TENNESSEE VALLEY AUTHORITY
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JUL 11 1989

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296
		50-390
		50-391

RESPONSE TO GENERIC LETTER (GL) 89-06 - SAFETY PARAMETER DISPLAY SYSTEM (SPDS) FOR BROWNS FERRY NUCLEAR PLANT (BFN) AND WATTS BAR NUCLEAR PLANT (WBN)

References:
1. R. L. Gridley letter to NRC dated September 19, 1988, "Browns Ferry Nuclear Plant (BFN) - Response to Request for Additional Information - Safety Parameter Display System (SPDS)"
2. R. L. Gridley letter to NRC dated February 22, 1989, "Sequoyah Nuclear Plant (SQN) - Evaluation of Safety Parameter Display System (SPDS)"
3. J. A. Domer letter to NRC dated June 25, 1985, concerning response to NRC Question 620.05 - SPDS Implementation Plan

On April 12, 1989, the NRC staff issued GL 89-06, Task Action Plan Item I.D.2 - Safety Parameter Display System, which requested that licensees submit to the NRC, pursuant to 10 CFR 50.54(f), information regarding the status of the SPDS implementation. GL 89-06 requested the licensee to provide one of the following:

1. Certification that the SPDS fully meets the requirements of NUREG-0737, Supplement 1, taking into account the information provided in NUREG-1342.
2. Certification that the SPDS will be modified to fully meet the requirements of NUREG-0737, Supplement 1, taking into account the information provided in NUREG-1342 along with an implementation schedule for the modifications.
3. A discussion of the reasons for the finding that a certification cannot be provided and a discussion of the compensatory action taken or intended.

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Enclosures 1, 2, and 3 provide TVA's response to the NRC's request for BFN, SQN, and WBN, respectively. Enclosure 4 provides a list of our commitments.

If there are any questions, please telephone T. L. Pitts at (615) 751-8087.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

M. J. Ray, Manager,
Licensing Project Management

Subscribed and sworn to before me
on this 11th day of July 1989.

Susan Clarker
Notary Public

My Commission Expires 2/2/90

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ENCLOSURE 1

BROWNS FERRY NUCLEAR PLANT (BFN)
RESPONSE TO GENERIC LETTER (GL) 89-06

BFN does not currently have a SPDS and therefore cannot provide certification as requested for items 1 or 2 of GL 89-06 at this time. This letter provides our response relative to item 3 of GL 89-06.

As stated in reference 1, TVA is planning to install an SPDS for BFN unit 2 "during the cycle 6 refueling outage. Following functional testing the SPDS will become operational during cycle 7 operation. The SPDS for units 1 and 3 will be installed before restart of the respective units." Factory and field testing is planned to be completed by the end of the cycle 6 refueling outage. Availability testing will be completed sometime during cycle 7 operation after which the SPDS will be considered fully operational. Considering that the SPDS installation for BFN will be accomplished within the negotiated schedule and that existing control room instrumentat'on will provide the information required during emergency operations, TVA does not consider that interim compensatory actions are necessary.

TVA will provide a supplemental response to GL 89-06 addressing certification of compliance with requirements of NUREG-0737, Supplement 1, within two months after the unit 2 SPDS has become fully operational.

ENCLOSURE 2

SEQUOYAH NUCLEAR PLANT (SQN)
RESPONSE TO GENERIC LETTER (GL) 89-06

SQN has a fully operational SPDS for both Units 1 and 2. Several modifications are planned at present in order to ensure that the SPDS fully meets the requirements of NUREG-0737, Supplement 1. Therefore, this letter provides our response relative to Item 2 of GL 89-06.

Reference 2 provided the status of TVA's actions to resolve deficiencies identified in the postimplementation audit report for the SQN SPDS. Reference 2 identified several modifications that are not yet complete. The implementation schedule for these modifications is as follows:

1. Main steam line radiation monitors will be added to the SPDS by the end of the Cycle 4 refueling outage for each unit.

2. Units for radiation monitors in the SPDS will be modified to be consistent with main control room instrumentation by the end of the Cycle 4 refueling outage for each unit.

3. Labels will be placed on the SPDS cathode ray tubes (CRTs) in the main control room by the end of the Cycle 4 refueling outage for each unit.

In addition to the above modifications (which address all outstanding deficiencies noted in the NRC's postimplementation audit report), TVA has other existing commitments regarding modifications to the SPDS. TVA will implement the following modifications to address items of concern noted by the NRC in NUREG-1342 and/or the GL 89-06, Enclosure 2, checklist:

4. Upgrade of postaccident monitoring equipment located inside containment that provides input to the SPDS so as to be able to operate during adverse containment conditions will be completed by the end of the Cycle 4 refueling outage for each unit as part of the modifications to meet Regulatory Guide 1.97, Rev. 2 (see GL 89-06, Enclosure 2, Question 4.9).

5. The SPDS will undergo an evaluation to determine what changes are required to make it more reliable. Necessary changes will be made by the end of the Cycle 6 refueling outage for each unit as part of the detailed control room design review (DCRDR) corrective action program (see GL 89-06, Enclosure 2, Questions 4.3, 4.4, 4.7, and 4.8).

