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4.2.2 Level III CAP Deviations

Level III CAP deviations were identified during the closure process for the following four BFN CATDs:

23900-BFN-02  
24105-BFN-01 (U3)  
24300-BFN-02  
40400-BFN-04

4.3 Watts Bar Nuclear Plant

During this reporting period, there were 14 approved Level II CAP deviations and 16 Level III CAP deviations for WBN CATDs.

4.3.1 Level II Cap Deviations

CATD 11200-WBN-06 - INSPECTION OR SCHEDULE FOR INSPECTION OF ALL SAFETY-RELATED VENDOR WIRE PANELS AND PROPER LABELING OF VENDOR WIRING

CATD 11200-WBN-06 documents the issue that it is not clear whether all safety-related vendor wired panels have been inspected or scheduled for inspection to ensure that vendor wiring is properly labeled.

NOTE: Only the affected portions of the CAP are listed below:

Original CAP

- 2.b Point-to-point inspection verification of modifications performed by TVA ensures configuration adequacy (QCP-3.06-2 and MAI-5).
- 2.e Maintenance procedures require that permanent labels be in agreement with the controlling drawing before maintenance is performed (AI-9.2).
3. Documentation for equipment in the QA program should be consistent. Based on 1 and 2 above, necessary changes will be made to bring the TVA drawings into agreement with the as-built labeling for all safety-related panels. The labeling upgrade program detailed in 4 will be done on an after fuel load (AFL) schedule for transferred panels and prior to transfer of Unit 2 panels, if feasible.

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4. PIR WBNWBP 8770 (PER) has been initiated to document these labeling problems and to control necessary corrective actions to bring TVA drawings and as-built labeling into agreement for vendor wired safety-related panels. A preliminary definition of corrective actions under consideration include:
- a. All vendor wired safety-related panels requiring reinspection will be defined by DNE.
  - b. A procedure will be prepared by DNE to coordinate the efforts of DNE, Nuc. Power, and DNC in bringing TVA drawings into agreement with as-built labeling configuration. Scope, organizational responsibilities, correction methods, acceptance criteria and other procedures requiring revision (such as inspection and system transfer) will be clearly defined in this document.
  - c. Transfer of Unit 2 equipment after a baseline date defined in the procedure of 4 (b) will require that associated TVA drawings and as-built labeling be in agreement.

**SUMMARY**

In summary of items 1 through 5, PIR WBNWBP 8770 (PER) will be initiated. The disposition of this PIR will define corrective action for CATD 11200-WBN-06 in greater detail and will include a schedule for completion of the major tasks involved. The disposition of the PIR will be issued by September 1, 1987.

**Revised CAP**

- 2.b Point-to-point inspection verification of modifications performed by TVA will ensure configuration adequacy. (MAI-3.3)
- 2.e Procedures require that Permanent labels will be in agreement with the controlling drawing. (SSP-2.52)
- 3. Labeling discrepancies will be handled in accordance with SSP-3.04 at the time of discovery.

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4. Labeling discrepancies will be handled in accordance with SSP-3.04 at time of discovery.

No further investigation is necessary, and the revised corrective action for PIR WBNWBP 8770 (PER) is "Use-As-Is" for undiscovered labeling discrepancies.

**SUMMARY**

Labeling discrepancies will be handled in accordance with SSP-3.04 at time of discovery.

The revised disposition of PIR WBNWBP 8770 and CATD 11200-WBN-06 is "Use-As-Is" for any undiscovered labeling discrepancies.

**Summary of Technical Justification**

- 2.b. Correction is for current procedure reference.
- 2.e. Correction is for current procedure reference.
3. Extent of condition evaluations have been completed for NCR W-205-P and W-237-P. No significant conditions which would impact safety or represent a requirement violated were noted.

SSP-3.04, "Corrective Action Program," requires that nonsignificant discrepancies which do not exemplify a requirement violated be dispositioned by an ACP at time of discovery.

4. Additional investigation for PIR WBNWBP8770 (PER) has revealed that:
  - a. The extent of condition investigations for NCRs W-205-P and W-237-P revealed no examples of requirements violated.
  - b. The extent of condition investigations for NCRs W-205-P and W237-P included the vast majority of vendor wired safety-related panels susceptible to labeling discrepancies. These included the main control room, the auxiliary control room, the auxiliary instrument room, the shutdown board rooms, and the diesel generator building.
  - c. Discrepancies which do not exemplify a requirement violated are handled as they are discovered on ACPs (DDs or DCNs) per SSP-3.04.

