined that the Cook Nuclear Plant SPDS for both Units 1 and 2 met five of the eight requirements of NUREG-0737, Supplement 1. We agreed to respond to the NRC audit team's findings regarding the three requirements not met. The three findings and our responses are as follows.

SPDS Is Not Continuous

- o The SPDS monitor does not provide any visual or audible cues to alert operators to a change in status for the five plant-specific safety functions on displays other than the two, top level iconic displays.

Response

The SPDS does not provide a continuous display on the Technical Support Center (TSC) computer terminals located in each control room. Operators do have the ability to access lower level displays on these terminals for more detailed information.

The immediate solution to correct this inadequacy will be a software modification. The modification will limit the keyboard functions available on the control room TSC computer terminal and

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provide a dedicated display of the SPDS iconic. The software modification will prevent a user from accessing any displays other than the iconic displays from the SPDS-dedicated terminal. A long-range solution is also being investigated that would provide the operator with a signal of any adverse changes to the iconic displays' process variables, which would permit a user to access other displays on the SPDS-dedicated terminal. If this alternative solution is found to be practical it will be implemented.

#### SPDS Is Not Designed To Incorporate Accepted Human Factors Principles

- o Numerical values for the high and low level alarm setpoints on each safety function "spoke" of the narrow- and wide-range iconic displays were not identified. Some alarm setpoints were reactor trip values and others were either anticipatory values or system capacity values. In addition, the Unit 2 SPDS low steam generator low level reactor trip setpoint, 21%, was incorrectly set at the Unit 1 value of 17%. In another case, the Unit 1 SPDS high Tavg alarm setpoint on the SPDS had not been changed to reflect the amended Technical Specification value.

#### Response

There is not enough physical space to display all of the high and low limit values on the narrow- and wide-range iconic displays' spokes. From a human factors standpoint, the fact that the discrete high and low limits for each spoke are not displayed does not detract from the functionality of the iconic display concept. The iconic displays provide a graphical representation of the status of specific process variables. It is not necessary for a spoke's high and low limits to be discretely displayed for the functionality and usefulness of the iconic displays to be fully realized. It would actually detract from the primary design concept of the iconic displays, which is rapid recognition of a critical safety function problem. Therefore, the high and low limits will not be added to the spokes of the iconic displays. The apparent disparity in the selection of reactor trip values, system capacity values, or anticipatory values will be rectified.

For the narrow-range iconic display, which is primarily used during normal power operations, the high and low limits for each spoke will be based primarily on reactor trip setpoints or engineered safety system actuation setpoints, if they are applicable to a variable on the narrow-range iconic display. If there are no reactor trip or engineered safety system actuation setpoints for a particular variable, such as the RCS average temperature, Technical Specification limiting condition for operation values will be used for a spoke's high and low limit values. If there are no reactor trip setpoints, engineered

safety system actuation setpoints, or Technical Specification limiting condition for operation values for a spoke's high and low limits, then annunciator setpoints will be used. Finally, if none of the above criteria are applicable to a specific process variable on the narrow-range iconic display, then system capacities or other appropriate values will be used, as is the case for net charging flow and power mismatch.

For the wide-range iconic display, which is used primarily after a reactor trip has occurred related to an accident condition, the high and low limits for each spoke will be based primarily on emergency operating procedure status tree values, as applicable, or alternatively on physically meaningful or appropriate values.

The narrow-range steam generator level low limit on the Unit 2 narrow-range iconic display was changed to the correct reactor trip setpoint. The RCS average temperature high limit on the Unit 1 narrow-range iconic display had not been changed to reflect a recent amendment to the Technical Specification limiting condition for operation value. The Unit 1 primary system recently was modified for reduced temperature and pressure operation. Changes resulting from this modification were evaluated and, as applicable, were implemented on the TSC computer system. The high limit value has been changed to the correct value corresponding to the amended Technical Specification limiting condition for operation requirement.

#### Operator Training With SPDS Was Not Satisfactory

- o Control room operators did not know, in all instances, what the numerical values were for the high and low level alarm setpoints for each safety function on the SPDS narrow- and wide-range iconic displays.

#### Response

The numerical values for the high and low alarm limits for each spoke on the narrow- and wide-range iconic display will be provided to the Cook Nuclear Plant operators as a technical data reference. The general philosophy on how these values were selected will be incorporated into the operator requalification training beginning in the third quarter of 1990.

Dr. T. E. Murley

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This document has been prepared following Corporate procedures that incorporate a reasonable set of controls to ensure its accuracy and completeness prior to signature by the undersigned.

Sincerely,



M. P. Alexich  
Vice President

ldp

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