



Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379

May 22, 1995

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,
328/95-03 - REPLY TO NOTICE OF VIOLATION (NOV) 50-327, 328/95-03

Enclosed is TVA's reply to Albert F. Gibson's letter to Oliver D. Kingsley, Jr., dated April 21, 1995, which transmitted the subject NOV's. The violations are associated with corrective action inadequacies, inadequate procedures or personnel not following procedures, and design control inadequacies.

Enclosure 1 contains TVA's response to the violations. Enclosure 2 contains the response for those items that NRC specifically requested in the subject letter. A list of commitments is included in Enclosure 3.

TVA understands that the subject letter involves examples of specific violations, as well as broader issues, such as the corrective action process and the failure to follow procedures. TVA has developed a Quality Improvement Team (QIT) tasked with the responsibility of improving the corrective action process. These improvements are focused on identification of problems and ensuring the appropriate causes are developed and corrective actions are taken to prevent future events. TVA's management team is also working to strengthen the site's procedural adherence. Two different QITs have been developed to review the number of procedures utilized at SQN, as well as the quality of those procedures. TVA believes these QITs will assist the management team in improving procedural adherence at SQN.

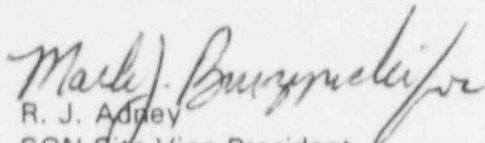
TVA would like to take this opportunity to express our appreciation for the professional manner in which this inspection activity was conducted. Your staff performed a very thorough and comprehensive inspection of our service water systems. This type of professional inspection will enhance the reliability and performance of the plant and its systems.

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If you have any questions concerning this submittal, please telephone Steve D. Gilley at (615) 843-7427.


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Enclosures

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ENCLOSURE 1
RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327, 328/95-03
ALBERT F. GIBSON'S LETTER TO OLIVER D. KINGSLEY, JR.
DATED APRIL 21, 1995

VIOLATION 50-327, 328/95-03-02

"10 CFR 50, Appendix B, Criterion III, 'Design Control,' states in part, that 'Measures shall be established to assure that applicable regulatory requirements and the design basis...are correctly translated into specifications, drawings, procedures, and instructions.'

"ANSI N45.2.11-1974, 'Quality Assurance Requirements for the Design of Nuclear Power Plants,' section 3.2 states in part, that 'The design input shall include ... performance requirements such as capacity, rating, system output, ... design conditions such as pressure, temperature, ... hydraulic requirements such as ... allowable pressure drops, ... instrumentation and control requirements ... operational requirements under various conditions, such as ... special or infrequent operation, and system abnormal or emergency operation.'

"TVA Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A, section 7.2.2, requires design inputs to be correctly translated into design outputs.

"TVA Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A, section 7.2.1.F, requires acceptance criteria for tests to be defined in design output documents.

"Final Safety Analysis Report section 8.3.1.1, states that the diesel generator battery, with the charger not operable, is capable of supplying all electrical and control DC loads to a minimum battery voltage of 105 VDC (i.e., 1.84 VDC per cell X 57 cells) for 30 minutes when the battery is at the lowest expected temperature of 40°F and at the end-of-life condition (80 percent capacity).

"Final Safety Analysis Report section 9.5.1.1.h, requires the fire protection system be designed to provide emergency feedwater to the steam generators under maximum design basis flood conditions.

"Final Safety Analysis Report section 9.2.2.2.2, documented the minimum required reservoir level as 670 feet.

"SQN-DC-V-12.1, 'General Design Criteria for Flood Protection Provisions,' section 4.9.6, required blowdown of the steam generators when feeding the steam generators from the high pressure fire protection system.

"SQN-DC-V-12.1, 'General Design Criteria for Flood Protection Provisions,' paragraph 4.10.7 of section A.2.4, states, 'If the downstream dam should fail, the water level in the forebay pool of the pumping station would no longer communicate

with the river. The water storage volume in the pool shall be sized to supply enough makeup for operation in the flood mode for at least six days without replenishment.

"Contrary to the above, as of January 9, 1995, measures were inadequately established to assure that applicable regulatory requirements were correctly translated into specifications, drawings, procedures, and instructions in that:

1. For the high pressure fire protection system the design pressure was not used as design input for the piping to the steam generator; system capacity requirements necessary to compensate for the heat load to be rejected from the steam generators and the spent fuel pool were not adequately used as a design input; operational requirements for steam generator blowdown were not considered as a design input; appropriate consideration for allowable strainer pressure drops was not used as a design input and operational considerations for system pressure and forebay makeup were not translated into procedures.
2. Strainer plugging with the resulting pressure increase on piping and strainers was not used as a design input for the essential raw cooling water screen wash system in calculation SQN-67-D053-HCG-RSR-073086.
3. The acceptance criteria for procedure 1-PE-EBT-082-001.0A[sic], 'Diesel Generator Battery 1A-A and Charger Capacity Tests,' was not defined in any design output document, and calculation SQN-CPS-007, Revision 1, 'Diesel Generator Battery Capacity,' R1, B87-930817-006, dated 08-16-93 concluded that diesel generator battery voltages less than 105 VDC were acceptable.
4. The minimum required reservoir level of 670 feet was not used as the design input when developing the turbine building isolation pressure switch (O-PS-67-206 and O-PS-67-209) setpoint in calculation FT-67-206.

