TENNESSEE VALLEY AUTHORITY
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MAR 01 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) - NRC INSPECTION REPORT NOS. 50-327, 328/89-29-01 AND 50-327, 328/90-01 - NOTICES OF VIOLATION

Enclosed is TVA's response to B. A. Wilson's letters to O. D. Kingsley, Jr., dated January 30, and February 7, 1990, which transmitted the subject notices of violation regarding freezing of the refueling water storage tank level transmitters.

Enclosure 1 provides TVA's response to Violation 90-01. Enclosure 2 provides TVA's response to Violation 89-29.

If you have any questions concerning this submittal, please telephone M. A. Cooper at (615) 843-6651.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark O. Medford

Mark O. Medford, Vice President
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Enclosures
cc: See page 2

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MAR 01 1990

U.S. Nuclear Regulatory Commission

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ENCLOSURE 1

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/90-01 AND 50-328/90-01
B. A. WILSON'S LETTER TO O. D. KINGSLEY, JR.,
DATED FEBRUARY 7, 1990

Violation 50-327, 328/90-01-02

"10 CFR 50, Appendix B, Criterion III, requires that measures be established to assure that applicable regulatory requirements and the design basis for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions.

10 CFR 50.59 requires that safety evaluations shall be performed which provide the bases for the determination that a change, test, or experiment does not involve an unreviewed safety question to identify if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased.

Contrary to the above, prior to December 15, 1989, the licensee failed to perform an adequate design change for the RWST level transmitters and failed to perform an adequate safety evaluation as required by 10 CFR 50.59 for the same change, in that Design Change Notice M0138A [sic] removed the thermostats and heaters from the RWST level transmitters without considering the effects of freezing and the associated safety evaluation, M0138A [sic], also did not consider the effects of freezing. As a result, on December 15, 1989 the RWST level transmitters froze and were declared inoperable. The heaters and thermostats were installed in 1982 to provide freeze protection for these transmitters.

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

Admission or Denial of the Alleged Violation

TVA admits the violation.

Reason for the Violation

In July 1982, Engineering Change Notice (ECN) 5653 (Workplan 10095) was approved to install strip heaters and control thermostats inside the refueling water storage tank (RWST) level transmitter enclosures (1, 2-LT-63-50, 51, 52, and 53). In addition, heat tracing and insulation were upgraded for the sense lines and enclosures.

On March 17, 1988, Condition Adverse to Quality Report (CAQR) SQP 880260 was written to document two problems associated with ECN 5653. Problem 1: Based on Quality Information Release NEB 87276, which reported the results of the analysis that was documented in Calculation SQN-APS2-039, the temperature inside the level transmitter enclosure could reach as high as 315 degrees Fahrenheit (F) should the thermostats and heaters fail to deenergize. This exceeded the 140 degrees F maximum ambient temperature rating of the level transmitters. Problem 2: No documentation had been found to indicate that the thermostats were qualified for applications involving Class 1E equipment. These problems were also documented as Design Baseline and Verification Program Punchlist Items 8885 and 9684.

To resolve the CAQR, Design Change Notices (DCNs) M01138A and M01139A were issued on September 21, 1989, to remove electrical power to the thermostats and heaters installed under ECN 5653. The DCNs also qualified the thermostats to position retention requirements because they were not removed as part of the DCNs. Because the heaters and thermostats were no longer a heat source and seismic qualification was demonstrated, both of the problems stated above were resolved. Calculation SQN-APS2-039 was referenced in these DCNs to provide assurance that the level transmitters would function at low temperatures.

During the independent qualified review (IQR) of the workplan for DCNs M01138A and M01139A, questions were again raised concerning the potential for freezing of the sense lines. Nuclear Engineering (NE) resolved this comment with the IQR, and the DCN was implemented; however, NE agreed to later perform Calculation SQN-SQS2-0101, which confirmed that sense line freezing would occur. Calculation SQN-SQS2-0101 was completed on November 13, 1989, and an action item was placed on the Plan-of-the-Day (POD) meeting agenda to procure and install qualified 1E thermostats. The purchase request was to be initiated by December 15, 1989, with installation anticipated for mid-January. These proposed dates were considered acceptable by personnel who anticipated that extreme weather would not occur until the late January or early February timeframe. Therefore, low temperature protection was not provided, and, as a result, the level transmitters began to fail at 0357 on December 16, 1989.

The root cause of this event is attributed to NE misapplying the results of Calculation SQN-APS2-039. The conditions and assumptions in this calculation were to determine the maximum internal enclosure temperature (based on varying outside temperatures), rather than the minimum. However, the information was incorrectly interpreted by personnel utilizing the calculation.

In addition, NE/Electrical Engineering personnel preparing DCNs M01138A and M01139A incorrectly assumed that personnel performing the review of the safety evaluation also performed the interdisciplinary technical interface review, i.e., believed that reviewers evaluated appropriateness of the calculation to support the modification. In fact, the personnel reviewing the 10 CFR 50.59 evaluated the acceptability of the stated modification assuming that the calculation supporting the modification was technically valid and appropriately applied to this modification. The presumption resulted in the DCNs with supporting 10 CFR 50.59 being issued without an adequate interdisciplinary review.