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- d. If a labeling discrepancy is discovered which exemplifies a requirement violated, a PER, SCAR, or FIR will be processed, including extent of condition and generic applicability, in accordance with SSP-3.04.

**SUMMARY**

The vast majority of potential labeling discrepancies have been investigated (and corrected) by NCR W-205-P and W-237-P. Labeling discrepancies of the type found are required to be corrected as they are discovered by an ACP in accordance with SSP-3.04. The discrepancies found do not fit the definition of adverse conditions exemplifying a requirement violated for which a condition adverse to quality report (PER, SCAR, PER) must be initiated.

**CATD 17300-WBN-01 AND CATD 17300-WBN-02- INSTRUMENT SENSING LINES  
INSTALLED WITH INADEQUATE SLOPE**

CATD 17300-WBN-01 and CATD 17300-WBN-02 documents the issue that instrument sensing lines were installed with inadequate slope.

**Original CAP**

- 10.a SCRWBNEEB8724 and SCRWBWBP8709 will be written for Unit 1 and Unit 2, respectively, to address slope requirements and other issues for Radiation Monitoring Lines.
- 10.b. Rework sense lines in accordance with the disposition of NCR6172 and NCR6359 for Unit 1 and Unit 2, respectively.

Rework radiation monitoring lines in accordance with the disposition of SCRWBNEEB8724 and SCRWBWBP8709 for Unit 1 and Unit 2, respectively.

- 10.c. Revise Q-List to indicate all sensing lines and all radiation monitoring lines that require QC inspection and documentation for slope purposes.

Revise Engineering Requirements Specification ER-WBN-EEB-01 to incorporate radiation monitoring line slope requirements (presently, ER-WBN-EEB-01 addresses only sense line slope requirements).

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- 10.d. ER-WBN-EEB-01, R1, has been issued to define the slope requirements for instrument sensing lines.

Some Unit 1 and Unit 2 sense line field work has been initiated.

Revised CAP

A. Radiation Monitoring Lines Installed with Inadequate Slope.

Reference SCR WBNEEB8724SCA (Unit 1) and CAQR WBP871094 (Unit 2). The corrective actions for each unit are as follows:

1. Establish radiation monitor line slope design input requirements in design criteria WB-DC-0-24.
2. Issue radiation monitor line slope design output requirements in Project Engineering Specification N3E-934 (formerly Engineering Requirements Specification ER-WBN-EEB-01).
3. Evaluate radiation monitor slope design input requirements to as-installed configuration. For lines which do not comply with design input requirements, either: (1) issue engineering change packages (i.e., DCNs) to correct the line configuration, or (2) issue exception(s) to WB-DC-0-24 to technically justify acceptability of the existing installed configurations.
4. Install and inspect radiation monitor lines in accordance with requirements specified in N3E-934 as scoped and authorized by the engineering change packages identified in step 3 above.

B. Instrument Sensing Lines Installed with Inadequate Slope.

Reference NCR 6172SCA (Unit 1) and NCR 6359 (Unit 2). The corrective actions for each unit are as follows:

1. Issue NE calculation WBPEVAR8511002 to identify the scope of instruments that are connected to sense lines and perform a primary safety-related function (i.e., reactor trip actuation, engineering safeguards feature actuation, post-accident monitoring, and automatic actuation of features required to perform a primary safety function).

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2. Issue drawing 47W600-0-8, Table B, to identify nonprimary safety-related instruments which are particularly sensitive to entrapped air in their sense lines. (This is a subjective evaluation based on known instrument performance deficiencies.)
3. Issue engineering change packages (i.e., DCNs, ECNs) for instruments and associated sense lines, identified in steps 1 and 2 above, in accordance with requirements specified in N3E-934.
4. Install and inspect instruments and associated sense lines in accordance with requirements specified in N3E-934 as scoped and authorized by the engineering change packages identified in step 3 above.
5. Issue sense line functional calculations (separation).

Summary of Technical Justification

SCR WBNEEB8724 and SCR WBNWBP8709 have been converted to SCR WBNEEB8724SCA and CAQR WBP871094, respectively.