"This is a Severity Level IV violation (Supplement I.D.3)."

VIOLATION 95-03-02 EXAMPLE 1

Reason for the Violation

The cause for this violation was the failure of the independent reviewer of the hydraulic evaluation performed for the High Pressure Fire Protection (HPFP) System during flood mode operation, to consider all design input, to validate utilized input, and to translate the results into other design and plant documents. The cooling requirements were calculated in a Quality Information Request/Release. At the time that work was done, the process did not require specific cross references to successor and/or predecessor documents. The problems associated with Quality Information Requests/Releases have previously been identified and the process corrected. Contributing to the problems with this calculation was a low usage older calculation that used simplified analytical approaches. The approach used was not comprehensive enough to account for all system parameters. The problems identified

with this calculation are attributed to personnel errors, which occurred when identifying design inputs for the hydraulic evaluation of the HPFP system during flood mode conditions. This condition is considered to be an isolated occurrence limited to systems and/or calculations associated with the flood mode mitigation function. The flood mode requirements for SQN have remained essentially unchanged since its original design and thus, the calculations have not been updated to utilize computer aided design tools. In addition, the calculations were not subject to periodic review, revision, and use as part of ongoing design work. The other design basis events and supporting calculations have been affected by more recent design basis reviews and major plant modifications, which would require design basis calculations to be reviewed and updated.

Corrective Actions That Have Been Taken and the Results Achieved

Personnel who originally prepared and checked the affected calculations are no longer with TVA. Personnel performing these functions today have been trained in a manner that would preclude future occurrences of this type. NRC commented on the general high quality of the calculations currently being prepared.

The Mechanical/Nuclear lead engineer has conducted a lessons learned review with group personnel concerning deficiencies identified in the affected calculations.

The Corrective Steps That Will be Taken to Avoid Future Violations

The hydraulic calculation will be revised to reflect flood mode conditions. Drawings will be revised to update the design pressure on the drawing for the affected portions of the HPFP system. A design output document will be prepared to identify specific assumptions employed when analyzing the HPFP during flood mode operation. The design control process will ensure that this information is provided for use in plant procedures.

Date When Full Compliance Will be Achieved

Full compliance will be achieved upon completion of the corrective actions stated above and will be complete by September 25, 1995.

VIOLATION 95-03-02 EXAMPLE 2

Reason for the Violation

The cause of this violation was the failure of design personnel to verify information used in the design basis calculation regarding strainer operation. No allowance was made for the presence of debris when the pressure drop across the strainer was calculated because the preparer of the calculation took credit for cleaning of the strainers. This assumption was in error because, even though cleaning does occur, the conditions associated with a flood could result in the rapid accumulation of debris.

Corrective Actions That Have Been Taken and the Results Achieved

An evaluation of the essential raw cooling water (ERCW) piping was made to determine if overpressurization would occur due to the presence of debris on the strainer. Pipe stresses were determined to comply with American National Standards Institute (ANSI) B31.1 pressurization limits.

The Corrective Steps That Will be Taken to Avoid Future Violations

The appropriate calculations will be revised to reflect a clogging allowance for the strainer or issue design output documentation to be used as a basis for periodic inspection/cleaning of the screens.

TVA will perform a review of the design calculations for other safety-related and quality-related strainers to ensure that strainer pressure drops have been properly addressed consistent with plant procedures and operating conditions.

Date When Full Compliance Will be Achieved

Full compliance will be achieved upon completion of the corrective actions stated above and will be complete by October 27, 1995.

VIOLATION 95-03-02 EXAMPLE 3

Reason for the Violation

A Diesel Generator (D/G) battery capacity calculation concluded that the D/G battery voltage would momentarily drop below 105-volt (V) dc (direct current), but would continue to supply adequate voltage to all components necessary to support the safety function. A sign-off indicated that the Final Safety Analysis Report (FSAR) review was performed; however, engineering personnel failed to recognize that the calculation results were in conflict with the minimum voltage stated in the FSAR. The required FSAR revision to reduce the minimum battery voltage of 105-V dc was not initiated as a result.

The acceptance criteria in a D/G battery and charger capacity test was based on information generated in an engineering calculation. These Engineering calculations are not considered design output and no other design output document containing the information existed. Changes occurred in the calculation, resulting in changes in the duty cycle, but the changes were never incorporated into the test acceptance criteria. When the test acceptance criteria in the procedure was established, the need to have the supporting information from Engineering controlled as design output information was not recognized. This failure is attributed to insufficient understanding by plant staff personnel on the different controls associated with design input and design output information.

