TENNESSEE VALLEY AUTHORITY
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DEC 26 1989

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, 328/89-25 - REPLY TO NOTICE OF VIOLATION

Enclosed is TVA's response to B. A. Wilson's letter to O. D. Kingsley, Jr., dated December 7, 1989, which transmitted the subject notice of violation.

Enclosure 1 provides TVA's response to the notice of violation. A summary statement of the commitments contained in this submittal are provided in Enclosure 2.

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
Nuclear Technology and Licensing

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

DEC 26 1989

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ENCLOSURE 1

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/89-25 AND 50-328/89-25
B. A. WILSON'S LETTER TO O. D. KINGSLEY, JR.,
DATED DECEMBER 7, 1989

Violation 50-327, 328/89-25-01

"A. Technical Specification 6.8.1 states that, written procedures shall be established, implemented and maintained covering surveillance and test activities of safety-related equipment.

Section 4.9 and the associated flow chart of Instruction Change Form (ICF) 89-0758 to procedure SI-137.2, Reactor Coolant System Water Inventory, requires that, if the unidentified leakage calculation results in a negative value, then the calculations will be reperformed using a minimum of one hour of additional data.

Contrary to the above, on October 18, 1989, the reactor operators completed the performance of SI-137.2 at 7:26 a.m., when the calculated unidentified leak rate was negative, without taking the additional data as required by section 4.9 of ICF 89-0758.

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

Admission or Denial of the Alleged Violation

TVA admits the violation.

Reason for the Violation

A special performance of Surveillance Instruction (SI) 137.2, "Reactor Coolant System Water Inventory," was conducted on Unit 2 from 0351 to 0726 Eastern standard time (EST) on October 18, 1989, because of an increased radiation reading in the lower containment. The unidentified leakage calculated after obtaining two hours of data was -0.06 gallon per minute (gal/min), which was within the acceptance criteria for unidentified leakage (less than 1.0 gal/min but greater than -0.10 gal/min). Two hours is the minimum duration of data collection for performing the SI. Completion of the SI was expedited because it was being performed to determine whether the increased lower containment radiation reading was the result of reactor coolant system leakage. However, the SI contained a stipulation that negatively valued unidentified leakage (within the acceptance criteria) could be accepted only after continuing data collection for a minimum of one additional hour. Thus, the SI was completed prematurely after two hours of data collection when it should have continued for at least one additional hour.

The reason for the violation was inadequate attention to detail by the personnel performing the SI in that the additional hour of data collection stipulated in the procedure was not performed. A contributing cause for the violation may have been that the procedure being used to perform this surveillance was not clear. At the time this violation occurred, four ICFs had accrued in SI-137.2, which resulted in a patchwork procedure that no

longer provided clear, step-by-step instructions to the performer of the surveillance. An ICF is an administrative vehicle for making urgently needed changes to site procedures. An ICF is generally processed with handwritten changes on the affected pages, which are incorporated into the procedure by page substitution.

Corrective Steps That Have Been Taken and Results Achieved

The Operations Superintendent has administered the appropriate level of disciplinary action to the shift personnel responsible for the failure to properly perform SI-137.2 or to properly document that the results of the test were not valid to use for surveillance requirement compliance.

Corrective Steps That Will Be Taken to Avoid Further Violations

SI-137.2 is being revised as part of an SI enhancement effort to incorporate the ICFs into a more clearly understandable text. The revision has been drafted and is in the review and comment cycle. This revision is expected to be completed by January 26, 1990.

Date When Full Compliance Will Be Achieved

TVA is in full compliance. Corrective steps will be completed by January 26, 1990.

Violation 50-327, 328/89-25-02

"B. Technical Specification 6.8.1 states that, written procedures shall be established, implemented and maintained covering surveillance and test activities of safety-related equipment.

TI-37, Radiochemical Laboratory Sampling and Logsheets, action IV requires that corrective actions as specified by the Technical Specifications should be performed if the RWST concentration is greater than 2100 or less than 2000 ppm boron. Additionally, TI-37 requires that the actions of SI-51, Weekly Chemistry Requirements, be followed after a resample confirms a condition that does not meet acceptance criteria. SI-51 requires the performer to notify the shift operating supervisor (SOS) if the data does not satisfy the acceptance criteria.

