

**SECOND ANNUAL REPORT
OF
EMPLOYER CONCERNS SPECIAL PROGRAM
CORRECTIVE ACTIONS IMPLEMENTATION**

OCTOBER 1, 1988 - DECEMBER 31, 1989

TENNESSEE VALLEY AUTHORITY

NUCLEAR POWER

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TABLE OF CONTENTS

	<u>Page</u>
TABLE OF CONTENTS	
PREFACE	i
EXECUTIVE SUMMARY	ii
1.0 - INTRODUCTION	1
1.1 <u>Background</u>	1
1.2 <u>Program Activities</u>	2
2.0 CATD IMPLEMENTATION STATUS AND CAP DEVIATION SUMMARY	4
3.0 CAP DEVIATIONS	6
3.1 <u>Sequoyah Nuclear Plant</u>	6
3.2 <u>Browns Ferry Nuclear Plant</u>	13
3.3 <u>Watts Bar Nuclear Plant</u>	17
3.4 <u>Bellefonte Nuclear Plant</u>	20
3.5 <u>Non-Plant Specific</u>	20
4.0 CONCLUSION	23
TABLES	
Table 1 - CAP Closure	2
Table 2 - CATD Closure Status And CAP Deviation	4
FIGURES	
Figure 1 - CAP Deviations By Location	5
Figure 2 - CAP Deviations By ECSP Category	5

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PREFACE

In July of 1988 TVA committed to the Nuclear Regulatory Commission (NRC) to provide an annual report of deviations from Employee Concerns Special Program (ECSP) Corrective Action Plans (CAPs) approved or implemented each year. These CAPs were developed as part of encompassing Corrective Action Tracking Documents (CATDs) to correct and/or resolve deficiencies or problems arising from the investigation of employee concerns addressed by the ECSP. The employee concerns included in the scope of the ECSP were those collected or otherwise identified before February 1986, and generally dealt with TVA's nuclear program activities between 1980 and 1985.

EXECUTIVE SUMMARY

There were 1,591 CATDs developed as a result of ECSP investigations. Of these, 898 have been closed through December 31, 1989. In addition, 72 CATDs have been partially closed primarily in support of Sequoyah Nuclear Plant (SQW) Unit 1 and Unit 2 restart, and Browns Ferry (BFN) Unit 2 restart. For those BFN CATDs that have been partially closed during this reporting period, only those items potentially impacting Unit 2 restart were verified and closed. The remaining CAP actions will be completed as post-restart.

In general, the ECSP gave priority to the verification and closure of corrective actions impacting BFN Unit 2 restart during this reporting period. Other significant activities accomplished by the ECSP during this period include the final approval of all ECSP reports and their submittal to the NRC on February 6, 1989, and the completion of the employee feedback program.

Between October 1, 1988 and December 31, 1989, the ECSP completely closed 290 CATDs and partially closed 27. During this same period there were 107 CAPs which required a deviation from the originally approved corrective actions. Of these, 5 were Level I CAP deviations, 22 were Level II CAP deviations, and 80 were Level III CAP deviations (usually administrative in nature).

Based on the CAP implementation, verification, and closure activities conducted through December 31, 1989, the completion of the CATDs is continuing to ensure correction of the problems identified by the ECSP and is playing an important part in TVA's overall effort to restore its nuclear program to normal operations. TVA intends to continue implementing, verifying, and closing CAPs resulting from the ECSP evaluations to fulfill its commitment to its employees and the NRC, and to realize the maximum benefit from the program.

1.0 INTRODUCTION

This report provides information pertaining to the implementation and verification of actions required to resolve employee concerns evaluated by the ECSP. The concerns included in the ECSP's scope were collected or otherwise identified before February 1, 1986, and generally dealt with TVA's nuclear activities between 1980 and 1985.

The report represents a summary of the status of CATDs resulting from the ECSP evaluations that have been implemented and verified complete through December 31, 1989. It also addresses any deviations identified and approved during the reporting period to the original CAP commitments, provides technical justifications for Level I and II deviations, and where necessary, documents written notification to the NRC of Level I CAP deviations.

1.1 Background

This report is the second to be submitted to the NRC as a result of commitment made by TVA to the NRC in July, 1988. A synopsis of the events leading to this commitment is provided below.

In February 1986 TVA established the ECSP to evaluate approximately 6000 employee concerns that had originated primarily at Watts Bar Nuclear Plant (WBN). The major findings, actions, and conclusions resulting from the nearly two years of ECSP evaluations were documented in a series of reports. The last of these reports were submitted to the NRC on February 6, 1989.

On March 11, 1988 the NRC forwarded to TVA its preliminary Safety Evaluations on the ECSP reports relating to Sequoyah Nuclear Plant (SQN). One of these Safety Evaluations dealt with engineering issues of a programmatic nature, primarily organizational and/or procedural problems in the engineering design process. In this particular Safety Evaluation, the NRC made the following statement: "Any additional program changes should be submitted for staff review and should not be implemented prior to review and approval by the staff."

In a letter dated July 6, 1989 from Mr. R. L. Gridley, TVA's Director of Nuclear Licensing and Regulatory Affairs, TVA provided the NRC with comments on the preliminary SQN Safety Evaluations. In response to the statement quoted above, TVA committed to submitting to the NRC for review, prior to implementation, any deviation to a CAP commitment that significantly deviates from the original intent of the CAP. For those CAP deviations not considered significant (Level II and Level III CAP deviations), TVA stated its intention to implement such changes without prior NRC review and to notify NRC subsequently in an annual report of all approved deviations to CAPs implemented during the reporting period.

TVA developed a set of criteria for judging the significance of a deviation to a CAP. Deviations to CAPs were divided into three levels of importance defined as follows:

Level I CAP Deviation (significant deviation) - a proposed change to a CAP whose implementation would; 1) require a change to existing technical specifications, or 2) deviate from the design basis or the Final Safety Analysis Report.