Corrective Actions That Have Been Taken and the Results Achieved

The subject calculation was revised to evaluate the following:

1. Emergency start of the D/Gs at the beginning of the duty cycle in response to:
 - a. Loss of offsite power (LOOP)
 - b. An accident signal concurrent with LOOP
2. Manual start of a D/G after a 30-minute discharge following a failure of a D/G to start on demand.
3. Service testing and acceptance criteria.

The load profile was developed that encompasses the duty cycle. Acceptance criteria (with margin for temperature and aging) is provided.

4. The capacity of the charger to recharge the D/G battery was evaluated.

The conclusion reached by this calculation was that the batteries could start the D/G as required to fulfill its safety function.

The basis for the assumptions used in Revision 1 of the subject calculation was reevaluated, resulting in the following enhancements. A reference was provided to the letter from Square D Company, documenting that the KPD relays will hold in to 10 percent of nominal voltage. Additionally, the performance of the dc lube oil pumps was determined and documented as not being required to support a successful D/G start. The effect on other components, if the dc lube oil pump did start, was also taken into account.

Revision 2 of the calculation also analyzed the start sequence for the D/G to provide assurance that vendor correspondence concerning battery capacity was accurate.

The service test and acceptance criteria for the battery were added to a drawing. The drawing is the appropriate design output document.

A change to the FSAR was initiated to indicate that battery voltage will drop below 105-V dc during the first 10 seconds of the duty cycle.

A review of other documents involving inconsistencies between calculation results and FSAR descriptions was conducted and concluded that this was an isolated occurrence.

The individual who performed the FSAR review and concluded that no FSAR change was required was counseled on the requirements that must be satisfied to be in

compliance with the FSAR. The person who reviewed the work and signed as checker no longer works at SQN.

The inappropriate use of design input information in plant procedures was discussed with key plant department personnel. They have in turn discussed these issues with personnel in their organizations involved with procedure preparation or revision.

The Corrective Steps That Will be Taken to Avoid Future Violations

A sampling review of safety-related plant procedures will be performed to determine if acceptance criteria is based on design calculations not contained in design output documents. The results of the sample review will be used to determine if additional procedures need to be reviewed. Procedures containing inappropriate references to design calculations will be identified to Engineering, and any deficiencies will be included in a corrective action program as appropriate by September 30, 1995.

Site Standard Procedure (SSP) 2.3, "Administration of Site Procedures," will be revised to clarify the definition of design output information for use in procedures by June 30, 1995.

Date When Full Compliance Will be Achieved

Full compliance will be achieved upon completion of the corrective actions stated above and will be complete on or before September 30, 1995.

VIOLATION 95-03-02 EXAMPLE 4

Reason for the Violation

The minimum process pressure for isolation of ERCW to the turbine building is established by calculation. Isolation of this portion of ERCW is necessary in the event of a pipe break, which could occur in the turbine building since it is a nonseismic structure. A plant design change was implemented to reflect dredging of the reservoir bottom near the ERCW intake channel and revised TVA reservoir level management practices designed to ensure a minimum water supply to the ERCW system. These changes resulted in the minimum reservoir level being changed from 636 feet to 639 feet. (Note that the minimum reservoir level of 670 feet cited in the notice of violation letter dated April 21, 1995, is incorrect. The correct minimum reservoir level is 639 feet.)

Several calculations were revised as part of the design change to reflect the change in minimum reservoir level. However, the subject calculation which calculates the process limits used in establishing the setpoints for FT-67-206, was not revised and; therefore, continued to use elevation 636 feet as the minimum reservoir level.

When the minimum reservoir level was increased from 636 feet to 639 feet, the engineer performing the screening review for the design change may have concluded

that the minimum process pressure calculated using a minimum reservoir level of 636 feet would bound a minimum process pressure calculated for a revised, higher, 639-foot reservoir level and, as such, the calculation need not be revised. A thorough review of both the process limit calculation and the setpoint calculation would have found that the minimum process pressure was used to establish ERCW system isolation to the turbine building in the event of a pipe break. For this application, a less-than-minimum process pressure is non-conservative in that it delays or prevents ERCW system isolation in the event of a turbine building pipe rupture. The calculation should have been revised to reflect the increase in minimum reservoir level as part of the design change in 1991. Failure to consider the full impact of not revising the calculation is attributed to a personnel error.

Corrective Actions That Have Been Taken and the Results Achieved

An engineering evaluation was performed and concluded that the present ERCW isolation setpoints are adequate to isolate the ERCW loads in the turbine building in the event of a pipe rupture. This conclusion was based on: (1) the minimal impact of the reservoir level change on the overall calculated system pressure, (2) the almost identical, off-setting change in the available pump head caused by the reservoir minimum level change, and, (3) the conservative (i.e., high) pump head values used in the calculation, which create sufficient margin to more than off-set the remaining effect of the minimum reservoir difference.