Project Specification N3E-934 specifies QC inspection requirements for slope verification associated with sensing lines and radiation monitoring lines. Section 4.0 of N3E-934 provides all inspection requirements applicable to instrumentation work activities including instrument line slope. The Q-List corrective action step was identified prior to the initial issuance of N3E-934 and is thus an outdated corrective action step.

N3E-934 (formerly ER-WBN-EEB-01) was issued as part of the TVA Specification Improvement Program. However, the slope requirements specified in N3E-934 will be used in the implementation of the corrective action program for the CAQs identified herein.

**CATD 21002-WBN-01 - AN EQUIPMENT QUALIFICATION PROGRAM (EQP) HAS NOT BEEN FULLY IMPLEMENTED AT WATTS BAR**

CATD 21002-WBN-01 documents that issue that an Equipment Qualification Program (EQP) that reflects the successfully completed SQN EQP has not been fully implemented at WBN.

Note: Only the affected portions of the CAP are listed below:

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Original CAP

"...For Unit 1...The resolution of EQ open items is contained in CAP 23508-WBN-02. This work was governed by WBEP-SEP-8 and WBN-EQP-1." Also, "For Unit 2, the equipment requiring qualification will be identified and documentation demonstrating this qualification will be retrieved or generated..."

Revised CAP

All open items required to be completed before Unit 1 fuel load will be resolved and documented in accordance with EAI 7.05 which replaces WBEP 5.16, WBEP-EP 43.06, WBEP-SEP-8 and WBN-EQP-1.

Summary of Technical Justification

This CATD is applicable to both Units 1 and 2 and will be open until the Unit 2 "Hold" status is lifted and Unit 2 CATDs closure work is resumed. The emphasis of this CATD is on the programmatic issues related to the EQ Program. The associated CATD 23508-WBN-02 CAP deviation indicates that it was originated to address a specific EQ cable open item. Therefore, the resolution of all EQ open items is better contained in the subject CATD 21002-WBN-01.

CATD 23508-WBN-02 - NO OVERALL ASSESSMENT IDENTIFIED ON THE PVC JACKETED FLEXIBLE CONDUIT

CATD 23508-WBN-02 documents the issue that no overall assessment was identified demonstrating the adequacy of the PVC jacketed flexible conduit used inside containment and MSVR (Main Steam Valve Vault Room).

Note: Only the affected portions of the CAP are listed below.

Original CAP

"...All open items required to be completed before Unit 1 fuel load will be resolved and documented in accordance with WBEP-EP 43.06."

Revised CAP

Resolve environmental qualification cable binder open item discrepancy between the "Demonstrated" and the "Specified" radiation doses. The resolution of EQ open items shall be contained in CATD 21002-WBN-01.

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**Summary of Technical Justification**

A review of the subcategory report indicates that this CATD was originated as a peripheral finding. In the course of reviewing various environmental qualification binders, it was noted that for several EQ binders (CABL-05, 006, 008, 012, and 017), the "Demonstrated" radiation dose did not meet the "Specified" radiation dose. This fact was recognized as an open item and qualification discrepancy in the respective EQ binders. To address this issue resolves the original finding.

Closure of all EQ items would involve this CATD in the programmatic issues unrelated to the identified finding. Another CATD, 21002-WBN-01, is currently open to implement the equipment qualification program at WBN. Presently, this CATD-CAP indicates that the resolution of EQ open items, for WBN-Unit 1, is contained in CAP 23508-WBN-02. CATD 21002-WBN-01 is applicable to both Units 1 and 2, and will be open until the Unit 2 "Hold" status is lifted and Unit 2 CATDs closure work is resumed. Since this CATD must remain open, and emphasis is on the programmatic issues, the resolution of EQ open items for WBN Unit 1 is better contained in the CATD 21002-WBN-01. This CAP deviation is initiated to transfer this activity from CATD 23508-WBN-02 to CATD 21002-WBN-01. Also, a deviation is submitted to change the CAP of CATD 21002-WBN-01 to include this activity. Furthermore, WBEP-EP 43.06 was issued, thus, completing the other "Approved CAP" commitment.

**CATD 23900-WBN-07 - ENGINEERING-CONSTRUCTION AND DOCUMENTATION PROGRAM NOT PROPERLY VERIFIED TO ASSURE IT PERFORMS ITS INTENDED FUNCTIONS**

CATD 23900-WBN-07 documents the issue that the Engineering Construction and Documentation Program (EC&D) has not been properly verified to assure that it performs its intended functions (e.g., printing of class IE pull slips which indicate the cable routing, the to-from location, and the type of cable used). No procedure is available for verifying the EC&D program. Adequacy of the as-built installed cables cannot be confirmed until the program has been verified.