Level II CAP Deviation - a change to a CAP that does not require NRC review prior to implementation of the change but that still requires adequate technical justification to support its implementation. (Such changes would include those that, 1) affect multiple plants, 2) affect a programmatic area of weakness, 3) involve organizational changes that directly affect implementation of the program, or 4) delay completion of the CAP by more than one year.)

Level III CAP Deviation - a change to a CAP that does not require either NRC review prior to implementation of the change or technical justification to support its implementation. (Such changes typically would be administrative in nature and would not affect any technical aspects of the commitments previously made e.g., the revision of a procedure other than the procedure originally identified for revision by the CAP.)

1.2 Program Activities

Three major activities were accomplished by the ECSP during the period covered by this report. These activities included the on-going verification and closure of CATDs, the finalization and submittal of all ECSP reports to the NRC, and the completion of the employee feedback program. In addition to these activities, the ECSP became a part of TVA's ongoing Employee Concern Program on October 1, 1988.

1.2.1 Verification and Closure of CATDs

During the period between October 1, 1988 and December 31, 1989, the ECSP closed 290 CATDs and partially closed 27 CATDs as shown in the following table.

LOCATION	CLOSED	PARTIALLY CLOSED
BELLEFONTE	3	0
BROWNS FERRY	82	18
NON-PLANT SPECIFIC	38	1
SEQUOYAH	72	5
WATTS BAR	95	3
TOTAL	290	27

1.2.2 Submittal of ECSP Reports

TVA transmitted the overall ECSP Summary Report and the nine ECSP Category Reports to the NRC on February 6, 1989 (RIMS number L44 980206 805). This action resulted in the docketing of all ECSP reports with the NRC.

1.2.3 Employee Feedback Program

TVA committed to the NRC to develop and implement a program to assist interested employees who raised concerns addressed by the ECSP program in determining the program's findings and actions taken in response to such concerns (corporate commitment NCO 86015 6054).

The purpose and intent of the program and the review period schedule were well publicized in advance within TVA. Employees desiring to determine the outcome of their concerns were assisted by the NRC and TVA's on-going Employee Concern Program (ECP) staff in their review of ECSP reports. This assistance was done in such a manner as to preserve the confidentiality of the employee.

This employee feedback program was initiated at SQW site on March 21-23, 1989. Following this, feedback stations were established at Chattanooga (March 28-29); BLN site (April 4-5); Knoxville (April 11-12); WBN (April 18-20); and BFN (May 2-4). Following completion of this program, the corporate commitment was closed by TVA on May 4, 1989.

2.0 CATD IMPLEMENTATION STATUS AND CAP DEVIATION SUMMARY

As of December 31, 1989, 898 CATDs had been completely implemented by the line organization and had been verified by the ECSP as closed. In addition 72 CATDs had been partially implemented and verified complete. These partially closed CATDs resulted primarily from the closure of SQW Unit 1 and 2 issues and in support of BFN Unit 2 restart efforts. For those partially closed BFN issues, only those steps potentially impacting Unit 2 restart were implemented and verified; the remaining steps are to be completed post-restart. Table 2, below, is a summary of both the CATD closure status through the end of 1989, and CAP deviations for the reporting period.

**Table 2
CATD Closure Status and CAP Deviations**

LOCATION	CATD STATUS				CAP DEVIATIONS		
	TOTAL CATDs	CLOSED CATDs	PARTIALLY CLOSED	OPEN CATDs	LEVEL I	LEVEL II	LEVEL III
BELLEFONTE *	190	52	0	138	0	0	2
BROWNS FERRY	358	193	19	165	0	10	19
BFN RESTART (SUBSET)	138	64	N/A	74			
NON-PLANT SPECIFIC	177	97	9	80	1	1	12
SEQUOYAH	334	250	40	84	3	6	20
WATTS BAR	532	306	4	226	1	5	27
TOTALS	1,591	898	72	693	5	22	80

* 121 OF THESE CATDs ARE IN INACTIVE STATUS

Table 2 shows that during the period covered by this report there were 107 CAPs where implemented corrective actions differed from those contained within the original CAP. Five of these CAP changes were considered to be Level I deviations, 22 were Level II CAP deviations, and 80 Level III CAP deviations.

Figures 1 and 2 on the next page show the distribution of these CAP deviations by location and by ECSP category respectively.