The personnel error, which caused the process limit calculation to be incorrect, is an isolated occurrence. The circumstances of the design change (i.e., a one-time river dredging) and the uniqueness of the calculation (the ERCW supply to the turbine building is the only system line that has an automatic isolation feature, which requires calculation of a minimum process pressure) limit the cause and effect of the error to the single calculation cited.

The Corrective Steps That Will be Taken to Avoid Future Violations

Detailed system flow modeling will be performed to determine if the present ERCW turbine building automatic isolation function is required. Calculations will be revised as appropriate upon completion of the flow modeling.

Date When Full Compliance Will be Achieved

Full compliance will be achieved upon completion of the corrective actions stated above and will be complete on or before June 30, 1996.

VIOLATION 50-327, 328/95-03-04

"10 CFR 50, Appendix B, Criterion V, 'Instructions, Procedures, and Drawings,' requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

Instructions, procedures or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

"TVA Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A, section 6.1.1, requires quality-related activities be prescribed by documented procedures and instructions, and accomplished in accordance with these procedures and instructions.

"SSP 12.1, 'Conduct of Operations,' Section 3.7.6.B.2, requires that annunciators that are known to be false due to instrumentation problems, electrical problems, or other problems, or main control room instruments that are known to be invalid or out of service, shall be identified by initiating work request and placing a work request sticker on the annunciator window or instrument.

"Procedure SSP-12.15, 'Fire Protection Plan,' Section 8, Appendix E, requires a posted transient fire load permit in the vicinity of the transient fire load material until the material is removed, no longer exists, or has been evaluated and a formal request submitted to the Appendix R Coordinator to include the material in the fire hazards analysis.

"Work Control Procedure AI-19, Attachment 2, item 33, directs operations procedures be identified for revision if affected by a modification being implemented. Also, operations personnel are to exclusively do the review.

"Procedure SSP-10.5, 'Technical Evaluation for Procurement of Materials and Services,' section 3.3.3, requires an equivalency evaluation of critical characteristics for replacement equipment.

"Contrary to the above:

1. Between September 1991 and January 1992, an activity affecting quality prescribed by a documented procedure was not accomplished in accordance with this procedure in that personnel, some of whom were not from the operations department, reviewing modifications that replaced the Main Steam Valve Roof Blow-out Panels for procedure changes, did not identify the steps directing removal of the roof panels in Procedure AOI-07, 'Maximum Postulated Flood,' as requiring deletion.
2. As of January 9, 1995, activities affecting quality were inadequately prescribed by a documented instruction or were not accomplished in accordance with that instruction in that AOI-07, 'Maximum Postulated Flood,' directed grounding of an operable 6900-volts shutdown board preventing the shutdown board's operation, and numerous spare parts designated in AOI-07 through reference to a maintenance instruction contained wrong information, were no longer in stock, had wrong maximum/minimum values, were designated as only requiring reorder after

the stock reached zero (with lead times of up to 400 days), or were never designated for storage.

3. As of January 26, 1995, an activity affecting quality prescribed by a documented procedure was not accomplished in accordance with this procedure in that a transient fire load permit was not posted in the vicinity of barrels in the Emergency Gas Treatment System room containing combustible liquids and had not been evaluated by the Appendix R Coordinator.
4. On January 10, 1995, an activity affecting quality prescribed by a documented procedure was not accomplished in accordance with this procedure in that the annunciator for Travelling Screens Malfunction Train B in the main control room was lit due to a false instrument indication associated with the travelling screens water level indicators, and a work request sticker had not been placed on the annunciator or the instrument indicator.
5. In June 1993, an activity affecting quality prescribed by a documented procedure, was not adequately accomplished in that procurement personnel performing an equivalency evaluation of replacement battery jars for the 1A-1 diesel generator, evaluated critical electrical characteristics of the jars as they existed in 1991 versus their critical electrical characteristics after two years of use (the 1993 characteristics).

"This is a Severity Level IV Violation (Supplement I.D.3)."

VIOLATION 95-03-04 EXAMPLE 1

Reason for the Violation

The modification to replace the roof on each of the four main steam valve vaults (MSVVs) was conducted under four separate work plans, two for Unit 1 and two for Unit 2.

Operations did not review the Unit 1 workplans because of memorandums issued by the organizations stating that their review was not required for certain civil related modifications. A corrective action document later determined that using the guidance of the memorandums was in violation of the procedural requirements of the plant modification process. The Unit 2 work plans did receive Operations review, but the review failed to identify Abnormal Operating Instruction (AOI) 7 as a procedure that was required to be revised. This oversight is attributed to a failure to recognize the impacts of the modification on AOI-7.

