

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

6N 38A Lookout Place

October 23, 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. 50-327/89-15 AND
50-328/89-15 - NOTICE OF VIOLATION (NOV) AND PROPOSED IMPOSITION OF CIVIL
PENALTY

TVA's response to the NOV and proposed imposition of civil penalty transmitted by Dennis M. Crutchfield's September 22, 1989, letter to O. D. Kingsley, Jr., is contained in Enclosure 1. TVA therein admits the violations cited in the NOV. Payment of the proposed civil penalty in the amount of \$87,500 is being wired to the Director, Office of Enforcement. Commitments made in Enclosure 1 are summarized in Enclosure 2.

TVA takes the issues raised by these violations very seriously. As discussed at the June 29, 1989, enforcement conference, TVA reviewed these events both individually and collectively to clearly establish their cause and corrective actions. In addition, a special task force was appointed by the Senior Vice President of Nuclear Power to independently review the events involved in this enforcement action to verify appropriate and complete identification of causes and corrective actions. The task force members were senior management personnel who had not previously been involved in the evaluation/investigation of these events. The task force findings generally substantiated previous determinations as presented in the enforcement conference. However, they also concluded that too much emphasis had been placed on the inadequacy of the 50.59 process and not enough attention was given to poor implementation and personnel errors.

In order to address these violations, TVA has initiated comprehensive corrective actions. Where weaknesses were identified in programs/processes, such as the 10 CFR 50.59 program or the process for review and approval of technical specification interpretations, program and process upgrades are being made. TVA particularly recognizes the vital role the 50.59 safety review process serves. These ongoing enhancements are being instituted to strengthen performance checks and improve implementation.

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U.S. Nuclear Regulatory Commission

October 23, 1989

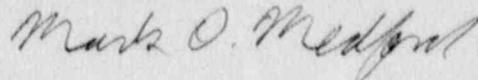
TVA also recognizes, however, that the value of improvements in programs, procedures, and training can only be realized through responsible, diligent personnel performance. A common element identified in all three of the events in this enforcement action was inattention to detail. An improved incident investigation process and augmented trending of events and incidents attributed to among other things personnel performance have been implemented. Findings from these programs are being reviewed carefully by site and corporate management to ensure effective corrective action. In addition, organization and management changes have been implemented to better focus line responsibility and accountability and to promote overall improvements in personnel performance and procedures management. Management efforts are being intensified to convey and reinforce expectations to site personnel.

In closing, TVA believes the extensive corrective actions initiated will significantly enhance performance in these areas. TVA will, however, continue to assess program/process implementation and personnel performance to verify effectiveness of these actions.

If you have any questions concerning this submittal, please do not hesitate to call me at (615) 751-4776.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



M. O. Medford, Vice President and
Nuclear Technical Director

Enclosures

cc (Enclosures):

Ms. S. C. Black, Assistant Director
for Projects
TVA Projects Division
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

Mr. B. A. Wilson, Assistant Director
for Inspection Programs
TVA Projects Division
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

NRC Resident Inspector
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy Daisy, Tennessee 37379

ENCLOSURE 1

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/89-15 AND 50-328/89-15
DENNIS M. CRUTCHFIELD'S LETTER TO O. D. KINGSLEY, JR.,
DATED SEPTEMBER 22, 1989

Violation 50-327, 328/89-15

"I. 10 CFR 50.59, Changes, Tests, and Experiments, allows a licensee to make changes in the facility and the procedures as described in the safety analysis report, and conduct tests or experiments not described in the safety analysis report, without prior Commission approval, unless the proposed change, test, or experiment involves an unreviewed safety question or a change in the technical specifications incorporated in the license. In part, a change, test, or experiment is deemed to involve an unreviewed safety question 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, or if the margin of safety as defined in the basis for any technical specification is reduced. Section 50.59(c) further requires the licensee to maintain records of these changes which must include a written safety evaluation which provides the basis for the determination that an unreviewed safety question is not involved.

- A. Final Safety Analysis Report (FSAR) Section 15.4.2.1, Rupture of a Main Steam Line, assumes operability of the BIT with a high concentration of boric acid (approximately 20,000 ppm).

FSAR Section 6.3, Emergency Core Cooling System, states in part that to prevent cold spots and stratification [that could result in boric acid crystallization making the BIT inoperable], within the Boron Injection Tank (BIT) during normal operations, the contents are continuously recirculated with the boric acid tanks. Any large scale leakage within the tank will be detected by a flow indicator and an alarm.