Figure 1
CAP Deviations by Location

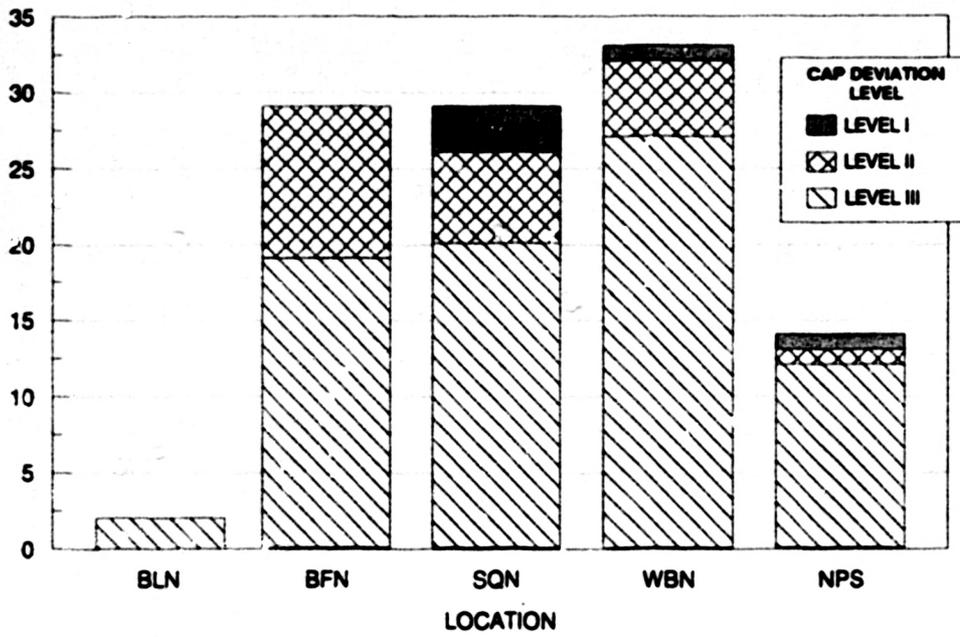
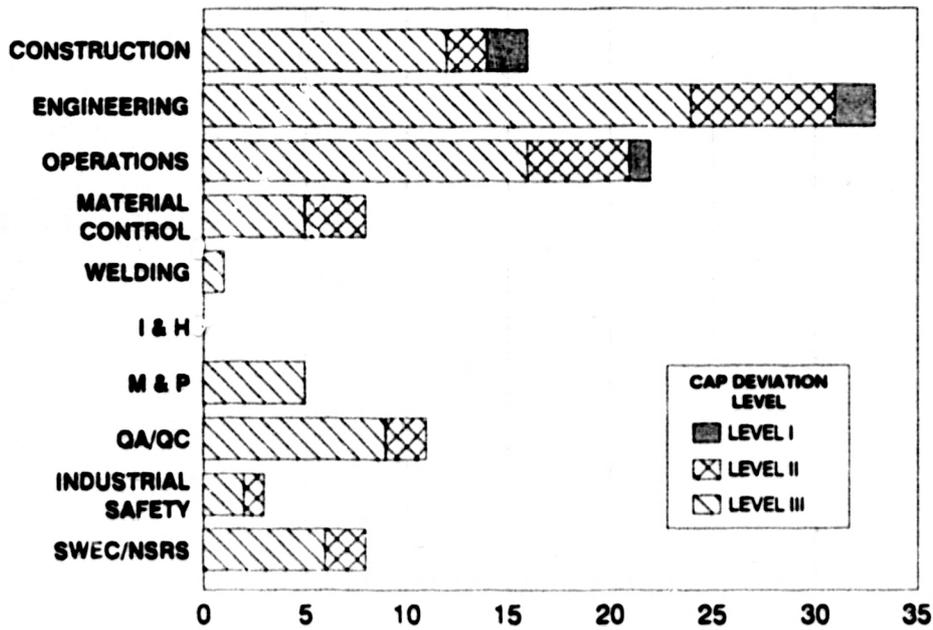


Figure 2
CAP Deviations by ECSP Category



3.0 CAP DEVIATIONS

This section presents a summarized description of all Level I and Level II CAP deviations by location. The number of Level III CAP deviations at each location is also indicated, but the exact nature of these minor deviations is not addressed.

Level III CAP deviations approved during the reporting period resulted whenever the required corrective actions were completed, but were not implemented exactly as required by the CAP language. Typical situations resulting in a Level III CAP deviation include:

The deletion or restructuring of a named procedure where the required corrective action was adequately addressed in another procedure, or

The reassignment of corrective actions from one responsible organization and/or function to another.

3.1 Sequoyah Nuclear Plant

During this reporting period there were 3 Level I CAP Deviations, 6 Level II CAP deviations, and 20 Level III CAP deviations approved for CAPs at SQN.

3.1.1 Level I CAP Deviations

19201-SQN-08 - Flexible Conduit Minimum Bend Radius

Special Maintenance Instruction (SMI)-0-317-33, Rev. 1, Walkdown Procedure for Identifying Flexible Conduit Connections in Violation of General Construction Specification Number G-40, failed to address minimum bend radius criteria. The SMI defined a deficiency as any condition not meeting the limitations defined in Attachment 1 to the instruction. Contrary to these requirements, flexible cable assemblies were not inspected for minimum bend radius violations in accordance with table 3.2.6-1 of Attachment 1 to the SMI.

The original CAP to this CATD stated that:

During the performance of SMI-0-317-33, Rev. 1, the bend radius requirement was inadvertently omitted. After further study, we have decided to eliminate this requirement from the procedure. Flexible metal conduit provides only mechanical protection for cables and no failures have to date been attributed to bend radius violations. Also, in general the seismicity of the equipment does not depend on the bend radius of the flex conduit as long as there is adequate movement (which we have assured) and the flex conduit does not exceed 6'-0". Based on the above, we conclude that this work is not a restart item. After plant restart, a flex bend radius sampling (per MIL STD 105D) will be performed. Estimated completion date for this activity is October 1987.

In a January 23, 1989 letter to the NRC titled "SQN Units 1 and 2 - Cable Monitoring Program and Assessments" TVA described the SQN Cable Monitoring Program.

Enclosure 2 to this letter dealt with NRC's Technical Evaluation Report (TER) C506-649 (SQN) which postulated failure of low and medium voltage cables subjected to tight bends. The TER cable overbending issue also involved possible age-related damage to cable interface layers.

This enclosure responded to the NRC request to develop a program to assure that such cables were adequate to perform their intended function. TVA concluded that the functionality of the installed cable at SQN was not impaired by small-bend radii configuration and that the elongation stress relationship does not affect functionality.

The enclosure continued, outlining SQN's existing cable monitoring program as it applies to providing assurance that SQN cables bent to small radii will continue to function over their qualified life.

This position regarding cable at SQN with small bend radius configurations resulted in a Level I CAP deviation to the subject CATD. This CAP deviation was reviewed and approved by the TVA ECSP in accordance with ECP Instruction 5. Notification of this CAP deviation was forwarded to the NRC by a letter dated July 19, 1989.

22303-SQN-01 - Seismic Adequacy of Field-Mounted Instruments

Employee Concerns Special Program Report 22300, Instruments Supports Design, questioned the practice of installing locally mounted instruments using "good engineering judgement" without an accompanying seismic analysis or qualification. While TVA generally followed acceptable standard practice and installation was in accordance with standard TVA design guidance, seismic documentation was found to be incomplete in many areas. The subject CATD was written to address this identified deficiency.