Corrective Actions That Have Been Taken and the Results Achieved

The corrective actions under SQFIR920024 included complying with the review requirements under the existing procedure for work plan reviews instead of using the guidance supplied in the memorandums from Operations and Technical Support.

The procedure that now controls the plant modification process is SSP-9.3, "Plant Modifications and Design Change Control." This procedure requires that the design change notices (DCNs) used for this type of work would afford Operations multiple opportunities for review of the design throughout the development process.

Modifications engineers who are responsible for preparing impact review packages have been briefed on this event, and on the lessons learned regarding the potential impact on site organizations that each modification carries.

AOI-7 has been revised to remove the reference to O-FP-MXX-000-001.0 requesting the removal of the MSVV roof panels.

The Corrective Steps That Will be Taken to Avoid Future Violations

SSP-9.3 will be enhanced on or before June 30, 1995, to provide improved guidance for when impact review is required by Operations for civil-related modifications.

Modifications engineers who are responsible for preparing impact review packages will be trained on or before July 14, 1995, on the revision to SSP-9.3 concerning DCN impact reviews.

The appropriate Operations personnel, will be trained on the probable maximum flood procedure on or before September 15, 1995.

Date When Full Compliance Will be Achieved

Full compliance will be achieved upon completion of the corrective actions stated above and will be complete on or before September 15, 1995.

VIOLATION 95-03-04 EXAMPLE 2

Reason for the Violation

The procedure AOI-7, "Probable Maximum Flood," was inadequate in that it incorrectly provided actions in the recovery phases, which could establish a direct ground from an operable 6900-V shutdown board to an elevation below the maximum probable flood elevation of 723.1. Additionally, items that the procedure designated as spare parts were not available from the warehouse.

Corrective Actions That Have Been Taken and the Results Achieved

An operability evaluation was performed for the condition involving the potential grounding of a 6.9 kilovolt (kV) shutdown board. Under certain conditions the flood procedure uses the D/G to feed the auxiliary building lighting through the 6.9-kV shutdown board, 6.9-kV unit board, 6.9-kV start bus, 6.9-kV common board, and then the lighting distribution board. The concern for this configuration is that a flood could short out the cable from the 6.9-kV shutdown board to the 6.9-kV unit board.

The operability evaluation determined that the D/G breaker on the 6.9-kV shutdown board will trip, clearing the fault and protecting the D/G. When this occurs, the 6.9-kV shutdown board will experience a loss of voltage, which will initiate load shedding, which will trip the breaker from the 6.9-kV shutdown board to the 6.9-kV unit board, as designed. The load shedding and load sequencing logic will retie the D/G to the 6.9-kV shutdown board after the breaker to the 6.9-kV unit board opens. Therefore, the shutdown board has been determined to be operable.

AOI-7, "Probable Maximum Flood" was revised to correct the inadequacy regarding the grounding of an operable 6900-V shutdown board.

Operations personnel have performed a technical review of AOI-7. All identified deficiencies have been corrected.

The Corrective Steps That Will be Taken to Avoid Future Violations

The procedure that identifies the spare parts to be relocated for a flood, O-FP-MXX-000-003.0, "Flood Preparation - Parts, Tools, and Equipment to be Moved Above Elevation 723.1," will be revised as appropriate.

Date When Full Compliance Will be Achieved

TVA will be in full compliance upon completion of the revision to O-FP-MXX-000-003.0 which will be complete on or before November 17, 1995.

VIOLATION 95-03-04 EXAMPLE 3

Reason for the Violation

The cause of the violation was a failure to follow procedure. A transient fire load (TFL) permit was not obtained for three barrels that were labeled with a Chemical Traffic Control sticker for ethylene glycol, which is a Class IIIB combustible. The barrels had been used in support of a maintenance activity and contained either ethylene glycol or a solution of ethylene glycol and water. At certain concentrations, the solution of ethylene glycol and water is combustible. However, to avoid the necessity of verifying concentrations in order to establish whether or not a solution is combustible, the SQN Chemical Traffic Control Program treats all solutions of ethylene glycol and water as combustible.

Therefore, under the existing program at SQN, these barrels were required to have a TFL permit.

Corrective Actions That Have Been Taken and the Results Achieved

The barrels were removed from the area.

A lessons learned review was conducted with the appropriate personnel in Maintenance concerning the requirements for TFL permits for ethylene glycol.

A bulletin was issued to the site describing this event. The bulletin pointed out that ethylene glycol was the particular substance involved in this event and that the requirements of SQN's TFL program were not followed.

The Corrective Steps That Will be Taken to Avoid Future Violations

Corrective actions to prevent future violations are complete as stated above.

Date When Full Compliance Will be Achieved

The completed corrective actions stated above bring TVA into full compliance.