Contrary to the above, on April 6, 1989, the licensee made a change to the facility as described in the FSAR without performing a written evaluation to determine whether the change involved an unreviewed safety question. The change involved taking the BIT out of continuous recirculation which activated the low flow alarm and renders [sic] the BIT inoperable. This is an unreviewed safety question because the consequences of a main steam line break accident previously evaluated in the safety analysis may be increased due to an undetected malfunction of the BIT.

- B. FSAR Section 15.4.1.1, Thermal Analysis, states 'The ECCS even when operating during the injection mode with the most severe single active failure, is designed to meet the Acceptance Criteria [of 10 CFR 50.46].'

Technical Specification Bases 3/4.5.2, ECCS subsystems, states in part that the Surveillance Requirements for each component ensures the assumptions used in the safety analysis are met. Flow balance testing provides assurance of proper flow split between injection points and an adequate total ECCS flow to all injection points equal to or above that assumed in the ECCS-LOCA analyses. Each RHR pump is required to provide at least 3976 gpm total flow to all four cold leg injection lines.

Contrary to the above, on twenty-six separate occasions between March 22, 1988 through April 20, 1989, without NRC approval, the licensee reduced the margin of safety as defined in the technical specification basis for the ECCS Subsystems by periodically placing the RHR system in a lineup that would allow each RHR pump to inject into only two of the four required cold leg injection lines. Such a system lineup is an unreviewed safety question that resulted from changes made to RHR surveillance instructions that were not properly evaluated by the licensee.

- C. FSAR Section 7.2, Reactor Trip System, states in part that the intermediate range high neutron flux trip provides protection during reactor startup by tripping the reactor when one out of two channels exceed the trip setpoint.

Technical Specification Bases 2.2.1, Reactor Trip System Instrumentation Setpoints, state in part that the intermediate range nuclear flux trip provides reactor core protection during reactor startup by initiating a reactor trip at a current level proportional to approximately 25% of rated thermal power. This trip function enhances the overall reliability of the Reactor Protection System.

Contrary to the above, in March 1989 the licensee made a change in the intermediate range detector location that significantly raised the reactor trip setpoint above that equivalent to 25% of rated thermal power without performing a safety evaluation. Between April 13-25, 1989, there were four reactor startups for which the intermediate range nuclear flux trip did not provide reactor core protection."

Admission or Denial of the Alleged Violation (Example I.A)

TVA admits the violation.

Reason for the Violation (Example I.A)

A 50.59 review was not initially performed for the subject evolution primarily because of reliance on a previously approved technical specification interpretation (TSI).

In early April 1989, BIT injection valve backleakage was causing dilution of the BIT and boric acid tank (BAT). Efforts were initiated to develop an action plan to stop or isolate the leakage or to otherwise vent/route the leakage from the BIT. In the interim, before completion of the action plan by Systems Engineering, Operations personnel decided to isolate the BIT from recirculation with the BAT to immediately stop the dilution. This action was considered acceptable based on an existing TSI, which indicated that isolation of recirculation did not affect operability of the BIT provided recirculation was restored in time to meet required 7-day technical specification (TS) surveillance requirements for volume and boron concentration. The TSI was based on having acceptable surveillance test results prior to isolation and assumed no inadvertent leakage from the BIT during isolation. Operations personnel placed a high level of confidence in the validity of the TSI conclusion because the interpretation had been previously reviewed and approved within TVA. Accordingly, they did not question the basis for the interpretation.

No procedure was used to initially isolate BIT recirculation. Administrative Instruction (AI) 58, "Maintaining Cognizance of Operation Status - Configuration Status Control," was considered to allow simple and well-controlled evolutions to be performed without a procedure. Operations personnel did not consider that a change was being made to the facility but rather a temporary off-normal alignment, which had been previously determined acceptable by the TSI. Based on this assumption that a modification was not being made and the fact that no procedures were being written or revised, an additional review of the acceptability of the evolution pursuant to 10 CFR 50.59 was not performed. At that time, site processes did not require that a 50.59 evaluation be performed for TSIs. As is discussed below, TVA has revised the process to require that a 50.59 safety evaluation be performed for future TSIs. The disposition of TSIs is discussed below.