**Original CAP**

The following corrective actions for CATD 23900-WBN-07 are documented in memorandums C01 860128 002 and L17 870203 802.

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1. OC QAP 3.4, "Control of cable routing design information" will be revised as follows:
  - A. The data fields of design output information accessed by OC to be included in the OC ECM&D program will be defined.
  - B. Requirements will be included that changes in the program that affect the design information data fields must be recorded, approved by a knowledgeable independent reviewer, authenticated by signature on the record, and submitted to RIMS for storage.
  - C. Requirements will be included that an ECM&D program revision that affects the design information data fields must be verified by sample data and test prior to release for field use. Provisions will be included that the test methods be defined and the results of each test be documented, authenticated by signature, and submitted to RIMS for signature.
  - D. Records required for these actions will be defined.
2. We intend that the detail requirements written into OC QAP 3.4 will be sufficient for direct implementation, precluding the necessity of a lower-tier procedure.
3. Peripheral office-level QA policy procedures, QAPP3 and QAPP5, have been or will be revised to establish requirements for and control the activities of the OC management Information Services Unit.
4. We will expand our sampling plan for the initial verification of completed cable pull slips to obtain a statistical confidence level that previously installed cables have been routed correctly. With this higher confidence level along with the greater detail of OC QAP 3.4, we will delete all future verifications now required in revision 0 of OC QAP 3.4 at 6-month intervals.
5. With the change control, testing requirements, and records required defined in OC QAP 3.4, we do not intend to place the OC ECM&D program users guide under the formal QA program for revision, issue, and distribution.

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6. All revised procedures listed in 1 and 3 above will be issued by OC-QAB and implemented by the OC management Information Systems Unit no later than March 17, and the expanded initial verifications will be completed by May 19.

We are proceeding with the procedure revisions but will coordinate with you before issue.

**Revised CAP**

1. Require all cable routing to be controlled by the CCRS for Unit 1.
  1. Verify the CCRS database by implementing the following steps.
    - A. Qualify the computer software.
    - B. Verify the existing data.
    - C. Revise procedures for controlling data entry, revision, and utilization of the CCRS.
    - D. Validate the system.

**Summary of Technical Justification**

The computerized cable routing system (CCRS), which is now used for Unit 1 cable routing, was validated and verified within the cable issues corrective action plan and in DNE calculation WBPEVAR8810018. Therefore, the existing corrective action plan (all actions detailed in memorandums C01 860128 002 and L17 870203 802) is not needed or required.

**CATD 30102-WBN-01 MAINTENANCE HISTORY REVIEWS ARE NOT IN D/G MIs AND NO EXISTENCE OF ANY TRENDING ANALYSIS PROGRAM FOR ROOT CAUSE ANALYSIS**

CATD 30102-WBN-01 documents the issues listed in Items 5 and 6 as: 5) Morrison Knudsen recommendations concerning maintenance history reviews are not in Diesel/Generator (D/G) Maintenance Instructions (MIs); and 6) No trending analysis program for root cause analysis of D/G failures exists.

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**NOTE:** Only the affected portions of the CAP are listed below:

**Original CAP**

Items 5 and 6:

A computer based maintenance history/trending program is planned for the diesel generators, as well as other plant equipment. The program development is presently limited, due to manpower relocations in support of SQN start-up. The program will be in place as soon as manpower is available, by Unit 1 fuel load at the latest.

Existing procedures defining the program are AI-9.2 Section 6.0 through 6.2 for NPRDS reportable items and WB6.5.1 outlining system engineer review requirements.

In addition, a Site Services Special Project group will be developing a data base and trending program for non-NPRDS reportable items utilizing the EQIS data base. Also, a task force is to be formed to improve the WBN computer data system to enhance our available system and provide more precise capabilities for trending and data entry (Ref. CATD No. 30102-WBN-05).

**Revised CAP**

Items 5 and 6:

The following procedures are in place at WBN to address these issues:

1. Site Standard Practice (SSP)-3.08, "Trend Analysis," implements the overall process, requirements, and responsibilities for the Trend Analysis Program for trending adverse conditions within the scope of the Nuclear Power Quality Assurance (QA) Program.
2. SSP-6.04, "Equipment History and Failure Trending," established a process for providing equipment maintenance history, trending, and Nuclear Plant Reliability Data System (NPRDS) programs to collect, store, and make available, failure and reliability data on safety-related, quality-related and NPRDS reportable components.