VIOLATION 95-03-04 EXAMPLE 4

Reason for the Violation

The cause of the violation was failure to follow procedures in that a work request should have been initiated when the annunciator light came on and would not clear.

The ERCW traveling screen differential indicators have not functioned properly since plant start-up. Several unsuccessful attempts have been made to repair these instruments. The traveling screens pressure drop instrumentation previously provided an automatic start signal to the screens. Because of the unreliability of the instruments, this feature was permanently disabled. When the automatic feature was permanently disabled, the requirement for periodic manual operator backwashing was implemented. The design change that disabled the automatic feature did not deactivate the main control room annunciator, even though they were inaccurate. Recently, a preventive maintenance procedure attempted to calibrate the transmitters, but was unsuccessful. As a result of the recent attempt to calibrate the instrument, the control room annunciator for traveling screen problems was activated and would not clear immediately due to the problems with the instruments.

Corrective Actions That Have Been Taken and the Results Achieved

The ERCW traveling screen level differential indicators have been marked, in accordance with the conduct of operations procedure, with an operator aid explaining that the instruments are unreliable.

An issue was submitted and has been approved by the Plant Issues Committee to study the alternatives regarding removal, repair, or replacement of the traveling screen level differential instrumentation.

The Corrective Steps That Will be Taken to Avoid Future Violations

The corrective actions to prevent future violations are complete as stated above.

Date When Full Compliance Will be Achieved

The completed corrective actions stated above bring TVA into full compliance.

VIOLATION 95-03-04 EXAMPLE 5

Reason for the Violation

The violation occurred because TVA failed to adequately document all of the items considered in the Procurement Engineering Group (PEG) evaluation. In particular, the testing conducted prior to placing the batteries in service was not documented as being considered in the evaluation for these batteries.

The procedure, SSP-10.5, "Technical Evaluation for Procurement of Materials and Services," requires that an equivalency evaluation be performed for replacement equipment if the item is determined to be an alternate item rather than an identical item. Procurements for replacement items are considered "like for like" if, through planned coordination with the supplier, there is no reason to believe they are different in design form, fit, and functional performance from the items that were originally supplied.

The batteries at Sequoyah were procured in 1980 and were being replaced with batteries from Browns Ferry that were procured in 1991. Both were manufactured by C & D Charter Power Systems, Inc., and were supplied to TVA as Class 1E qualified items. Both were rated 125-V dc and were identified by the same part number. The vendor was contacted prior to the transfer to inquire about the use of the batteries at Sequoyah. C & D responded by letter dated May 27, 1993, that the batteries purchased by Browns Ferry in 1991 were identical to the batteries purchased by Sequoyah in 1980, and that there had been no design or material change since 1980. Based on this information the Sequoyah PEG determined that the batteries were identical and that replacement under the like for like procurement scenario was appropriate. Therefore, no equivalency evaluation was performed.

Battery capacity was considered in the evaluation process as evidenced by the purchase request, which stated that the batteries were needed on a date that would allow testing and preparation for installation. Additionally, the PEG was cognizant of the requirement that these batteries would be tested as part of the installation process (prior to being placed in service) to ensure that the batteries would perform their intended function. However, the failure to document this information led to an evaluation that did not contain adequate documentation to support the determination that the battery was a like for like replacement.

Corrective Actions That Have Been Taken and the Results Achieved

Since this occurred in June 1993, several process improvements have been made in the Procurement Engineering group. Several independent assessments, both internal

and external to TVA, of the procurement process have been completed and recommendations incorporated into the process. Procedures associated with obtaining materials and services have been revised and enhanced to be more directly consistent with Electric Power Research Institute (EPRI) guidelines. The procurement engineering process has become more automated in an effort to improve efficiency and add consistency. Training based on EPRI guidelines and conducted by an independent contractor has also been recently completed by all PEG employees. This training included review and discussion of EPRI guidelines that deal with the utilization of commercial grade items, technical evaluation of replacement items, and sampling plans.

Discussions were held with personnel in PEG involved in the procurement of batteries to counsel them on the necessity of documenting all considerations used in the evaluation process. In particular, this discussion focused on the procurement of batteries since battery capacity must be verified by testing in order to ensure that the battery can perform the same function as the one being replaced.

The Corrective Steps That Will be Taken to Avoid Future Violations

Corrective actions to prevent future violations are complete as stated above.

Date When Full Compliance Will be Achieved

The completed corrective actions stated above bring TVA into full compliance.

VIOLATION 50-327, 328/95-03-05

"10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires in part, 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.

"TVA Nuclear Quality Assurance Plan, TVA-NQA-PLN89-A, Section 10.1 states in part, that '... Adverse conditions, including nonconforming items or nonhardware problems such as failure to comply with operating license, technical specifications, or procedures, shall be identified, evaluated, corrected, tracked, trended, and when required, reported to appropriate levels of management.'

"Procedure SSP-3.4, 'Corrective Action,' section 3.0 requires personnel to promptly report problems including adverse conditions using a problem evaluation report.