Subsequently, the action plan was finalized that included isolation of BIT recirculation; a handwritten procedure was developed in accordance with AI-58 to implement that plan. A 50.59 safety evaluation was performed to support the handwritten procedure, which concluded that periodic isolation of recirculation was acceptable. As a result of questions that had been raised by NRC resident inspectors, plant management directed Operations personnel to restore the BIT to recirculation until the questions could be addressed. Subsequently, a method was developed to prevent reactor coolant system backleakage to the BIT without isolating recirculation.

There are three technical considerations that correlate to the TS requirements for BIT operability. These include assurance that stratification does not occur, that volume is being maintained, and that dilution does not occur. Nuclear Engineering (NE) evaluations performed by both TVA and the nuclear steam supply system vendor verified that boron precipitation or crystallization would not occur. The nature of the backleakage and observed pressurization of the BIT while it was isolated provided assurance that volume was being maintained. Assuming that dilution of the BIT would not occur was predicated on the assumption that the isolation valves between the BIT and the BAT did not leak. This assumption was based on the periodic backseat testing

conducted for the check valve in the return line at the bottom of the tank and on the observed pressurization of the BIT when isolated. However, in hindsight, TVA determined that a small amount of valve leakage and dilution of the BIT over time is possible. As a result, TVA determined that isolation of the BIT without entry in the limiting condition for operation (LCO) would no longer be allowed.

Although the BIT was incorrectly considered operable, its removal from recirculation did not constitute an unreviewed safety question (USQ) because of the boration conditions at the time of the event. The unit was in hot standby and borated to a shutdown margin equivalent to 1 percent delta k/k at 200 degrees Fahrenheit as required by the action statement in TS 3.5.4.1. This boration was sufficient to prevent a return to criticality following a main steam line break (MSLB). Therefore, for this event the consequences of an MSLB previously evaluated in the safety analysis would not have been increased.

Corrective Steps That Have Been Taken and Results Achieved (Example I.A)

As previously stated, the BIT was returned to recirculation following identification of the concerns. Any subsequent isolations of the BIT have resulted in entry into and compliance with LCO 3.5.4.1.

At the direction of Operations management, the TSI manual was removed from main control room (MCR) use and placed under control of the Operations Superintendent. The site process governing TSIs has been revised to require a 50.59 evaluation for all TSIs. Accordingly, all preexisting TSIs have been eliminated. To date, only one TSI has been reissued with a safety evaluation and returned to the MCR for use.

TVA reviewed AI-58 guidance and determined that it had been misinterpreted to address performance of evolutions without procedures. The specific section was intended to allow certain configuration changes to be made without entry into the configuration log, not to address changes without procedures or control processes. As an interim measure, a training letter was issued to Operations personnel clarifying the intent of that section. Long-term corrective actions are discussed below.

Corrective Steps That Will Be Taken to Avoid Further Violations (Example I.A)

TVA recognizes the requirements and need for conducting plant activities in accordance with prescribed and approved procedures. While TVA believes that the subject isolation activity should have been conducted with an approved procedure, TVA also believes there still remain certain simple manipulations involving deviations from normal configurations that should properly be considered operation of the facility rather than changes in the facility. Therefore, for certain simple, short duration manipulations that are in accordance with the licensed design of the plant and for which direct positive control is maintained, generation of special procedures is not warranted and could actually obstruct reasonable facility operation. AI-30, "Nuclear Plant Conduct of Operation," will be revised by October 27, 1989, to clearly define the conditions and controls under which manipulations can be performed without procedures. In addition, a review of the AI-30 requirements will be incorporated into the periodic operator requalification program.

Clarification of guidance regarding use of procedures will ensure that activities such as the BIT isolation are appropriately controlled, reviewed, and evaluated. Performance of a safety evaluation for all future TSIs will further ensure adequate evaluation of proposed activities.

TVA is in addition conducting a review of the voided preexisting TSIs to determine which should be reissued under the new process, which should be incorporated into permanent TS changes, which should be incorporated into plant procedures, and which should be permanently eliminated. The issuance of future TSIs will be strictly controlled and will include a completed safety evaluation.

Training on TSs is being conducted in weeks 5 and 6 of annual requalification training to heighten sensitivity of shift personnel to both the requirements and intent of the TSs. Operations management and training personnel are stressing during this training that personnel must continue to question activities, procedures, interpretations, etc., to ensure that both the explicit requirements and intent of the TSs are being maintained and implemented.

The leaking check valves that caused the dilution of the BIT have been identified and are scheduled for work at the next refueling outage.