6. Units, except for those noted in Item 2 above, and setpoints for all points in the SPDS will be modified to be consistent with Emergency Operating Instructions (EOIs) and main control room instrumentation by the end of the Cycle 6 refueling outage for each unit as part of the DCRDR corrective action program (see GL 89-06, Enclosure 2, Questions 5.7, 5.10, 5.13, and 5.15).

The following describes checklist items where the SQN SPDS approach differs somewhat from the recommended approach of NUREG-1342 but are considered acceptable by TVA.

Reactor Core Cooling and Heat Removal from the Primary System (Refer to Question 2.2.2 and NUREG-1342, Section III.F.1.b) Hot and cold leg temperatures and steam generator pressure are available on the SPDS. However, they are not used in SQN's SPDS core cooling and heat removal alarm algorithms during natural circulation. Therefore, an evaluation of thermal driving head during natural circulation is not continuously displayed by SPDS.

RCS Integrity (Refer to Question 2.2.3 and NUREG-1342, Section III.F.1.c) Containment sump level is not monitored by the RCS integrity SPDS status tree but is indirectly monitored by the post-loss of coolant accident decay heat removal status tree. Steam generator pressure, level, and radiation are not monitored by the RCS integrity SPDS status tree. Steam generator pressure and level are monitored by the core cooling SPDS status tree. Steam generator radiation level is monitored by the effluent and area radiation SPDS status tree.

Containment Conditions (Refer to Questions 2.2.5, 2.3.1, 2.3.2, and NUREG-1342, Section III.F.1.e) The SQN SPDS does not include actual containment isolation valve positions. However, these are not necessary because containment isolation valve positions are provided in status boxes in close proximity to the SPDS CRTs. Additionally, a Phase B containment isolation annunciator is provided in the same area. Although there is no annunciator specific to a Phase A containment isolation signal, there is one for initiation of a safety injection (SI). Since the only two means by which a Phase A containment isolation signal can be initiated are an SI signal and manual initiation, TVA determined it is not necessary to continuously display the status of a Phase A containment isolation signal on the SPDS CRTs. Additionally, both Phase A and B demand signals are inputs to the SPDS, and the condition of these signals can easily be determined on the plant status display, 2PS1.

Containment hydrogen concentration is continuously monitored by the SQN SPDS. However, it should be noted that the hydrogen monitors are not normally in operation; they are only put into operation after an accident.

Verification and Validation (Refer to Question 4.5 and NUREG-1342, Section III.A.3) The SPDS as delivered by the original vendor (Westinghouse Electric Corporation) did undergo a generic verification and validation procedure, but TVA does not have documentation to fully support this. TVA does have three top-level Westinghouse system requirements documents for the system: "Design Basis Document--Plant Safety Status Display," "Design Basis Document--Onsite Technical Support Center," and "Functional Requirements--Technical Support Complex."

The requirements of the SPDS status trees and barchart software are specified in the TVA-developed Safety Parameter Display System Software Requirements Specification. The original Westinghouse requirements documents referenced in the previous paragraph, augmented by TVA-developed, implementation-level documentation, provide the system requirements for the remaining displays and capabilities available to the Main Control Room (MCR) and the Technical Support Center (TSC) personnel using the Technical Support Center Data System.

The SPDS has undergone significant changes since the original contract was cancelled by TVA. These changes include addition of the SPDS status trees and barcharts, deletion of the SPDS iconic displays, redesign of the data acquisition hardware and software, many minor changes to improve the man-machine interface, and improvements in the error detection and handling process. Changes made to the SPDS by TVA have been reviewed and tested by various disciplines including operators, computer software designers, and engineers.

Sampling Rate (Refer to Question 5.6 and NUREG-1342, Section III.A.2) The sampling rate and display update rate of many parameters are not the same. The update rate of SPDS displays is approximately once every 5 seconds. Digital points such as pump status are updated once a second. The vast majority of the parameters that input to SPDS are updated once every 2 or 5 seconds. Some points are updated at a slower rate, but the slowest rate is once every 60 seconds.

ENCLOSURE 3

WATTS BAR NUCLEAR PLANT (WBN)
RESPONSE TO GENERIC LETTER (GL) 89-06

WBN does not currently have an operational SPDS and therefore cannot provide certification as requested for items 1 or 2 of GL 89-06 at this time.

As stated in reference 3, TVA is planning to have the WBN unit 1 SPDS "operational and operators trained in its usage before startup following the first refueling outage." An "operational SPDS" will comply with NUREG-0737, supplement 1, taking into account the information provided in NUREG-1342. TVA plans to have a functional SPDS installed and users trained in its usage before fuel load. A "functional SPDS" will comply with NUREG-0737, supplement 1, with the exception of documented availability, resolution of operator comments during first cycle, and verification of displayed data with main control room indications.

TVA plans to complete a live system test program before declaring the SPDS operational, which will include system availability testing. This testing cannot be completed until after commercial operation.

TVA will provide a supplemental response to GL 89-06 addressing certification of compliance with requirements of NUREG-0737, Supplement 1, within two months after the unit 1 SPDS has become operational.

The new commitments made by this submittal are as follows:

BFN

- TVA will provide a supplemental response to GL 89-06 within two months after the Unit 2 SPDS becomes fully operational.

WBN

- TVA plans to have a functional SPDS installed and users trained in its usage before fuel load.
- TVA will provide a supplemental response to GL 89-06 within two months after the Unit 1 SPDS becomes fully operational.