"Contrary to the above, as of January 10, 1995:

1. A condition adverse to quality was not promptly identified in that a problem evaluation report was not initiated for multiple calculations which could not be reviewed and understood without recourse to the originating organization, and some aspects of these calculations still could not be interpreted by the originating organization.

2. Conditions adverse to quality were not promptly identified in that problem evaluation reports were not initiated for multiple deficiencies associated with the 1993 self-assessment of the essential raw cooling water system and the 1994 contractor assessment of service water systems.
3. A conditions adverse to quality was not promptly identified in that a problem evaluation report was not initiated for the Independent Safety Engineering group reporting to the Sequoyah Manager of Nuclear Assurance and Licensing with recommendations being made to appropriate Sequoyah site managers instead of to the Manager, Nuclear Experience Review/Independent Safety Engineering as directed by Technical Specification 6.2.3.4.

"This is a Severity Level IV Violation (Supplement I.D.3)."

VIOLATION 95-03-05 EXAMPLE 1

Reason for the Violation

The reason for this violation was an inappropriately high threshold on the part of plant personnel to the initiation of problem evaluation reports (PERs). Experienced personnel in the Engineering organization knew that some calculations were difficult to follow; however, they failed to consider that the requirements of the ANSI standard stated that any qualified person should be able to review and understand the calculations without recourse to the originating organization. When an engineer that had recently been assigned responsibility for the ERCW system attempted to review and understand several calculations, the engineer had difficulty. SQN has concluded that the threshold for initiation of a PER was inappropriate.

Corrective Actions That Have Been Taken and the Results Achieved

A discussion was held with Mechanical Engineering personnel to review lessons learned in this event regarding the failure to identify potential deficiencies through the corrective action program.

As a general practice, calculations that are undergoing a major revision are updated to current requirements contained in engineering procedures. These procedures are consistent with the requirements contained in ANSI N45.2.11.

The Corrective Steps That Will be Taken to Avoid Future Violations

A quality improvement team had been assembled and chartered with developing recommendations for improving the SQN corrective action program and encouraging the documentation of problems in the corrective action program.

Date When Full Compliance Will be Achieved

The completed corrective actions stated above bring TVA into full compliance.

VIOLATION 95-03-05 EXAMPLE 2

Reason for the Violation

The reason for this violation was an inappropriately high threshold on the part of plant personnel to the initiation of PERs. Self-assessments of the service water system were performed by SQN in 1993 and 1994. The actions that resulted from the self-assessments were being tracked as part of the plant tracking system and not as part of the corrective action process. Plant personnel previously believed that unless a specific procedural requirement had been violated or a plant operability/reportability question existed, a PER was not required. Therefore, SQN has concluded that the threshold for initiation of a PER was inappropriate.

Corrective Actions That Have Been Taken and the Results Achieved

SQN revised the procedure that implements the corrective action process in August 1994. The revised procedure changed the program adding new PER classifications for less significant issues. This change in the corrective action program was a major change in the SQN philosophy of documenting problems, which reduced the threshold of when a PER should be initiated.

A reevaluation of the open issues from the self-assessment and the contractor assessment was performed under the guidance of the revised corrective action process and resulted in the initiation of PERs to address identified problems and document the actions required to resolve them.

A discussion was held with Technical Support personnel to review lessons learned in this event regarding the failure to identify potential deficiencies through the corrective action program.

The Corrective Steps That Will be Taken to Avoid Future Violations

As mentioned previously under Example 1, a quality improvement team had been assembled and chartered with developing recommendations for improving the SQN corrective action program and encouraging the documentation of problems in the corrective action program.

Date When Full Compliance Will be Achieved

TVA is in full compliance.

VIOLATION 95-03-05 EXAMPLE 3

Reason for the Violation

The violation occurred when an organizational change was made and the Independent Safety Engineering group began reporting to the SQN Manager of Nuclear Assurance and Licensing instead of the corporate Manager, Nuclear Experience Review/Independent Safety Engineering (NER/ISE) in the corporate office. As a result

of this organizational change, recommendations formulated by ISE employees were sent to appropriate SQN site managers rather than the corporate Manager NER/ISE.

The manager involved recognized the discrepancy when the organizational change was made, but did not initiate a change to the technical specifications (TSs) because the manager believed that the intent of the TS was to ensure ISE independence and that requirement was still being met.

Corrective Actions That Have Been Taken and the Results Achieved

The involved manager was counseled on the requirements which must be satisfied to be in compliance with TSs.

A change to TS 6.2.3 was initiated on February 14, 1995, to reflect the current organization and reporting relationship.

Independent Review and Analysis employees who perform ISE functions were instructed to make recommendations to the corporate Manager, Independent Review and Analysis. This training was completed on March 9, 1995. The title of Corporate Manager, Independent Review and Analysis has superseded the title identified in existing TS as Manager, NER/ISE, which was also a corporate position.