In the future, LCO 3.5.4.1 will be entered as applicable when the BIT is removed from recirculation. During the upcoming Cycle 4 refueling outages, TVA will be removing the BIT requirement and obtaining deletion of the subject TS requirements.

Date When Full Compliance Will Be Achieved (Example I.A)

TVA is in full compliance. Additional enhancement efforts are ongoing.

Admission or Denial of the Alleged Violation (Example I.B)

TVA admits the violation.

There were two types of test procedures involved in this event. Surveillance Instruction (SI) 128.1, "RHR Pump and Piping Venting," was used to perform venting of residual heat removal (RHR) discharge piping; performance of this procedure resulted in opening of the hot leg injection valve. If an accident were to occur with this valve open, the total RHR injection flow provided to the four cold legs would be degraded. This procedure was performed 27 times on a unit operating in Modes 1, 2, or 3 between March 22, 1988, and April 20, 1989. The SI-128.2 through 128.5 series were used to perform testing of the RHR pumps. Performance of any of the procedures resulted in closure of one of the cold leg injection valves and one of the crosstie valves. If an accident were to occur with these valves closed, only one pump supplying flow to two cold leg injection lines would be available. This procedure was performed two times on a unit operating in Modes 1, 2, or 3 between February 24, 1989, and March 1, 1989.

Reason for the Violation (Example I.B)

Incorrect valve alignments were implemented as a result of technically inadequate test procedures and inadequate reviews of those procedures during procedure revisions.

In May of 1987, SI-128 was split up into five separate procedures. SI-128.1 contained the venting procedure, and SI-128.2 through 128.5 contained the pump test procedures for the four Unit 1 and Unit 2 RHR pumps. During these changes, SI-128.1 was written to include a valve alignment that would open the normally closed hot leg injection valve to vent the downstream discharge piping. The 50.59 screening review performed did not address the opening of this valve. It was not recognized that if an accident were to occur with the hot leg valve open, the required injection flow to the four cold legs would be degraded.

In December 1988, during procedural enhancement of the SI-128 series to the writer's guide format, an incorrect valve alignment was added to the 128.2 through 128.5 pump test SIs. The alignment closed the cold leg injection crosstie and injection valve for the purpose of better isolating the pump under test from possible short-circuiting of flow through interfacing alignments. It was not recognized that if an accident were to occur with this alignment, injection into the required four cold legs would not be achieved. The individuals involved with these procedure revisions were not familiar with SQN accident analysis assumptions. NRC Inspection and Enforcement (IE) Notice 87-01 had been issued in January 1987 identifying the consequences of a misalignment of the cold leg crossover or injection valves. This IE Notice had been added to the Mechanical Test procedure file but was not referenced during this procedure revision. The 50.59 screening review performed for the SI-128.2 through 128.5 pump test revisions in December 1988 incorrectly indicated that the change being made was an administrative enhancement only. Additional review of the procedure change package noted and questioned the alignment change, but the review comment was inadequately dispositioned.

The deficient procedures were not identified during subsequent performances by Operations personnel until the venting procedure was questioned on April 2, 1989, by a senior reactor operator (SRO).

This event was also discussed in Licensee Event Report (LER) 50-327/89011 dated May 11, 1989.

Corrective Steps That Have Been Taken and Results Achieved (Example I.B)

Administrative holds were placed on SI-128.1 through 128.5 until they were revised with an appropriate 50.59 review to delete the incorrect alignments; those revisions are complete. In addition, related emergency core cooling system (ECCS) system operating instructions were revised to include precautions concerning ECCS cold leg injection requirements. The individuals involved in the review process for the SI-128 series procedures have been appropriately disciplined. Additional emphasis on the importance of attention to detail was provided as discussed below.

TVA instituted significant upgrades to the 50.59 review program, which include incorporation of a Level II reviewer concept that requires an individual with background in 50.59, systems design and operation, and Chapter 15 accident analyses to perform a final review of 50.59 evaluations (screening reviews or safety evaluations). In addition, management has met with individuals who perform/review 50.59 reviews to emphasize their responsibilities and the importance of attention to detail during conduct of those reviews. Additional details regarding the 50.59 upgrade efforts are addressed following responses to the specific examples.

Corrective Steps That Will Be Taken to Avoid Further Violations (Example I.B)

The described enhancements to the 50.59 program are intended to provide additional assurance that future changes to procedures are adequately evaluated for effect on accident analysis assumptions.