Contrary to the above, on October 20, 1989 by 8:15 a.m., the licensee had drawn 2 samples from the Unit 2 RWST and determined the boron concentration to be below 2000 ppm and did not inform the SOS of this fact.

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

Admission or Denial of the Alleged Violation

TVA admits the violation.

Reason for the Violation

At approximately 0630 EST on October 20, 1989, during performance of SI-51, "Weekly Chemistry Requirements," the analyst in the Radiochemistry Laboratory obtained test results of 1,952 parts per million (ppm) boron for the Unit 2 refueling water storage tank (RWST). The RWST boron concentration required by Limiting Condition for Operation (LCO) 3.1.2.6 is between 2,000 and 2,100 ppm. In accordance with the requirements of both Sequoyah Standard Practice SQE22, "Sequoyah Nuclear Plant Chemistry Program," and Technical Instruction 37, "Radiochemical Laboratory Sampling and Log Sheets," a second sample was obtained at 0735 for analysis to verify the results of the first sample. At 0815, the results of the second sample showed 1,971 ppm boron.

At approximately 0816, the Secondary Chemistry Manager arrived and was briefed on the RWST test results. This manager reviewed the analytical results, along with the standardization results, and questioned the validity of the analysis. Changes had been made to the chemistry analytical procedure three days prior to this event that had changed the standards used to bracket the expected sample boron concentration. Prior to the change, 1,000 ppm and 3,000 ppm standards were specified while after the change 100 ppm and 3,000 ppm standards were specified. Suspecting that there was an analytical problem rather than an actual RWST boron concentration problem, the Secondary Chemistry Manager asked the analyst to run a 1,000 ppm standard as a check, and also asked the Chemistry shift supervisor to call the SOS to brief him on the situation and to tell him that Chemistry was looking into it and would get back to him as soon as possible. The SOS was telephoned at 0819 and told of the problem with the RWST boron concentration and that the analysis would be reverified. The Chemistry shift supervisor did not make it clear that the results were based on two samples. As a result, the SOS did not enter the LCO. At approximately 0845, the 1,000 ppm standard showed an analysis result of 956 ppm, which is below the 1-percent control limit. The standard being below the 1-percent control limit voided the previous analysis results and confirmed that the problem was analytical as had been suspected. At 0850, the SOS was informed about the boron standardization problem. The SOS confirmed that the RWST level had not changed since the last weekly boron concentration surveillance. (At least a 3-percent level change would be required to dilute the tank to the lower boron concentration.)

Having confirmed an analytical problem, troubleshooting efforts were initiated to isolate and correct the source of the problem. Following a full recalibration of both boron titrators in the laboratory using new potential H(ydrogen-ion) activity (pH) buffers and restandardized sodium hydroxide titrant, both the 1,000 ppm and 3,000 ppm standards were within specification. At 1025, the first RWST sample was reanalyzed and determined to contain 2025 and 2048 ppm boron with the two titrators in the laboratory. At 1029, Operations was notified of the first sample reanalysis results. At 1050, the second RWST sample was reanalyzed and determined to contain 2,038 ppm boron. At 1100, the first sample was delivered to the laboratory at the Power Training Center (PTC) for independent analysis. At 1300, the PTC laboratory reported two test results of 2036 and 2037 ppm on the first sample, confirming the results obtained at the SQN laboratory at 1025. In addition, a third sample was obtained from the Unit 2 RWST at 1235 for confirmatory

analysis. At 1305, this sample was determined to contain 2043 ppm boron. At 1310, the Chemistry shift supervisor notified the SOS of the independent PTC results and of the test results for the confirmatory third sample.

The reason for the violation was a failure by the Chemistry shift supervisor to make clear in the 0819 report to the SOS that the analytical results were based on two separate samples. Had this been made clear, LCO 3.5.5 would have been entered. The cause of the unacceptable boron concentration results was that the range of standards used to bracket the expected sample boron concentration was too wide (100-3,000 ppm versus 1,000-3,000 ppm) and the 100 ppm standard had too wide an acceptance criterion. The changes to the chemistry analytical procedure had been made without adequate validation.

Corrective Steps That Have Been Taken and Results Achieved

The appropriate Chemistry personnel have been counselled as to the importance of complete and timely notification of the SOS with information needed to make plant operational decisions. The individual responsible for changing the range of standards used to bracket the expected boron concentration and those persons responsible for reviewing the procedure change have been given the appropriate level of disciplinary action.