Copies of ISE reports that were issued since March 11, 1994, and contained recommendations were sent to the corporate Manager IRA.

The Corrective Steps That Will be Taken to Avoid Future Violations

Corrective actions to prevent future violations are complete as stated above.

Date When Full Compliance Will be Achieved

The completed corrective actions stated above bring TVA into full compliance.

ENCLOSURE 2

OPERATION OF THE ESSENTIAL RAW COOLING WATER (ERCW) CHEMICAL TREATMENT

The following actions have been taken to ensure the reliability of the ERCW chemical treatment program.

Piping has been replaced for chemical injection lines. This has significantly increased availability, since the previous lines had frequent leaks and required shutdown of the system in order to repair.

Overall responsibility for the chlorination system has been assigned to the Chemistry section. This has allowed better coordination between groups and has made one manager responsible for performance.

A long-term contract with a chemical vendor has been initiated for the operation and maintenance of the ERCW chemical treatment equipment. The vendor has a full-time person onsite to ensure reliable treatment. Additionally, they will be fabricating the injection equipment that will replace the existing system.

A study to replace the existing ERCW chlorination system is presently underway. This project will install a new injection system with the capability to inject additional chemical to provide a comprehensive corrosion and fouling program. This will be a major improvement in the capability to treat the ERCW system and should be significantly more reliable than the previous system.

EVALUATION OF PROCEDURES WITH ACCEPTANCE CRITERIA NOT BASED ON DESIGN OUTPUT

The issue of not having design output to support the diesel generator battery duty cycle test acceptance criteria is being evaluated from a generic perspective. The following actions will be taken to resolve this issue.

A sampling review of procedures will be performed and if the results warrant an expansion of scope, the sample size will be increased as appropriate. The results of this review will be provided to Engineering for evaluation and disposition.

The documents that are considered design output and the requirements for using design output information in procedures was discussed with key plant department personnel. They have in turn discussed these issues with personnel in their organizations involved with procedure preparation or revision.

Additionally, Site Standard Practice (SSP) 2.3, "Administration of Site Procedures," will be revised to clarify the information that is to be considered as design output.

GENERIC LETTER 89-13 ACTIONS

The SQN response to Generic Letter 89-13 will be revised to address the issues identified as a result of this inspection.

VIABLE EXTERNAL FLOOD MITIGATION CAPABILITY

As previously stated in Enclosure 1 in the response to 95-03-04 Example 2, SQN has performed a technical review of AOI-7. All known deficiencies have been corrected. The AOI upgrade project is underway and will include further enhancements of AOI-7.

ENCLOSURE 3

INSPECTION REPORT 95-03

COMMITMENTS

1. The hydraulic calculation will be revised by September 25, 1995, to reflect flood mode conditions.
2. Drawings will be revised by September 25, 1995, to update the design pressure on the drawing for the affected portions of the high pressure fire protection system.
3. A design output document will be prepared by September 25, 1995, to identify specific assumptions employed when analyzing the high pressure fire protection during flood mode operation.
4. Calculations will be revised by October 27, 1995, to reflect a clogging allowance for the strainer or issue design output documentation to be used as a basis for periodic inspection/cleaning of the screens.
5. A review of the design calculations for other safety-related and quality-related strainers will be performed by October 27, 1995, to ensure that strainer pressure drops have been properly addressed consistent with plant procedures and operating conditions.
6. A sampling review of safety-related plant procedures will be performed to determine if acceptance criteria is based on design calculations not contained in design output documents. The results of the sample review will be used to determine if additional procedures need to be reviewed. Procedures containing inappropriate references to design calculations will be identified to Engineering, and any deficiencies will be included in a corrective action program as appropriate by September 30, 1995.
7. SSP-2.3, "Administration of Site Procedures," will be revised by June 30, 1995, to clarify the definition of design output information for use in procedures.
8. Detailed system flow modeling will be performed to determine if the present essential raw cooling water turbine building automatic isolation function is required. Calculations will be revised, as appropriate, on or before June 30, 1996.
9. SSP-9.3, "Plant Modifications and Design Change Control," will be enhanced by June 30, 1995, to provide improved guidance for when an impact review is required by Operations for civil-related modifications.
10. Modifications engineers who are responsible for preparing impact review packages will be trained on the revision to SSP-9.3 concerning design change notice impact reviews. Training will be complete by July 14, 1995.

11. The appropriate Operations personnel will be trained on the probable maximum flood procedure during requalification training on or before September 15, 1995.
12. O-FP-MXX-000-003.0, "Flood Preparation - Parts, Tools, and Equipment To Be Moved Above Elevation 723.1," will be revised, as appropriate, by November 17, 1995.
13. The Sequoyah response to Generic Letter 89-13 will be revised by September 22, 1995, to address the issues identified as a result of this inspection.