Corrective Steps That Have Been Taken and Results Achieved

Immediate corrective actions taken consisted of obtaining discretionary enforcement to extend operating in the limiting condition for operation (LCO), issuing night orders containing provisions to ensure adequate RWST water levels existed, providing revised operational requirements for Emergency Procedure ES-1.2, and recalibrating the transmitters. Temporary Alteration Control Form 0-89-69-063 was initiated to reinstall power to the enclosure

heaters and thermostats for the level transmitters. Operations Section Letters Administrative 99, "Assistant Unit Operator (AUO) Duty Locations and Responsibilities," was revised to require operator verification to detect potential failures every four hours.

Field-DCNs 1858A and 1859A have been completed to add qualified 1E thermostats and to reconnect the heaters.

Corrective Steps That Will Be Taken to Avoid Further Violations

NE has revised the appropriate procedures to require that NE personnel utilizing existing design input (i.e., calculations) from another discipline to support the issuance of design output documents shall obtain an interdisciplinary technical interface review in accordance with Sequoyah Engineering Procedure (SQEP) 26, "Plant Modification Packages and Design Change Notices," and shall require their concurrence on the involved DCN cover sheet prior to issuing the output. This action was previously identified in LER 50-327/89033; however, the procedure to be revised was reported as NEP-5.2. This action supersedes the commitment made in LER 50-327/89033.

Date When Full Compliance Will Be Achieved

TVA is in full compliance.

ENCLOSURE 2

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/89-29 AND 50-328/89-29
B. A. WILSON'S LETTER TO O. D. KINGSLEY, JR.,
DATED JANUARY 30, 1990

Violation 50-327, 328/89-29-01

"10 CFR 50, Appendix B, Criterion XVI, Corrective Action, states that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected.

Administrative Instruction 12, Corrective Action, implements this requirement. AI-12 establishes the requirements that shall be used in determining whether an issue/problem should be identified as a condition adverse to quality and corrected and documented via a Condition Adverse to Quality Report (CAQR); and as such, receive additional reviews and management attention than those required in the administrative control program. AI-12 states that an item that has failed, malfunctioned or shows signs of abnormal degradation resulting from inadequate design shall be identified by a CAQR.

Contrary to the above, from October 3, 1989 to December 15, 1990 [sic], the licensee identified that the heat tracing had been removed from the Unit 1 and Unit 2 Refueling Water Storage Tank level transmitters and did not initiate a CAQR or take prompt corrective action. These transmitters had a history of failures when heat tracing was not applied. Prior to the licensee taking corrective action to reapply heat tracing that had been removed as a result of an inadequate design, at least three level transmitters failed. These failures resulted in entry into technical specification (TS) Limiting Condition for Operation 3.3.3.7, and a request for TS relief.

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

Admission or Denial of the Alleged Violation

TVA admits the violation.

Reason for the Violation

As described in TVA's response to Violation 90-01 in Enclosure 1, NE personnel misapplied a calculation, during the resolution of CAQR SQP880260, resulting in an erroneous conclusion regarding the freeze protection for the RWST level transmitters. The possibility for freezing of the level transmitters was identified during the workplan review, and an action plan was initiated on the POD meeting agenda on October 26, 1989. A calculation was completed on November 13, 1989, and an action plan was placed on the POD agenda to procure and install qualified 1E thermostats. Because of the high visibility the issue received, personnel overlooked the obvious conclusion that a CAQR was

required to be written. Also, it was not anticipated that extreme freezing conditions would be experienced this early during this winter season. Accordingly, implementation of the action plan was not expedited in time to prevent the subject event from occurring when extreme conditions did in fact occur on December 15, 1989.

Corrective Steps That Have Been Taken and Results Achieved

Immediate action was taken by the Work Control group to review the POD agenda to ensure that no other conditions adverse to quality (CAQs) were being tracked by this list. Details regarding additional immediate actions taken in response to the event are described in Licensee Event Report (LER) 50-327/89033 and Violation Response 90-01-02. Further corrective action consisted of each discipline lead engineer instructing their employees on the importance of identifying CAQs when deficiencies are first noted so that proper and timely corrective action can be taken. Appropriate disciplinary action has been taken for the individuals concerned with this event.

SQN has taken actions to further ensure that CAQs are promptly reported and corrective actions are identified. These actions consisted of restructuring the Management Review Committee to more effectively correct identified problems and issuing clarifying guidance from the Interim Site Director. This guidance explained the importance of the CAQR system, directed personnel to use the system, addressed the need to promptly identify problems to ensure a review for operability and reportability could be performed, and requested personnel to identify any problems that they may be aware of but had not yet reported.

Corrective Steps That Will Be Taken to Avoid Further Violations

TVA will continue to stress the importance of the CAQR program. As stated in the Interim Site Director's January 19, 1990, weekly message to the site, "Making the Sequoyah corrective action program work is everyone's job, and I expect everyone to devote the necessary time to the prompt identification and correction of problems. Anything less, and the program will fail." A follow-up message was issued on February 8, 1990, to reaffirm the Interim Site Director's support for the CAQR program. In the longer term, a multisite task force was formed to evaluate the problem identification process, and the recommendations have been made to the Vice President, Nuclear Power Production. Planned enhancements to the program, as a result of the evaluation, are: single problem reporting document, lower threshold for an incident investigation, establishment of more reasonable assurance criteria and high-level review of problem reports, and approval of corrective actions.

Date When Full Compliance Will Be Achieved

Full compliance has been achieved.