The CAP for this CATD contained the following post-restart corrective actions:

1. Obtain a list of safety-related instruments required for Unit 1 and Unit 2,
2. Identify and verify existing design approved mounting schemes,
3. Perform a seismic qualification documentation search for each instrument not installed per the design approved mounting drawing, or if the seismic qualification documentation is not found or is not adequate.

After further review, TVA revised this CAP committing to:

1. initiate procedures to implement the Vendor Seismic Qualification Documentation Retrieval (VSQDR) Program, and
2. initiate procedures to implement ER-SQN-EEB-001 with a scheduled completion date of March 1, 1990.

The VSQDR program is designed to create a database of all Q-List components together with a unique list of retrievable seismic qualification documentation for each such component. Project procedures will ensure that the database is maintained for the life of the plant.

ER-SQM-EEB-001 is design-basis maintenance control that will identify those installations which do not have adequate design approved mounting details. As maintenance activities are performed on safety-related process sensing instruments, a drawing and vendor manual search will be conducted. If the search identifies inadequate design approved details, the instrument will be maintained in its current condition and Engineering will be notified of the need to initiate necessary design change and drawing documentation.

This Level I CAP deviation was reviewed and approved during this reporting period in accordance with ECP Instruction 5. NRC notification of this Level I CAP deviation was made subsequent to December 31, 1989.

23101-SQM-01 - Update SQM Fire Protection Suppression System (FPSS) into Compliance with National Fire Protection Association (NFPA) Code 13

The approved CAP for this CATD contained the following two corrective actions:

Sequoyah Engineering Project shall revise the fire protection sprinkler system drawings to reflect FCRs 4415, 4542, 4543, and 4551 under ECN L6319, and

Sequoyah shall complete phase 2 of the program by upgrading portions of the Control Building and Auxiliary Building areas to NFPA-13 requirements.

After further review, TVA decided to revise the CAP as follows:

- A. The FPSS drawing revisions and modifications have been incorporated to reflect FCRs 4415, 4542, 4543, and 4551 under ECN L6319.
- B. SQM shall replace all 1/2-inch piping feeds to sprinkler heads with proper size piping. Locations involved are:
 1. Control building emergency air cleanup charcoal filter housing (2-filter housings),
 2. Containment purge air cleanup filter housings for Units 1 and 2 (4-filter housings),
 3. Two sprinkler heads in the Control Building, Elevation 714.0, cable spreading room, and
 4. The sidewall sprinklers around the waste packaging area railroad bay at the east end of the Auxiliary Building.

C. SQN shall perform hydraulic adequacy calculations or physical piping modifications as required to meet NFPA-13 pipe sizing criteria for the areas which have violations to the NFPA-13 pipe schedule sizing methods. These areas are:

1. Control Building, Elevation 732, HVAC mechanical equipment room having 6 sprinklers on a 1.5-inch pipe,
2. Auxiliary Building, Elevation 706, postaccident sampling facility Rooms A8 and A9, each having 3 sprinklers on a 1-inch pipe, and
3. Auxiliary Building, Elevation 734, Room A7, 480-volt shutdown board 1a1-A which has 11 sprinklers on a 2-inch pipe. (Note: Room A23, 125-volt Vital Battery Board Room III incorrectly shows a 1.5 inch pipe instead of the installed 2-inch pipe feeding 6 sprinklers.)

This CAP deviation is a technically acceptable alternative since all safety-related areas needed for Appendix R safe shutdown capability have been evaluated and upgraded under Phase I by ECNs L6300 and L6319. Sprinkler head obstructions and required relocations are identified by SI-241, which is performed once each 18 months pursuant to Technical Specification 4.711.2. This will result in either 10 CFR50.59 safety evaluations and acceptance of sprinkler conditions, or DCR process modifications as such obstructions or relocations are identified. Sprinkler system additions are instituted through the DCR process.

As of the end of this reporting period, this level I CAP Deviation had been approved in accordance with ECP Instruction 5, but NRC notification had not yet been done.

3.1.2 Level II CAP Deviations

19201-SQN-01 - Procedure Control for the Receipt of Non-QA/Non-CSSC Items

SQN work control procedure (AI-11) exhibited weakness in the receipt of conduit and associated hardware to more accurately detect damage or defects for this material. Nuclear Engineering directives to procure conduit from a QA approved vendor was not consistently utilized for procuring conduit systems.

After a review of AI-11, TVA determined no revision was required because of the following reasons:

1. Conduit material and accessories are procured to quality Level III and are subjected to receipt inspection by certified quality control inspectors.

2. Receipt inspection of non-QA/non-CSSC material is performed by formally trained storekeepers who ensure that items received are in an acceptable condition and comply with procurement document requirements.
3. Site procedure prohibit use on non-CSSC items in CSSC applications.
4. Modifications and Additions Instruction (M&AI)-6 requires a documented inspection of conduit systems at installation to ensure that they are free from burrs, cuts, sharp edges, rough surfaces, or any other defect that may be detrimental to the cable jacket. In addition, M&AI-7 requires a post-installation inspection of power cables to detect possible cable damage during installation.
5. AI-11 is not intended to provide detailed criteria for receipt inspection of all types of material. Items are receipt-inspected to procurement document requirements by certified QC inspectors or storeroom personnel. Conduit is procured to a standard TVA procurement specification which is used as criteria to perform receipt inspection.

22110-SQM-01 - Use of a Snubber Instead of a Rigid Support

The upper head injection system riser just outside the Unit 1 reactor vessel requires a rigid support but a snubber (1-UH1H-9) was used. TVA committed to remove the snubber and install a rigid support at this location.