In addition, as immediate corrective action, a night order was issued giving explicit instructions to ensure that any boron standardization would more closely bracket the boron concentration being analyzed.

Corrective Steps That Will Be Taken to Avoid Further Violation

Sequoyah Standard Practice SQE22 will be revised by January 31, 1990, to clarify that the SOS should be notified after the results of the first sample, even though there may be open issues relative to sample or analysis quality. These issues will be provided to the SOS so that he has that information for an LCO call. A night order is already in effect stating this prior to the procedure revision.

Date When Full Compliance Will Be Achieved

TVA is in full compliance.

Violation 50-327, 328/89-25-04

"C. Technical Specification 6.8.1.e states that written procedures shall be established, implemented and maintained covering site Radiological Emergency Plan (REP) implementation.

The Sequoyah Radiological Emergency Plan implementing procedure (EPIP)-1, Emergency Plan Classification Logic, implements these requirements, and requires that the Radiological Emergency Plan (REP) be activated when any one of the conditions listed therein is detected. The Shift Operating Supervisor (SOS) is responsible for declaring the emergency and providing the initial activation. The logic of EPIP-1 states that both unit-related emergency diesel generators (EDGs) inoperable simultaneously by unscheduled outage or failure as determined by the shift engineer is a Notification of Unusual Event.

Contrary to the above, at 4:10 a.m. on October 26, 1989 the 2B-B EDG became inoperable while the 2A-A EDG was also inoperable, and the SOS did not declare an NOUE nor provide for initial activation of the REP until 6:15 a.m., over two hours after the condition was discovered.

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

Admission or Denial of the Alleged Violation

TVA admits the violation.

Reason for the Violation

AT 1748 EST, on October 25, 1989, 2A-A diesel generator (D/G) was declared inoperable as the result of voltage regulator problems. Action Statement (a) of LCO 3.8.1.1, which requires, in part, that the remaining alternating current sources be periodically demonstrated to be operable. SI-7.1, "Diesel Generator AC Electrical Power Source Operability Verification (Diesel Generator/Offsite Source)," is used to fulfill this requirement. At 0410, during a performance of SI-7.1 for D/G 2B-B, an assistant unit operator (AUO) in the D/G building noticed that the "power on" indicator light on the D/G local control panel was burned out. While attempting to change the burned out light bulb, a short occurred, blowing a control power fuse and causing a loss of D/G 2B-B control power. When the control power was lost, the operators in the main control room lost control of the 2B-B D/G. The control room operator attempted to trip the D/G manually using the emergency trip button, but could not stop the D/G. The AUO in the D/G building was contacted and directed to trip the D/G, but also could not stop the D/G. The SOS was contacted about the problem. It was determined that Action Statement (d) of LCO 3.8.1.1 and LCO 3.0.5 applied, which require that at least one of the two D/Gs (2A-A or 2B-B) be returned to operable status within two hours or both units be in hot standby within the next six hours. These LCOs were entered as of 0410. The SOS sent an assistant shift operations supervisor (ASOS) to the D/G building to investigate. The ASOS found the blown control power fuse. When the fuse was replaced, normal control of the D/G was regained. At 0522, SI-7.1 was completed on 2B-B D/G with all acceptance criteria passed and the D/G was returned to operable status. Action Statement (d) of LCOs 3.8.1.1 and 3.0.5 were exited at that time. It was not until after the 2B-B D/G was operable again that the SOS, during his review of the activities, realized that Emergency Plan Implementing Instruction (EPIP) 1, "Emergency Plan Classification Logic," defined a condition with both unit-related D/Gs being inoperable at the same time as the result of unscheduled maintenance or a failure. At 0615, the SOS declared and exited a notification of unusual event (NOUE) and made the appropriate notifications.

The reason for the violation was that the SOS failed to realize that an NOUE should have been declared. The SOS did not immediately consider the REP because he was in a technical specification action statement and incorrectly assumed that the action statement was the only controlling document.

Two contributing reasons for the violation have also been identified. First, a review of EPIP-1 found that the unusual event classification process relied solely on memory. For most other conditions, the emergency operating instructions (EOIs) and abnormal operating instructions (AOIs) branch the operator into the appropriate EPIP event for proper classification. The loss of both D/Gs on the same unit is not covered by an AOI or an EOI, and consequently, there is no directed entry into the EPIP classification process. The second contributing reason for the violation was an omission in training. The SOSs are trained and evaluated on the simulator to make timely event classification calls on events related to the REP. However, not all unusual event classifications concerning normal technical specification events have been routinely covered during simulator evaluations. Training exercises have included EPIP classifications on EOI and AOI scenarios, but generally have not included normal operational events that are covered by operation within technical specification requirements.