AI-4, "Preparation, Review, Approval and Use of Site Procedures/Instructions," is being revised to require that procedures identified during future Nuclear Experience Review (NER) evaluations be annotated to reflect the NER information. This requirement will apply to both procedures that are revised to address an NER item and those procedures that are found to meet the recommendation in NER items. The revision to AI-4 will be approved by October 27, 1989.

To enhance access, ease, and capability for technical resources/references, a matrix has been developed cross-referencing individual plant procedures to various source documents, such as previously reviewed NER items that resulted in procedure changes. This information is being evaluated along with existing processes and ongoing procedure enhancement efforts for long-term incorporation. TVA is developing a project to re-review past NER information to identify procedures that were correct at the time of the NER review to incorporate annotations to prevent deletion of essential information. The scope of this effort is significant and will be ongoing. These enhancements to the procedure process are intended to assist the procedure writer/reviser in identification of pertinent information and requirements.

Date When Full Compliance Will Be Achieved (Example I.B)

TVA is in full compliance.

Admission or Denial of the Alleged Violation (Example I.C)

TVA admits the violation with the following clarification. A 50.59 review was performed for this change but was inadequate as described below.

Reason for the Violation (Example I.C)

Intermediate-range (IR) detectors were repositioned with resultant altering of trip setpoints outside TS requirements because of technical and administrative errors made by personnel attempting to alleviate source-range (SR) noise problems. These errors allowed these changes to circumvent the established design control process.

During troubleshooting activities to resolve SR detector noise problems, the decision was made to implement a vendor recommendation to remove the ground strap from the SR detector at the SR/IR detector housing. Vendor troubleshooting guidance also recommended that the SR/IR detector cart

be relocated to optimize the response of the SR channels to core neutrons. The system engineer researched both drawings and design output documents and found no reference to a specific required detector position. Thus, the system engineer determined that relocating the detectors would not affect plant design.

Following original review and approval of the workplan (WP) to implement the ground strap removal, the system engineer decided to implement detector cart relocation by revision to one of the procedures referenced in the WP, rather than a revision to the WP. The 50.59 review performed for the procedure revision incorrectly stated that relocation would not affect detector performance. The 50.59 screening review also contained administrative errors in that one of the questions was answered indicating that no safety evaluation would be required but the block indicating that a safety evaluation would be required was checked.

This change received cross-disciplinary review by the system engineer, the vendor representative, the Instrument Maintenance (IM) engineer, and the IM supervisor. The procedure change did not receive Operations review, although Operations had reviewed the original WP. The procedure change did not receive Reactor Engineering review. It was incorrectly believed that adequate expertise in review of the involved change was being provided.

The reviewers failed to determine that the relocation would affect detector performance and therefore failed to establish administrative controls to effect a recalibration prior to the point where the detectors would be required operable by TSs. The responsible personnel also failed to identify that the 50.59 review had been inadequately performed. Had the relocation been identified as a permanent configuration change, the design process would have identified the necessary operability considerations including procedural changes, drawing changes, postmodification testing, etc. Operations reviews each design change package for plant system configuration required to meet TSs and other effects on plant operations. The shift operations supervisor (SOS) is notified prior to the implementation of any design change.

During four subsequent startups, the incorrect detector performance went undetected. During startup and low power levels, the shift in detector output was not easily recognizable and appeared to be within expected ranges. Prior to startup, preliminary setpoint values were generated by Reactor Engineering based on information provided by the nuclear steam supply system vendor for the new core. The intermediate channels were calibrated to these setpoints by IM. At 10 percent reactor power, the 25 percent IR trip was blocked and verified blocked. At that point, power was being verified by power range detectors, core delta-T, and steam dump demand. At the time of the event, procedures did not require verification of bistables when power was increased past the 20 percent and 25 percent bistable setpoints. Final verification of bistable setpoints is performed at the 100 percent plateau after performance of a precision calorimetric. At approximately 73 percent reactor power during the initial ascent above 50 percent power, an SOS noticed a difference between the Unit 1 and Unit 2 bistables status panel and upon further review determined that the Unit 2 IR detectors were inoperable.

This event was also discussed in LER 50-328/89006 dated June 2, 1989.

Corrective Steps That Have Been Taken and Results Achieved (Example I.C)

The IR detector setpoints were recalibrated to compensate for the detector relocation. Associated procedures have been revised to properly reflect, verify, and control detector cart position. General Operating Instruction 2, "Plant Startup From Hot Standby to Minimum Load," has been revised to include monitoring and verification of IR detector performance and applicable bistable setpoints during power ascension. Responsibility for the nuclear instrumentation system has been reassigned to Reactor Engineering.