Piping analysis 0600104-15-01 (RIMS number B25 880517 817) was evaluated for a snubber at the location and found acceptable. The isometric drawing was revised to show usage of a snubber instead of a rigid support. In addition, the support design calculation 1U1H0009 (RIMS number B25 880805 827) was issued to show the support as a snubber.

23105-SQM-01 - Adequacy of Battery Room Ventilation System

The fifth Diesel Generator 125V vital battery room does not have a dedicated exhaust system. All battery system exhaust fans, including the Diesel Generator batteries, are class IE and supplied with emergency power. A malfunction of the fans is annunciated in the main control room. In addition, no hydrogen survey has been conducted for the vital battery room V which is more prone to hydrogen pocket formation. The Diesel Generator battery exhaust hood would accumulate hydrogen if the exhaust damper failed closed followed by battery overcharging.

The CAP recommended 3/4 inch holes being drilled into the mounting frame of the Diesel Generator battery vent hood exhaust fan discharge dampers (FC0455 through FC0458) and the vital battery room exhaust damper frames (FC031-485 and 487) near the ceiling. Sufficient holes would provide minimum natural ventilation in case of forced air interruption and would scavenge potential pockets of hydrogen without seriously compromising the function of the dampers.

A hydrogen survey was also to be conducted for the vital battery V room.

After further analysis by TVA it was determined that no action was required because:

1. A hydrogen survey had been performed. The survey used test locations in the room which had relatively low-air flow velocities with the ventilation system running.

To enhance the possibilities of hydrogen pocketing the survey was performed with the ventilation system off. No measureable level of hydrogen was detected. This test was performed three times a day during a seven day equalizing charge period.

2. The room is equipped with a redundant, automatic switch-over, class 1E, emergency powered ventilation system. Failure of both trains is outside the single failure criteria. Calculation DS-E-3.1.1, RO (RIMS number EEB 841226 926) showed the ventilation system is sufficiently sized to prevent hydrogen accumulation during normal operation conditions. In addition, SQW Operating Instruction (OI)250-5 requires that an exhaust fan shall be in service at all times.
3. The damper is not a leak tight design. Even with the damper fully closed there will still be a small amount of bypass flow through it. A second relief path is through the existing fan housing openings. The largest is located where the fan shaft extends out of the housing. The size of this opening is approximately the equivalent of four 3/4-inch holes.

23702-SQW-04 - Limitorque Valve Operators Inadequately Fused

Fuse selection for valve operators did not provide sufficient margin for emergency operation. This issue only applies to the fifth diesel ERCW valves since all other valve operators are equipped with magnetic overload devices (circuit breakers) for circuit protection.

TVA determined that corrective action for this issue would be to scope, evaluate, and correct any discrepancies in the fuse selection process for the fifth diesel generator. In addition, calculations were to be performed to confirm adequate electrical protection and margin.

The SQW Site Director, in a memorandum (RIMS number S53 861204 894) to the acting Manager of Nuclear Power, decided to discontinue work on the fifth diesel generator. He stated that the marginal increase in safety and reliability resulting from this additional diesel generator at SQW does not warrant any further expenditures nor diversion of manpower. Consequently no further action was taken on the fuse issue.

30107-SQM-01 - Integrity and Maintenance of Containment Paint Coatings

TVA Nuclear Safety Review Staff (NSRS) Report I-85-812-SQM, which dealt with the adequacy, integrity and maintenance of containment paint coatings at SQW was tracked by SQ-CAR-86-01-001. CATD 30107-SQM-01 was written to quantify and bound the issues addressed by the NSRS Report.

The CAP to this CATD stated that actions had been taken to resolve NSRS Recommendation I-85-812-SQM-02 as follows:

Delaminating topcoat was removed by MR Nos. A523804, A548573 and A547675. Further inspection for all areas was conducted by Preventive Maintenance (PM) Nos. 1435-364 and 1439-364. Any additional identified delaminating topcoat would be removed.

Westinghouse conducted a coating transport analysis for SQW Unit 2 and concluded that existing quantities and types of coatings were acceptable. Debris from these coatings resulting from both LOCA and MSLB conditions, would not significantly affect the decay heat removal capability. Consequently no further action was taken on this specific NSRS Recommendation.

40512-SQM-01 - Use of Incorrect Material (ASTM A36) for Fabrication of Support Pad

The subject ECSP report (MC-40512-SQM) stated that the heat number for a 1-1/4 inch support pad plate identified the material as being certified to ASTM A36 in conflict with the required ASTM A516, grade 60 or 70 carbon steel plate.

The CAP for this CATD stated that:

1. Metallurgical testing will be performed on the support pad in question to determine the material type and grade, and
2. If the material is verified as being the incorrect type and grade, it will be removed and replaced.

In the process of preparing the surface (light grinding to remove paint and other surface materials or corrosion products) an A516 heat number was exposed. However, an in-situ metallurgical evaluation of the plate was still conducted. This evaluation showed that the material met the requirements of the required material specifications (A516), but could not determine if the material was initially produced to meet A516 specifications. Since the material met the A516 material specifications the hanger base plate was left "as-is," even though the material type and grade was not conclusively determined as required by the CAP.

3.2 Browns Ferry Nuclear Plant

During this reporting period there were 10 Level II CAP deviations, and 19 Level III CAP deviations approved for CAPs at BFN.

3.2.1 Level I CAP Deviations

There were no Level I CAP Deviations.

3.2.2 Level II CAP Deviations

20406-BFN-03 - Communication Between Nuclear Engineering Disciplines and Modifications

BFN does not coordinate the effects of upcoming (near or long-term) design changes with all disciplines and site Modifications. This results in an inadequate evaluation of the impact of design changes. TVA determined that implementation of Nuclear Engineering Procedure (NEP) 6.3 would provide a prescoping meeting between Nuclear Engineering and Modifications personnel before design begins. Additional meetings between Nuclear Engineering and Modifications are recommended as the design proceeds. A review of the design by all involved Nuclear Engineering disciplines is required during and following the design process.

