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J. L. Wilson
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January 22, 1992

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) - NRC INSPECTION REPORT NOS. 50-327, 328/91-26 - RESPONSE TO NOTICE OF VIOLATION (NOV) 50-327, 328/91-26-01 AND -03

Enclosure 1 contains TVA's response to Bruce A. Wilson's letter to Dan A. Nauman dated December 23, 1991, which transmitted the subject NOV. The first violation dealt with failure to take effective and timely corrective action for a previous event concerning loss of the refueling water storage tank level transmitters. The second violation involved failure to adequately implement the design control process associated with the installation of a new annunciator system in the main control room. A summary of new commitments contained in this submittal is provided in Enclosure 2.

A typographical error was noted in the citation of the NOV Example B. Violation 50-327, 328/91-26-03, states, "Contrary to the above, measures did not provide for verifying the adequacy of the design of the annunciator system modification process from November 4 to November 24, 1991." However, the annunciator system was returned to functional status upon installation of the resistors in the inputs to the temporary system on November 21, 1991.

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If you have any questions concerning this submittal, please telephone M. A. Cooper at (615) 843-8924.

Sincerely,

J. L. Wilson

Enclosures
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ENCLOSURE 1

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/91-26 AND 50-328/91-26
BRUCE A. WILSON'S LETTER TO DAN A. NAUMAN
DATED DECEMBER 23, 1991

Violation 50-327, 328/91-26-01

"A. 10 CFR 50, Appendix B, Criterion 16 requires, in part, that significant conditions adverse to quality are promptly identified and corrected; and, that the corrective actions preclude repetition.

"Contrary to the above, on December 2, 1991, flooding of the Unit 2 refueling water storage tank basin resulted in the failure of level instrumentation for the tank. This event was similar to an event that occurred in 1989 on the Unit 1 refueling water storage tank and corrective actions for that event were inadequate to prevent the December 2 event.

"This is a Severity Level IV violation (Supplement I)."

Admission

TVA admits the violation.

Reason for the Violation

The root cause of the event resulting in this violation is considered to be ineffective administrative controls to compensate for a design deficiency. Corrective actions taken as a result of the 1989 flooding event included clarification of the established administrative controls by providing further guidance for shiftly checks of the basin. The assistant unit operator (AUO) round sheets were revised to include this clarification. Performance of a shiftly check of the water level in the basin was expected to preclude the repetition of the 1989 event. During the evening shift of December 2, 1991, the shiftly check of the basin was not performed. The AUO overlooked checking the basin during his rounds. He did not return to the basin to perform the check when he realized it was overlooked. Additionally, he did not inform his supervisor of the missed check and did not take his round sheets to the main control room (MCR) for his supervisor's review.

Evaluation following the event resulting in this violation has determined that shiftly checks of the basin may not be adequate during heavy rain conditions to ensure that the level does not reach the cabinets. If one AUO checks the basin at the first of the shift and the next AUO checks the basin at the last of the shift, rain data indicates that the level in the basin could reach the cabinets in less than the 16-hour period between checks. However, if shiftly checks are interpreted to require an eight-hour frequency, maximum probable precipitation data, as described in the Final Safety Analysis Report (FSAR), supports shiftly checks as an adequate frequency. The AUO's failure to check the basin, as required, precluded the possibility of detection and mitigation of the high water level in the refueling water storage tank (RWST) basin. If he had checked the basin at the end of his shift, the event may still have occurred because of the rain experienced during this timeframe.

Generating a plant modification study package addressing feasible options to eliminate flooding in the RWST basins was also included as corrective action

for the 1989 event. The study performed recommended the installation of a rain shield to eliminate flooding in the RWST basins. Follow-up action on this recommendation has not yet been implemented. However, administrative controls to compensate for the design deficiency were expected to preclude the event resulting in this violation.

Corrective Steps That Have Been Taken and Results Achieved

The RWST basins were pumped out and the level transmitters and terminal strips were dried. The proper operation of the transmitters was verified, and they were returned to service.

Standing orders were issued on an interim basis until formal procedural requirements could be implemented to require a check of the RWST basin every two hours during periods of rain. Additionally, the requirement for the assistant shift operations supervisor (ASOS) to review AUO round sheets on a shiftly basis was reinforced.

