

TENNESSEE VALLEY AUTHORITY

5N 157B Lookout Place

April 26, 1990

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

Gentlemen:

In the Matter of) Docket Nos. 50-327
Tennessee Valley Authority) 50-328

SEQUOYAH NUCLEAR PLANT (SQN) - REQUEST TO DECLARE THE EAGLE 21 SYSTEM OPERABLE FOR MODE 5 - ADDITIONAL INFORMATION

Reference: TVA letter to NRC dated April 24, 1990, "Request to Declare the Eagle 21 System Operable for Mode 5"

The referenced letter requested NRC's approval to utilize portions of the Eagle 21 process protection system to support operability of the low-temperature overpressure protection system, the reactor vessel level indication system, and the refueling water storage tank level indication in Mode 5 before NRC's approval of Technical Specification Change 89-27.

During a telephone conference call on April 26, 1990, between TVA, NRC, and Westinghouse Electric Corporation, NRC requested additional information concerning the status of the Eagle 21 verification and validation (V&V) effort as it relates to the request for Mode 5 operability. Specifically, TVA was asked to address (1) What V&V work has not been completed for the affected channels?, (2) What is the nature of the V&V problem reports remaining to be dispositioned?, and (3) How are the instrument channels to be used for Mode 5 impacted by the portions of V&V to be completed?

The response to these questions is provided in the enclosed Westinghouse letter.

Please direct questions concerning this issue to Russell R. Thompson at (615) 843-7470.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark E. Burgett
E. G. Wallace, Manager
Nuclear Licensing and
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Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission

April 26, 1990

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ENCLOSURE



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April 26, 1990

Mr. P. G. Trudel
Project Engineer
Tennessee Valley Authority
Sequoyah Nuclear Plant
P.O. Box 2000
Soddy Daisy, TN 37379

TVA-90-756

Sequoyah Nuclear Plant Unit 1
Eagle-21 Mode 5 Operation

Dear Mr. Trudel:

The purpose of this letter is to provide supplemental information to address questions raised by the NRC staff with respect to Eagle-21 process protection channels required for Mode 5 operation at Sequoyah Nuclear Power Plant Unit 1. The channels in question are Refueling Water Storage Tank Level, Reactor Coolant System Wide Range Hot Leg Temperature, and Reactor Coolant System Wide Range Pressure. Responses to the NRC staff questions are provided here below:

1. For the subject channels, all units of code required for continuous on-line processing have completed software verification testing and for the remaining problem reports, final resolution will not require any code changes.

Also, for the subject channels, Validation testing has been successfully completed, the data has been evaluated and there were no test anomalies identified. Twelve (12) units of code remain to be re-verified for the Test Sequence Processor (TSP) subsystem and fourteen (14) units for the Man-Machine Interface (MMI).

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The TSP subsystem and MMI have a passive relationship with respect to the processing of these channels. The TSP subsystem and MMI are electrically separated from and are only used to perform automatic surveillance test and provide diagnostic/monitoring capabilities for the process protection system. It is important to note that electrical power may be removed from the TSP subsystem and MMI with absolutely no impact to operation of the Loop Calculation Processor (LCP) subsystem, which is required for continuous on-line processing of the protection channels.

2. For the overall Eagle-21 system for Sequoyah Nuclear Power Plant, the nature of the remaining verification problem reports to be formally closed may be categorized as follows:
 - o Remaining problem reports consist of approximately:
 - 18% Generic
 - 11% Module level
 - 28% Type J (Leader/Comments)
 - 17% Type E (Logic Anomaly)
 - 7% Type G (Data Handling Anomaly)
 - 6% Type B (Design Requirements Implemented Incorrectly)
 - 13% Other
 - o All problem reports to-date have been screened to assure that none will cause an impact to the software currently installed at Sequoyah. The current effort consists of completing the testing of the outstanding TSP and MMI code, and the formal close out of outstanding problem reports.
 - o All problem reports associated with the loop calculation processor (LCP) and its inputs have been addressed and there are no open items which would have any impact on code in place at Sequoyah.
3. The software code for the process channels required to be operable for Mode 5 resides in LCP subsystem Programmable Read Only Memory (PROM) components along with software required to process all other channels in the affected racks. However, all LCP code has completed software verification testing. In addition, Validation prudency tests have been completed to demonstrate that no adverse interactions exist between the TSP subsystem, MMI and the LCP subsystems. These Validation prudency tests have also demonstrated that no interactions exist between the various channels which reside in the LCP subsystem.

In summary, it is concluded:

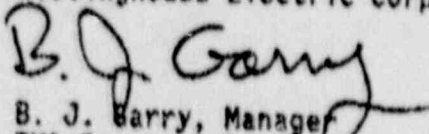
- 1) System Validation testing for the subject process channels has been successfully completed.
- 2) All software required for continuous on-line processing of the subject channels has completed verification testing and code changes are not required to close out remaining problem reports.

- 3) The 26 units of code to be re-verified have no effect on the continuous on-line processing of the channels required for Mode 5 operation and,
- 4) The process channels which are completing system Validation testing have no interactions with those channels required for Mode 5 operation.

If any further clarification to the above is needed, or any other information is required, we will be available to respond at your convenience.

Very truly yours,

Westinghouse Electric Corporation



B. J. Garry, Manager
TVA Sequoyah Projects
Customer Projects Department

cc: D. M. Lafever
R. G. Davis
M. J. Burzynski