The TVA Nuclear Performance Plan for BFN does not require full implementation of NEP 6.3 and 6.4 until after restart. In the interim, BFEP PI 86-03 Preparation and Control of Engineering Change Notice Modification Package provides adequate coordination control and satisfies the CAP requirements.

22800-BFN-01 - Unistrut Clamp Load Test Discrepancies

The CATD stated that TVA Singleton Lab test results for P2558-20 and P2558-50 Unistrut clamps for load direction parallel to the pipe axis and used by TVA for the design are two to three times higher than the Unistrut Corporation test results.

The CAP required:

1. a review of field records (Purchase Orders, Workplans, etc.) for Unistrut P2558-series or similar clamps installed since May 1984.
2. review existing calculations for Unistrut P2558-series or similar clamps using allowables given in QIR-CEB-87-099.
3. This QIR will be revised to incorporate available allowables for B-Line B2400-series clamps.
4. Additional testing will be performed for material finishes not previously tested.

5. The walkdown/qualification for Small-Bore Piping will use the QIR allowables for clamp qualification.
6. The QIR will be incorporated into the BFN pipe support handbook as the method to prevent recurrence.

The CAP commitment identified as item 1, above, was changed to an alternate approach. A review of all pipe support drawings was conducted to identify where a Unistrut clamp had been utilized. Where the drawing review identified a questionable pipe clamp its use was evaluated by performing calculations.

The CAP commitment identified as item 6, above, was also deviated. To prevent recurrence of this problem the BFN Pipe Support Design Handbook (PSDH) section on unistrut-type clamps was issued as a Lead Civil Engineer Instruction. The PSDH adequately addresses allowable load capacities and the proper design of Unistrut pipe clamp series P2558 and B-Line pipe clamp series B-2400.

30401-BFN-01 - Site Instruction Upgrade

The CATD stated that site instructions had not been verified as being equal to or better than the procedures in the Construction Quality Assurance Manual, Appendix B.

The CAP to this CATD required the completion of the Design Baseline Verification Program (DBVP) and the Specification Improvement Program (SIP) as part of required corrective actions. These two programs are specifically addressed by CATDs 20106-BFN-01 and 23106-BFN-01 respectively. The DBVP, as finally established, did not address the subject issue; no site procedural changes resulted from the DBVP.

The SIP is not applicable to this issue because current specifications are being incorporated into procedures and are considered better than the much older, pre-10 CFR50, Appendix B requirements.

30401-BFN-03 - Incorporation of General Specification Changes in Site Procedures

The CATD stated that Site Director Standard Practice BFN SDSP-2.4 did not adequately ensure that changes to General Specifications were reflected in all affected site procedures.

Part 2 of the CAP to this CATD stated that the procedures section would identify all BFN-specific General Specifications and provide a list to Document Control. Document Control would ensure the latest version has been addressed by SDSP-2.4 and ensure source document implementation.

Direct implementation of this corrective action was hampered since General Specifications are not site-specific. Nuclear Quality Audit Finding QBF-A-85-0008-D10 identified deficiencies in BFN procedures regarding General Specification implementation.

This audit finding was addressed by requiring Nuclear Engineering to review all maintenance-related procedures for proper general specification implementation. Comments from this review were independently verified by the procedure staff at BFN and "procedure change request" forms were submitted for requirements not incorporated. Since these actions met the intent of the corrective action, the CATD was closed.

40400-BFN-04 - Segregation of Austenitic Stainless Steel and Carbon Steel

The CAP to this CATD states, in part, that "Power Stores will establish a satellite storage area inside protective fence for this material storage."

Due to manpower and space limitations, BFN did not create a "satellite" storage area inside the protective fence for the storage of austenitic stainless and carbon steels. These materials are stored in Power Stores storage areas. These areas are outside of the plant protective fence but are inside the "restricted access" security fences at Power Stores. All other corrective actions required by this CAP were implemented as written.

80203-BFN-01 - Vendor Weld Acceptance Criteria

The CATD referenced Non-Conformance Report (NCR) 6345 which identified unsatisfactory vendor welds from a vendor. That vendor supplied weld components to BFN under several contracts. As a result these components (doors) were to be inspected and the results documented.

The CAP to this CATD stated that a Maintenance Request (MR) had been initiated on all 24 subject CSSC doors to require inspection and documentation of each door. Any defective or discrepant welds would be identified by the CAQ process and assigned to Nuclear Engineering for evaluation, disposition and resolution.

Based on ALARA, manpower, and time considerations, and on discussions with Nuclear Engineering, it was decided to randomly select 7 of the 24 doors in question for sample re-inspection of the vendor welds, and subsequent documentation of inspection results for Nuclear Engineering evaluation. This re-inspection resulted in the identification of no defective or discrepant welds in any sample. Due to the lack of negative findings and to the sample size (about 30%), no further re-inspections were determined warranted.

80252-BFN-01 - Review of Hydrostatic Tests

The CATD questioned whether the pressure effects of water static head had been accounted for in hydrostatic tests performed prior to revision 6 of the General Construction Specification G-29M.

The CAP to this CATD stated that a review (of these hydrostatic tests) would be performed and documented. The review was to include a "worst case" determination.

A review of the applicable process specification (3.M.9.1) of G-29M determined that the process specification had accounted for static head pressure in revisions prior to 6, and the revision 6 to G-29M did not introduce any changes to process specification 3.M.9.1.

Since (a) no evidence was found that the procedure contained any revision of G-29M was violated, (b) the documentation of static head pressure is not required, and (c) the maximum hydrostatic test pressure limits included static head pressure, no further review was warranted.

91200-BFN-06 - Inadequacy of Employee Asbestos Exposure Data Base

The CAP to this CATD required each BFN unit supervisor to initiate a procedure to notify the Industrial Safety Section at least every six months in compliance with the monitoring requirements of BF-14.45, Asbestos.