In this case, inadequate implementation of the 50.59 process, rather than weaknesses in the process itself, was the primary cause of this incident. Accordingly, the personnel involved in processing the procedure change have been appropriately disciplined on the importance of attention to detail.

As later discussed in this response, management has also met with individuals who perform 50.59 reviews to emphasize their responsibilities and the importance of attention to detail in performing those reviews. Inclusion of Level II reviewers in the 50.59 program upgrade is intended to aid in detection of improperly performed 50.59 reviews.

Corrective Steps That Will Be Taken to Avoid Further Violations (Example I.C)

Design output documents are being revised to include designation of required detector cart position. The inclusion of detector cart positions on these design documents will ensure that any future permanent repositioning of these detectors will be processed through the established design control process. These revisions will be completed by October 27, 1989.

Date When Full Compliance Will Be Achieved (Violation I.C.)

TVA is in full compliance.

Further Corrective Actions (Violation I)

At the time of these events, enhancements were already being implemented in the TVA 50.59 program as a result of the Browns Ferry Nuclear Plant fuel loading event and Plant Operations Review Committee (PORC) oversight review findings. However, as a result of the 50.59 violations found in these three events, TVA initiated an evaluation to determine if common weaknesses existed that had not been adequately addressed by the ongoing program enhancements.

While TVA's reevaluation determined that the enhancement program and the revised program requirements were generally consistent with industry 50.59 initiatives, two significant weaknesses remained with respect to program implementation.

1. The then existing screening review process was being misapplied, resulting in adequate reviews of some changes to not be performed.
2. Qualifications/training of individuals performing 50.59 reviews did not always include adequate background in plant systems and FSAR requirements, particularly related to accident analysis assumptions.

Interim actions were immediately taken by TVA management to address these areas. An additional safety review checklist was implemented under memorandum from the Vice President of Nuclear Power Production to better ensure appropriate use of screening reviews and safety evaluations. An interim list of individuals designated as Level II 50.59 reviewers was established. These individuals were identified by site management as having strong backgrounds in plant systems and FSAR requirements.

A safety evaluation task force was established to develop recommendations for permanent 50.59 program upgrades. Lessons learned training was provided to 50.59 preparers/reviewers including a description of these events and the interim 50.59 changes being implemented. The Plant Manager participated in the training, emphasizing the responsibilities in performing 50.59 reviews and the importance of attention to detail in conducting these reviews. A 50.59 qualifications review board was established to oversee selection of longer-term Level II reviewers.

As a result of TVA's 50.59 program enhancements, the process will now be based extensively upon guidance recently issued by Nuclear Safety Analysis Center Publication 125, which was first issued in June 1989. This process includes consolidation of safety assessments and 50.59 screening reviews into a single, integrated safety assessment. The integrated safety assessment provides a graded review approach supported by checklists intended to "flag" potential impacts on safety; thereby requiring a more detailed evaluation of the change. Two levels of 50.59 reviewers are formally established. A Level I writer/reviewer is a senior engineer or equivalent who has completed specialized 50.59 training; a Level II reviewer is an individual with background in the 50.59 process, plant systems, and FSAR requirements/assumptions. The formal list of Level II reviewers has been established by the 50.59 review board following review of training, review of background, and oral examination of proposed Level II reviewers.

TVA also performed a review to assess whether any undetected USQs could exist because of previously inadequate safety/50.59 reviews. TVA has evaluated the results of five audits and two oversight functions performed of SQN's 50.59 program between January 1988 and August 1989. The audits/oversight functions were performed by a number of separate organizations within the TVA system responsible for ensuring quality-related activities (i.e., Independent Safety Engineering Group, Engineering Assurance, Nuclear Manager's Review Group, Nuclear Safety Review Board, PORC Oversight Section, and SQN Site Quality Assurance [QA]) as well as the NRC. These audits/oversight functions evaluated the technical adequacy and procedural compliance of approximately 900 screening reviews or safety evaluations issued between 1986 and 1989. The screening reviews and safety evaluations evaluated by these audits/oversight functions are considered to provide a representative sample. These audits/reviews were judged to be technically adequate, and the qualifications of the reviewers were judged to be satisfactory. Although some discrepancies were identified, resolution of findings from these reviews did not result in identification of any USQs. Therefore, TVA believes that there is reasonable assurance that no USQs exist.