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3. SSP-12.09, "Incident Investigations and Root Cause Analysis," establishes the processes to identify events needing investigation, and perform root cause analysis.

**Summary of Technical Justification**

CATD No. 30102-WBN-01, Items 5 and 6, addresses a concern that maintenance history reviews and root cause analysis are not being performed for WBN's Standby Diesel Generator. The CAP addresses these items together. The current CAP is no longer valid, due to procedural and process changes at WBN. Site Standard Practices (SSPs) have been issued at WBN which address the stated concerns.

Item 5 states that a maintenance history review process is not addressed in DG Maintenance Instructions (MIs), as recommended by the DG vendor. This is not consistent with site practice addressing trending history reviews. Current SSPs cover the requirements for trending equipment maintenance histories and are not required to be included in the DG specific MIs. Based on the existence of these SSPs, Items 5 and 6 are considered resolved and no further actions are required.

**CATD 30202-WBN-01 - SHUTDOWN BOARD VOLTAGES ARE NOT BEING MONITORED**

CATD 30202-WBN-01 documents the issue that the shutdown board voltages are not monitored at the present time. However, when voltages were monitored under SI-3 during 1985, some 480 volt shutdown board voltages were recorded which were in excess of the limits stated in the FSAR and ANSI C84.1. No provisions are made in SI-3 or SOI-5-1M1 to correct shutdown board voltages that are in excess of the safe operating limits as stated in the FSAR and ANSI C84.1. No specifications of upper voltage limits of safe operation of safety-related power boards are given in GOI-7C.

**Original CAP**

Revise Watts Bar Design Criteria WB-DC-30-1 to reflect the voltage rating requirements described in ANSI C84.1 and C92.2. Also, revise the FSAR to commit to the same ANSI standards and requirements. These ANSI standards should be utilized to establish acceptance criteria for voltage limits. This acceptance criteria will be reflected in WBN Technical Specifications and appropriate Surveillance Instructions Acceptance Criteria will address voltage limits for normal operation as well as voltage limits for safe operation. DPM N7701 and subsequently GOI-7C and Standard Practice WB-5.2.6,

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will be revised to include maximum voltage limits for safe operation. The above discrepancies will be identified in PIRWBNEEB86103 (Unit 1) and PIRWBNEEB86104 (Unit 2). Corrective action will be accomplished under these PIRs.

The following steps will be taken to determine if any auxiliary shutdown board equipment was unacceptably degraded due to overvoltage and conditions:

- 1) Determine the maximum voltages that could have occurred in auxiliary power system. This effort will pinpoint the boards that have seen the highest voltages and determine if equipment rated 8KV or 600V ac will need any further consideration.
  - a. OES will review the locally available past recorded voltages for the incoming sources to determine the maximum voltage that has occurred.
  - b. WBEP will use the maximum switchyard voltage to determine maximum voltages in the auxiliary power system.

WBEP will develop an impedance diagram based on the minimum board loading and, by using the maximum switchyard voltages at the source voltages, will calculate the maximum voltages of the boards. Operations will provide EEB with a history of tap changes for the Common Station Service transformers and 6900/480V Shutdown transformers and the existing tap settings.

2. Review all Class 1E ac electrical equipment for susceptibility to overvoltage. This will narrow the scope of investigation to only the devices that are susceptible to overvoltage.
  - a. WBEP will provide a list of types of equipment that may have been subjected to overvoltage.
  - b. EEB technical specialist will determine which devices are most susceptible to overvoltage and also which devices may have been degraded.

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3. Watts Bar Electrical Maintenance will determine if there is evidence of overvoltage induced failures in the maintenance record.

Once the most susceptible equipment has been identified, the maintenance record will be reviewed to determine if an excessive number of these components has required maintenance.

4. Watts Bar Electrical Maintenance will field test the equipment that is most likely to have been degraded.

In addition to reviewing the maintenance record, a representative sample of susceptible components will be tested to determine if their insulation has been unacceptably degraded.