Corrective Steps That Have Been Taken and Results Achieved

The Operations Superintendent has discussed this event and the need for timely EPIP classification with all SOSs. The SOS who failed to make the timely classification has been disciplined for failure to declare an NOUE in a timely manner. In addition, each individual incident that would cause an entry into an NOUE is being reviewed and, if possible, included in the appropriate section of a plant instruction to enhance identification of EPIP entry criteria. Actions have also been initiated to include normal operational events of this nature in operator requalification training to evaluate performance on unusual event recognition.

In an effort to make EPIP-1 more user-friendly and, therefore, more effective, a revision has been completed and will be implemented during January 1990 that includes a new format reflecting Nuclear Management and Resources Council recommendations. Use of the new EPIP-1 format has been reviewed with operators during requalification training. In addition, site emergency preparedness personnel have begun conducting tabletop drills with the duty SOS on event classification using the new EPIP-1 format. This continuing training is being conducted approximately weekly on the mid-shift to familiarize operators with the new format and to reinforce awareness of the REP.

Corrective Steps That Will Be Taken to Avoid Further Violations

No further corrective actions are needed.

Date When Full Compliance Will Be Achieved

TVA is in full compliance.

Additional Requested Response

The cover letter transmitting this violation stated the violation is similar to Violation 50-327, 328/88-33-01 cited by letter on November 5, 1988, and requested TVA give particular attention to the identification of the root cause of the problem and the corrective action to prevent recurrence. TVA was also requested in paragraph f of Inspection Report 89-25 to discuss the

corrective actions taken for Violation 88-33-01 and four emergency preparedness-related inspector follow-up items (IFIs) as part of the response to Violation 89-25-04. The corrective actions described in the response to Violation 89-25-04 and information provided in TVA's response to Violation 89-21-01 dated November 6, 1989, encompass the corrective actions for the four IFIs. Violation 88-33-01 is discussed below.

Violation 88-33-01 involved a delay of approximately one hour by the SOS in initiating the REP following receipt of a seismic alarm. The SOS did not initiate the REP immediately because the seismic alarm was believed to be spurious. Although the alarm was subsequently confirmed to have been spurious, initiation of the REP should not have been delayed. The corrective action for Violation 88-33-01 was a revision to EPIP-1 to direct the SOS to follow his indications and, unless a suspected spurious or otherwise false alarm can be substantiated in a minimum timeframe (based on the potential severity of the event), to proceed with actions as required by EPIP-1 until such time as the alarm is verified to be false.

Although Violation 88-33-01 and Violation 89-25-04 both involved untimely initiation of an NOUE, they are unrelated in terms of common root cause or appropriate corrective actions. In Violation 88-33-01 the SOS delayed initiation of the REP because he believed (correctly) that a seismic alarm was spurious. The corrective action was a clarification of the latitude given to the SOS to investigate suspected spurious indications before initiating the REP. In Violation 89-25-04 the SOS simply did not at first recognize the D/G event required initiation of the REP. The corrective actions are a major enhancement to EPIP-1 format to simplify its use; expanded operator training on event recognition during annual requalification; continuing on-shift exercises with the SOSs on event classification; and the inclusion of incidents that would cause an NOUE entry into appropriate plant instructions to enhance their recognition. These corrective actions are believed to be appropriate and responsive to the issues and to be adequate to prevent recurrence of the violation. These actions are also believed to be responsive to the concerns expressed in NRC Information Notice 89-72, "Failure of Licensed Senior Operators to Classify Emergency Events Properly," issued October 24, 1989.

Enclosure 2

List of Commitments

1. SI-137.2 is being revised as part of an SI enhancement effort to incorporate the ICFs into a more clearly understandable text. This revision is expected to be completed by January 26, 1990.

2. Sequoyah Standard Practice SQE-22 will be revised by January 31, 1990, to clarify that the SOS should be notified after the results of the first sample even though there may be open issues relative to sample or analysis quality. These issues will be provided to the SOS so that he has that information for an LCO call. A night order is already in effect stating this prior to the procedure revision.