The two most significant audits/oversight functions relative to scope and timeframe are (1) the oversight function performed by the PORC Oversight Section and (2) an audit performed by the SQN Site QA group. The PORC

Oversight Section conducted an oversight review of at least 10 percent of the screening reviews and safety evaluations processed during the monthly reporting period between January 1988 and June 1989. During the 18-month period that the PORC Oversight Section functioned, it reviewed approximately 610 screening reviews or safety evaluations prepared by plant operations or engineering organizations. The PORC Oversight Section was staffed by 50.59 qualified personnel whose primary responsibility involved the oversight review and concurrence of screening review and safety evaluations. The reviews performed by the PORC Oversight Section identified a number of technical and procedural errors with both screening reviews and safety evaluations. However, the PORC Oversight Section did not identify any USQs. The audit conducted by the SQN Site QA group was performed immediately after the 50.59 enforcement conference with NRC in June 1989. The audit evaluated 110 screening reviews that were prepared between 1987 and 1989 (60 were prepared by NE and 50 were prepared by plant staff organizations). The evaluation utilized the safety assessment checklist issued in June 1989. The checklist provides a more conservative screening threshold for initiating a safety evaluation for changes, tests, or experiments. Utilizing the more conservative criteria initially identified 14 screening reviews that would have required a more detailed safety evaluation under today's guidelines. Additional review to disposition these 14 concluded that none of the 14 constituted USQs and that 12 of the 14 were correctly dispositioned as screenings reviews; a more detailed safety evaluation was prepared for the two remaining items.

Prior to January 1987, all changes, tests, or experiments were evaluated utilizing a safety evaluation process. This was a conservative methodology that resulted in a considerable expenditure of resources because of the level of preparation and review associated with the safety evaluation. In January 1987, the 50.59 program was modified to incorporate a screening process that allowed changes, tests, or experiments that did not affect the safety analysis report to be "screened out" with no safety evaluation prepared. In addition, as part of TVA's restart effort, a large number of safety evaluations for safety-related systems were reviewed for technical adequacy under the scope of such programs as the Design Baseline Verification Program and the Procedures Upgrade Program.

The scope of the review performed provides a representative sample of TVA's 50.59 process. While screening reviews and safety evaluations were in some cases determined to be lacking in the detail and documentation necessary for "standalone" documents, the effort did not identify any USQs. As previously addressed, extensive enhancements and upgrades have been made to the 50.59 program to address these types of weaknesses.

Violation II

"II. 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, states in part that measures shall be established to assure that conditions adverse to quality, such as deficiencies and deviations are promptly identified and corrected. In the case of a significant condition adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, on April 10, 1989, the licensee identified RHR surveillance instruction deficiencies that constituted a significant condition adverse to quality, but failed to take adequate corrective action to preclude repetition in that the deficient RHR surveillance instructions were used on April 17 and 20, 1989. Use of the deficient procedures placed the plant in an unanalyzed condition.

This is a Severity Level III Problem. (Supplement I)

Civil Penalty \$87,500 (assessed equally among Violations I.A, B, C, and II)."

Admission or Denial of the Alleged Violation (Violation II)

TVA admits the violation.

Reason for the Violation (Violation II)

Administrative controls to prevent further use of the deficient procedure were informally and inadequately implemented. Communication of the identified deficiency to shift personnel was incomplete.

When the venting procedure was questioned by an SRO on April 2, 1989, follow-up discussions commenced between Operations, Plant Operations Review Section (PORS), Mechanical Test, and NE personnel. Initial discussions indicated that the venting procedure alignment could be considered acceptable based on operator action to close the valve in the event of an accident during SI performance. Interim administrative controls were not placed on further use of the procedure, and the deficiency was not immediately documented in accordance with TVA's corrective action program.

As a result of continuing review, however, Mechanical Test personnel reviewed the existing procedure files for the SI-128 series and identified IE Notice 87-01; the additional alignment problem in the pump test procedures was identified. The deficiencies in both procedures were subsequently documented in accordance with TVA's corrective action program.