5. Operations will revise SI-3 to reflect acceptance criteria of the revised WBN Technical Specifications.
6. WBEP will perform load flow studies and coordinate with PSO to determine the optimum transformer taps and switchyard voltages. Minimum load conditions in conjunction with maximum grid voltages will be used to establish transformer tap settings for maximum voltages. Maximum load conditions (LOCA and full load rejection) in conjunction with minimum grid voltages will be used to establish transformer tap settings for minimum voltages. The minimum and maximum voltages and the transformer tap settings will be released on a drawing by WBWP.

**Revised CAP**

1. Provide capability to regulate the grid voltage to the Class 1E power system through the installations of Common Station Service Transformers (CSSTs) having automatic load tap changers.
2. Limit the maximum 480 volt Class 1E system's voltage to values less than the values specified in ANSI C84.1, Table 1, Voltage Range B.
3. Develop mechanism(s) (i.e., data base, etc.), to track and identify failed equipment and to trend failures that are attributed to overvoltage.

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**Summary of Technical Justification**

The original approved corrective action plan did not foresee the installation of CSSTs with automatic load tap changers on each secondary winding. The automatic load tap changes regulate the secondary voltage, compensating for grid voltage variations as well as load variations. DCN M-12051-C installs CSSTs C&D that are dedicated to the Class 1E power system with automatic load tap changes for each of the transformer's two secondary windings.

The above action will prevent the recurrence of shutdown board voltages that are in excess of safe operating limits.

As stated above, the original approved corrective action plan did not foresee the installation of CSSTs with automatic load tap changers on each secondary winding. These 6900/480 volt transformers were selected to have the capability to limit the maximum voltage to values specified in ANSI C84.1, Table 1, Voltage Range B, for minimum load conditions and maximum source voltages.

Consider the following:

- a. At WBN, operation of motors has been limited and therefore the motors would not be exposed to overvoltages, or if exposed, would occur for minimum time/duration.
- b. Several motors, originally purchased as non-1E, have been replaced with 1E motors, with better capability of withstanding higher voltage of the specified range.
- c. Battery changers/inverters can operate at a higher voltage than the motors (480V + 7.5% vs. 460V + 10%).
- d. Control power components on Motor Control Centers are at 120V ± 10%, or reflected the high side, would be at 480V ± 10%.
- e. Transformers and heaters are normally rated at 480V + 10%.
- f. Instrument calibration and inaccuracies create doubt as to the exact value for the maximum voltages that have been recorded.
- g. The feasibility of accurately predicting the remaining qualified life of equipment to experience overvoltage condition(s) is questionable when the overvoltage condition cannot be qualified (peak voltage, duration, frequency).
- h. SQN committed on a similar CATD to evaluate the qualified life of devices susceptible to overvoltage and to replace those with unacceptable loss of qualified life.
- i. SQN has committed on a similar CATD to use the Nuclear Plant Reliability Data System (NPRDS) and the Equipment Information System (EQIS) to track and identify failed equipment and to trend failures that are attributed to overvoltage. NPRDS is being implemented at WBN (SSP-6.04).

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- j. Regarding overvoltage to existing equipment: Plant routine testing further demonstrates that presently installed equipment is functioning properly. Tracking and trending (as specified in item 3) can then identify future overvoltage failures.

CATD 30202-WBN-02 - BOARD POWER ALIGNMENTS AND LINE VOLTAGES IN EXCESS OF THE WBN FSAR AND ANSI C 84.1

CATD 30202-WBN-02 documents the issue that the present five percent boost tap setting on the 6.9-kV to 480 volt shutdown board transformers cause the 480 volt shutdown board voltage to be in excess of the WBN FSAR and ANSI C 84.1 Range B upper limit for several board power alignments and line voltages (both 161-kV and 500-kV lines).

Original CAP

Revise Watts Bar Design Criteria WB-DC-30-1 to reflect the voltage rating requirements described in ANSI C84.1 AND C92.2. Also, revise the FSAR to commit to the same ANSI standards and requirements. These ANSI standards should be utilized to establish acceptance criteria for voltage limits. This acceptance criteria will be reflected into WBN Technical Specifications and appropriate Surveillance Instructions. Acceptance Criteria will address voltage limits for normal operation as well as voltage limits for safe operation. DPM N7701, and subsequently GOI-7G and Standard Practice WB-5.2.6, will be revised to include maximum voltage limits for safe operation. The above discrepancies will be identified in PIRWBNEEB86103 (Unit 1) and PIRWBNEEB86104 (Unit 2). Corrective action will be accomplished under these PIRs.