In order to better ensure compliance with the monitoring requirements of BF-14.45, an asbestos work permit program was established by the Industrial Safety Section. Since this program captures and tracks all asbestos removal activities throughout the plant, the CATD was closed.

SWEC-BFN-04-01 and SWEC-BFN-04-02 - Response to NRC Concerning the Engineering Report/Significant Condition Report Program and Evaluation of Category II Conditions

These CATDs dealt with NRC Inspection Report 84-01 and suggested that TVA had not kept the NRC informed as to the enhancements made in the improvement of the Condition Adverse to Quality (CAQ) process. The CAP stated (in part) that "TVA has committed, as part of the Browns Ferry Nuclear Performance Plan (BFNPP), to evaluate all open NCRs/SCRs prior to restart."

A review of the BFNPP revealed that the commitment was to evaluate all SCR (not all SCR and NCR). However, since the BFN restart review board dispositioned both open SCR and open NCRs utilizing identical processes, the CAP was closed.

3.3 Watts Bar Nuclear Plant

During this reporting period there was 1 Level I CAP deviation, 5 Level II CAP deviations, and 27 Level III CAP deviations approved for CAPs at WBN.

3.3.1 Level I CAP Deviation

11103-WBN-08 - Cable Tray Supports

This CATD addressed a finding involving potential discrepancies in documentation related to modifications of cable tray supports. In particular, the CATD dealt with cable tray supports not completely walked down or adequately documented as part of the disposition for Nonconformance Report (NR) 5737 R1.

The CAP to this CATD, as originally approved, contained the following corrective actions (summarized):

1. For areas not addressed under NR 5737 R1 - A 100-percent configuration inspection of all supports documented before issue of the NR will be performed.
2. For areas accepted based on a sample program under NR 5737 R1 - If it cannot be verified that acceptable sample techniques were used, additional (unspecified) action will be required.
3. For areas walked down under NR 5737 R1 - If it cannot be verified that 100 percent of these cables tray supports were walked down, a 100 percent walkdown will be performed on those supports not covered.

Following a review of this CAP, TVA determined that the corrective actions, as defined, represented an excessive program that could be revised to provide an approach more consistent with similar programs. Accordingly, this CAP was modified as follows:

1. Supports which were inspected under NCR 5737 R1 - Although evidence in the form of daily log sheets exist indicating the reinspection was performed, proper inspection documentation was not maintained for those supports found to be adequate during this reinspection. Accordingly an over inspection of approximately 60 of these supports will be performed. The selection of supports will be identified and the program implemented in accordance with approved Nuclear Engineering procedures consistent with Nuclear Construction Issues Group (NCIG)-02, such as Watts Bar Engineering Procedure (WBEF) 3.15. The objective of this over inspection is to verify the adequacy of the original walkdown by demonstrating with a 95-percent confidence that at least 95 percent of the population meets the design criteria. The inspection documentation of these supports will be updated to provide a reference in their records to this program.

2. Supports which were to be reinspected under NCR 5737 R1 - Those supports documented before but not reinspected during NCR 5737 R1 (including supports in those areas sampled) will be subject to an engineering walkthrough and a critical case evaluation. This walkthrough and critical case evaluation will consist of a review of the installed configuration and will focus on those attributes essential to cable tray support qualification.
3. Subsequent to the evaluation of the final critical cases, those critical cases that do not meet the design criteria will be reviewed and unacceptable attributes will be identified. Those particular attributes will then be reviewed for the entire population with field modifications implemented as required.

This modification resulted in a Level I CAP deviation to the subject CATD. This CAP deviation was reviewed and approved by the ECSP in accordance with Employee Concern Program Instruction 5. Notification of this CAP deviation was forwarded to the NRC by a letter dated May 5, 1989.

3.3.2 Level II CAP Deviations

10200-WBN-12 - Incorporation of Results of Structural Evaluation of Concrete into the WBN Final Safety Analysis Report (FSAR)

ECSP Report 10200, Attachment D, paragraph D.3.1 stated that the results of the structural evaluation of concrete would be incorporated as revisions to the WBN FSAR. The CAP to this CATD stated that these results would be incorporated into the FSAR by June 1, 1987.

Due to staffing and workload constraints the FSAR amendment process was placed on hold. This item is being tracked pursuant to WBN A1-4.7.2, Responsibilities and Requirements for FSAR Changes, which requires all recommended FSAR changes to be tracked in the FSAR data base until completion.

Since the recommendation that the FSAR be revised to incorporate the results of the concrete structural evaluation is being tracked by A1-4.7.2 the CATD was closed prior to actual FSAR revision.

22206-WBN-01 - Adherence To The American Institute Of Steel Construction (AISC) Minimum Weld Criteria

This CATD stated that there was a conflict between the design criteria/licensing commitments and the actual practice for adherence to AISC minimum weld requirements.

The associated CAP stated that the following two steps would be taken:

1. Request NRC concurrence in the use of ASME Code Case N-413, and
2. Following NRC concurrence, revise FSAR and applicable design criteria to reflect the use of welds smaller than the AISC minimum.

Part I of the CAP was determined to be inappropriate and unnecessary since (1) the welds in question were not ASME welds but were AISC welds and (2) in either case, the Code Case N-413 had been incorporated into Regulation Guide 1.84, Revision 24 at the time the CATD was written.

Based on this, proposed revisions to the FSAR were directly pursued to address fillet welds specified below the minimum size specified by AISC.

22800-WBN-01 - Maximum Design Loads for Pipe Supports Exceed Allowable Loads

The CATD stated that maximum design loads for two pipe supports (47A450-8-12 and 47A450-8-15) exceeded the allowable loads for P2558-60 unistrut clamps used in TVA calculation NCR-WBNCEB8501 Tightening of P2258 Unistrut Clamp, RO.