Administrative controls to prevent further use of the procedures were not formally implemented at that time. The Mechanical Test supervisor believed the venting procedure was adequately controlled because he incorrectly believed all SI packages were issued through his section. No positive actions were taken to ensure against further use. Although various individuals were aware that the procedures were deficient, this fact was not fully communicated to all shift personnel. The venting procedure was subsequently performed two additional times following issuance of SI packages directly to the MCR from the Planning and Scheduling section. During follow-up efforts to formally document administrative controls on the subject procedures, the Mechanical Test supervisor learned that the SI packages had been issued directly to the MCR and that the venting procedure had been performed again.

This event was also discussed in LER 50-327/89011 dated May 11, 1989.

Corrective Steps That Have Been Taken and Results Achieved (Violation II)

Administrative controls were placed on the subject procedures until they were subsequently revised to remove the incorrect alignments. The individuals involved in the review process for these procedures have been appropriately disciplined, and additional emphasis on the importance of attention to detail was provided. In addition, as discussed below, organization and management changes involving the affected organizations have been implemented to better focus line responsibility and accountability and to promote overall improvements in personnel performance.

Corrective Steps That Will Be Taken to Avoid Further Violations (Violation II)

AI-4 is being revised to establish a prescribed method for placing administrative holds on a deficient procedure in order to ensure consistent and thorough establishment of controls. This revision will be issued by October 27, 1989.

Date When Full Compliance Will Be Achieved (Violation II)

TVA will be in full compliance when AI-4 is revised.

Concluding Remarks

TVA takes the issues raised by these violations very seriously. As discussed at the June 29, 1989, enforcement conference, TVA reviewed these events both individually and collectively to clearly establish their cause to implement appropriate and corrective actions. In addition, a special task force was appointed by the Senior Vice President of Nuclear Power to independently review the events involved in this enforcement action to verify appropriate and complete identification of causes and corrective actions. The task force members were senior management personnel who had not previously been involved in the evaluation/investigation of these events. The task force findings generally substantiated previous determinations as presented in the enforcement conference. However, they also concluded that too much emphasis had been placed on the 50.59 process and not enough attention was given to poor implementation and personnel errors. The value of importance in programs, procedures, and training can only be realized through responsible, diligent performance of personnel. Augmented trending of events and incidents attributed to personnel performance has been implemented and is being carefully reviewed by site management. Management efforts are being intensified to convey and reinforce expectations to site personnel.

While not a result of these specific events, several significant organization and management changes have been made that are intended to better focus line responsibility, strengthen accountability and overall personnel performance. These changes include assignment of a new Operations Superintendent and the addition of the Operations Manager position. This new management team has already brought about visible improvements in the level of personnel performance, emphasizing a diligent and questioning philosophy in conduct of operations.

TVA has restructured the Technical Support Group, and a new Technical Support Superintendent has been assigned to strengthen implementation and integration of the Systems Engineering organization into day-to-day operations and to promote an overall upgrade in personnel performance within that organization. TVA believes that these changes are intended to promote measurable improvements in conduct of site activities.

TVA has also implemented an enhanced process for investigation of events and incidents to ensure appropriate identification of cause and corrective action, including personnel performance. Responsibility for these incident investigations has been transferred from the old PORS organization to line organizations to better focus responsibility and accountability within the line organization responsible for the event. Trending of these event investigations, particularly relative to personnel performance and implementation deficiencies will ensure weaknesses are promptly identified and corrected.

The site procedures effort for enhancements and revisions has been integrated back into the line organizations. This reorganization of the site procedures enhancement program is intended to improve line management involvement.

ENCLOSURE 2

List of Commitments

1. AI-30 will be revised by October 27, 1989, to clearly define the conditions and controls under which manipulations can be performed without procedures.
2. TVA is revising AI-4 to institute requirements for annotation of procedures to reflect NER information received through IE Notices, SERs, and SOERs. This requirement will apply not only to procedures that are revised to address an NER item, but also those procedures that are found acceptable during the review. The revision to AI-4 will be approved by October 27, 1989.
3. Design output documents are being revised to include designation of required detector cart position. These revisions will be completed by October 27, 1989.
4. AI-4 is being revised to establish a prescribed method for placing administrative holds on a deficient procedure in order to ensure consistent and thorough establishment of controls. This revision will be issued by October 27, 1989.
5. A review of the AI-30 requirements for conducting plant activities in accordance with prescribed and approved procedures will be incorporated into the periodic operator requalification program.
6. TVA is developing a project to extend the procedure annotation requirements to previously reviewed NER items. This project will include the procedure technical resources/references matrix and a re-review of past NER items to identify procedures that were correct at the time of the NER review.