Corrective Steps That Will Be Taken to Avoid Further Violations

Expected actions concerning the RWST basin level checks will be formally proceduralized to strengthen the administrative controls.

The performance of the evening shift AUO on December 2, 1991, did not meet expectations. Additionally, AUO performance improvements have been recognized as being behind the improvements of the control room staff. An AUO improvement plan is being developed to generically upgrade the performance of AUOs. Implementation of this plan will ensure standards of performance are clearly conveyed, demonstrated, and enforced.

Date When Full Compliance Will Be Achieved

Full compliance was achieved on December 2, 1991, at 0334 Eastern standard time when the level transmitters were returned to operable status.

Violation 50-327, 328/91-26-03

"B. 10 CFR 50, Appendix B, Criterion 3 requires, in part, that measures shall be established for the selection and review for suitability of application of materials, parts, equipment, and processes which are essential to the functions of the components involving plant safety; and, that these measures shall also provide for verifying the adequacy of the design.

"Contrary to the above, measures did not provide for verifying the adequacy of the design of the annunciator system modification process from November 4 to November 24, 1991. During this time period, a temporary annunciator system, which was providing annunciation of important safety-related parameters on Unit 1, was determined to have up to 20 inoperable alarm points due to an inadequate evaluation which had been performed on the suitability of alternating current interfaces between the existing alarm outputs and the installed temporary system.

"This is a Severity Level IV violation (Supplement I)."

Admission

TVA admits the violation.

Reason for the Violation

The interface between plant equipment and the new annunciator system was not adequately addressed. The system was designed to utilize inputs from dry contacts, i.e., either off or on. The plant configuration, however, has several inputs to the system from The Foxboro Company bistables containing triacs, which have significant leakage currents. A contract design firm designed the new annunciator system for TVA. The contractor's personnel stated that they intended for the interfaces with plant equipment to be addressed by the equipment vendor. In the procurement specification for the annunciator system, the intent for the vendor to perform this function was not clearly delineated. Additionally, information necessary to perform this function was not provided in the specification.

A meeting was held at the vendor's request to obtain additional data regarding the locations, dimensions, interface requirements, etc., for installation of the new annunciator system. Information regarding the triac inputs from the Foxboro bistables was not conveyed to the vendor during this meeting. The vendor designed and manufactured the SQN system based on the assumption that the inputs were from dry contacts.

The initiating event for this problem was the flawed procurement specification; the intent for the vendor to address interfaces with plant equipment was not clearly delineated. The contractor's design progressed under the assumption that the vendor would address system interface, and the vendor's design progressed under the assumption that the inputs were from dry contacts. These two disconnects also led to reviews and tests not identifying the interface problem. The cause of the flawed procurement specification is considered to be inadequate management oversight of the development of the specification.

Corrective Steps That Have Been Taken and Results Achieved

Upon discovery of the problem, additional operators were posted on Unit 1 to increase monitoring of operational parameters. Resistors were added to the relay card input circuits to ensure impedance values were adequate for proper system operation on November 21, 1991. Forced air circulation was added in the cabinets containing the resistors to dissipate the heat generated.

Corrective Steps That Will Be Taken to Avoid Further Violations

The procedure governing development of procurement specifications will be revised to ensure that interface evaluation responsibilities are clearly delineated in future specifications. Review of this event, as a case study, will be conducted with management personnel of the contract design firm currently utilized at SQN; this review will convey expectations relative to management oversight of work produced to ensure deliverables comply with requirements.

Date When Full Compliance Will Be Achieved

Full compliance was achieved on November 21, 1991, when resistors were added to the temporary annunciator system inputs.

ENCLOSURE 2

List of Commitments

Violation 50-327, 328/91-26-01

Commitments made in response to this notice of violation are tracked under Licensee Event Report 50-328/91008.

Violation 50-327, 328/91-26-03

1. The procedure governing development of procurement specifications will be revised to ensure interface evaluation responsibilities are clearly delineated in future specifications. This action will be completed by May 4, 1992.

2. Review of this event, as a case study, will be conducted with management personnel of the contract design firm currently utilized at SQN; this review will convey expectations relative to management oversight of work produced to ensure deliverables comply with requirements. This action will be completed by February 21, 1992.

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