The CAP stated that calculation NCR-WBNCEB8501 (RIMS number B41 850305 945) would be revised to reflect the correct support design load parallel to the unistrut axis for support 47A450-8-12 (value should be 660# instead of 290#). Calculation NCR-WBNCEB8501 (RIMS number B41 850307 008) will be revised to include an evaluation for this condition. For support 47A450-8-15, no additional action is required since the applied load is less than the rated clamp load value in the direction parallel to the unistrut.

Review of calculation NCR-WBNCEB8501 (RIMS number B41 850307 008) determined that it was not affected by the revision to calculation NCR-WBNCEB8501 (B41 850305 945). As a result this portion of the CAP was unnecessary.

31107-WBN-01 - Potential Use of Contaminated Hoses for Connecting MSA Breathing Air Manifolds to Service Air Lines

The CAP to this CATD committed to changing the MSA Breathing Air Manifold couplings to a "unique coupling type.

The intent of this corrective action was met by implementation of physical and procedural controls to ensure that the correct hoses and hookups are made before use.

40400-WBN-04 - Lack of Protective Covers and Seals on Austenitic Stainless Steel Tubing, Piping, and Fittings in Storage

The CAP to this CATD referenced and quoted Process Specification 4.M.1.1, section 3.1.7.1 of General Construction Specification G-29. This section established storage requirements for stainless steel and stated that end caps were required on tube and piping in storage but not required for stored fittings.

The CAP required that DNE's position concerning storage protection requirements of stainless steel fittings be validated by tests performed at TVA's Singleton Materials Engineering Laboratory.

DNE determined that no testing was necessary because (1) No clear test scheme or acceptance criteria could be established, (2) G-39 requires components in fluid handling systems to be visually clean and also requires internal flushing to reduce soluble contaminants to within acceptable limits, and (3) G-29 Process Specifications 4.M.1.1 and 4.M.4.1 ensure external cleanliness for stainless steel piping vulnerable to stress corrosion cracking.

3.4 Bellefonte Nuclear Plant

During this reporting period there were 2 Level III CAP deviations approved for CAPs at BLN.

3.4.1 Level I CAP Deviations

There were no Level I CAP deviations.

3.4.2 Level II CAP Deviations

There were no Level II CAP Deviations.

3.5 Non-Plant Specific (NPS)

During this reporting period there was 1 Level I CAP deviation, 1 Level II CAP deviation, and 12 Level III CAP deviations to NPS CAPs.

3.5.1 Level I CAP Deviation

30100-NPS-01 - Maintenance and Performance Testing of Diesel Generators

This CATD was written concerning the lack of corporate guidance in the maintenance and performance testing of diesel generators at all sites.

The CAP to this CATD, as originally approved, was as follows:

The Office of Nuclear Power is in the process of developing an Upgraded Preventive Maintenance Program.

This program will contain corporate guidelines/requirements for maintenance, testing, and trending of nuclear plant components and systems. The diesel generators are included in this program. In the past, there was no formal program for corporate guidance in the maintenance and testing of diesel generators. Support and guidance were supplied on an as-needed basis.

The draft Technical Specifications for Watts Bar Nuclear Plant have been revised to include diesel generator reliability improvements in accordance with NRC Generic Letter 84-15. This program will reduce the number of starts required to prove diesel operability. This program also requires that records be maintained of the number of diesel starts and failures.

After review, TVA changed this CAP to read as follows:

1. A Maintenance Specialist position has been established in Nuclear Maintenance to handle and resolve diesel generator concerns.
2. A thorough review has been performed of NRC generic letter 84-15 and recommendations were made to Sequoyah Nuclear Plant (SQN) in regard to changing testing methods to increase reliability and comply with NRC Generic Letter 84-15.
3. A proposed change to SQN Technical Specification has been made in an effort to reduce the number of diesel starts and to allow an idle start during most testing activities. This Technical Specification change will enhance reliability. All TVA Nuclear Power (NP) sites are being considered for this type of change in their Technical Specifications.
4. Nuclear Maintenance corporate management has, for the last four years, provided maintenance training for site personnel at Sequoyah, Watts Bar (WBN), and Browns Ferry Nuclear Plants to upgrade skills and knowledge in the area of diesel generator maintenance. This training is dynamic in that updated information is incorporated into lesson plans to reflect current technology and equipment upgrade information.

Maintenance practices are being further improved by Nuclear Maintenance's involvement in revisions to WBN's Maintenance Instructions and Preventive Maintenance Instructions. The recommendations made are designed to save time and money while maintaining high diesel generator reliability.

This Level I CAP deviation was reviewed and approved during this reporting period in accordance with ECP Instruction 5. NRC notification of this Level I CAP deviation was made subsequent to December 31, 1989.

3.5.2 Level II CAP Deviation

30400-NPS-02 - Corporate and Plant Control of Consumables

The CATD questioned the adequacy of corporate and plant control of consumable usage, particularly Room Temperature Vulcanizer (RTV).

The CAP to this CATD referenced the ECSP report 30400 in stating that the CATD was written against a single, isolated incident where RTV was applied without adequate material traceability. The CAP then committed to appropriate training for the individuals involved.

Since it was acknowledged in the CAP and in the parent report that the incident was isolated, training was determined to be unnecessary and unjustified.

3.0**CONCLUSION**

The ECSP gave priority during this reporting period to the verification and closeout of CATDs related to the restart of BFN Unit 2. In addition, start-up actions at WBN, post-restart action at SQN, and non-plant specific actions affecting the overall TVA nuclear program continue to be implemented.

As of December 31, 1989, almost 57.5 percent of all CATDs have been fully closed. During this report period, 5 CAP deviations were considered significant, Level I CAP deviations and 22 Level II CAP deviations were required. Given that these CAPs were prepared in 1986, and considering the amount of change that has occurred within TVA's nuclear program over the past several years, this number of significant CAP deviations is considered quite low. Deviations from approved CAPs will continue to be closely controlled, and the number of such deviations will be minimized whenever possible.