The following steps will be taken to determine if any auxiliary shutdown board equipment was unacceptably degraded due to overvoltage conditions:

1. Determine the maximum voltages that could have occurred in auxiliary power system. This effort will pinpoint the boards that have seen the highest voltages and determine if equipment rated 8KV or 600V ac will need any further consideration.
  - a. OES will review the locally available past recorded voltages for the incoming sources to determine the maximum voltage that has occurred.

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- b. WBEP will use the maximum switchyard voltage to determine maximum voltages in the auxiliary power system.

WBEP will develop an impedance diagram based on the minimum board loading and, by using the maximum switchyard voltages at the source voltages, will calculate the maximum voltages of the boards. Operations will provide EEB with a history of tap changes for the Common Station Service transformers and 6900/480V Shutdown transformers and the existing tap settings.

- 2. Review all Class 1E ac electrical equipment for susceptibility to overvoltage. This will narrow the scope of the investigation to only the devices that are susceptible to overvoltage.
  - a. WBEP will provide a list of types of equipment that may have been subjected to overvoltage.
  - b. EEB technical specialist will determine which devices are most susceptible to overvoltage and also which devices may have been degraded.
- 3. Watts Bar Electrical Maintenance will determine if there is evidence of overvoltage induced failures in the maintenance record.

Once the most susceptible equipment has been identified, the maintenance record will be reviewed to determine if an excessive number of these components has required maintenance.

- 4. Watts Bar Electrical Maintenance will field test the equipment that is most likely to have been degraded.

In addition to reviewing the maintenance record, a representative sample of susceptible components will be tested to determine if their insulation has been unacceptably degraded.

- 5. Operations will revise SI-3 to reflect acceptance criteria of the revised WBN Technical Specifications.

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6. WBEP will perform load flow studies and coordinate with PSO to determine the optimum transformer taps and switchyard voltages. Minimum load conditions in conjunction with maximum grid voltages will be used to establish transformer tap settings for maximum voltages. Maximum load conditions (LOCA and full load rejection) in conjunction with minimum grid voltages will be used to establish transformer tap settings for minimum voltages. The minimum and maximum voltages and the transformer tap settings will be released on a drawing by WBEP.

**Revised CAP**

1. Provide capability to regulate the grid voltage to the Class 1E power system through the installations of Common Station Service Transformers (CSSTs) having automatic load tap changers.

NOTE: CATD 30202-WBN-03 CAP DEVIATION WILL REVISE THE WBN FSAR (Section 8.1.5.2) to list ANSI C84.1-1970 as a reference.

2. Limit the maximum 480 volt Class 1E system's voltage to values less than the values specified in ANSI C84.1, Table 1, Voltage Range B.
3. Develop mechanism(s) (i.e., data base, etc.) to track and identify failed equipment and to trend failures that are attributed to overvoltage.

**Summary of Technical Justification**

The original approved corrective action plan did not foresee the installation of CSSTs with automatic load tap changers on each secondary winding. The automatic load tap changers regulate the secondary voltage, compensating for grid voltage variations as well as load variations. DCN M-12051-C installs CSSTs C&D that are dedicated to the Class 1E power system which automatic load tap changes of each of the transformer's two secondary windings. The above will prevent the recurrence of shutdown board voltages that are in excess of safe operating limits.

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As stated in Items 1 above, the original approved corrective action plan did not foresee the installation of CSSTs with automatic load tap changers on each secondary winding. These 6900/480 volt transformers were selected to have the capability to limit the maximum voltage to values specified in ANSI C84.1, Table 1, Voltage Range B, for minimum load conditions and maximum source voltages.

Consider the following:

- a. At WBN, operation of motors has been limited and therefore the motors would not be exposed to overvoltages, or if exposed, would occur for minimum time/duration.
- b. Several motors, originally purchased as non-IE motors, with better capability of withstanding higher voltage of the specified range.
- c. Battery changers/inverters can operate at a higher voltage than the motors (480V + 7.5% vs. 460V + 10%).
- d. Control power components on Motor Control Centers are at 120V ± 10%, or reflected the high side, would be at 480V ± 10%.
- e. Transformers and heaters are normally rated at 480V + 10%.
- f. Instrument calibration and inaccuracies create doubt as to the exact value for the maximum voltages that have been recorded.
- g. The feasibility of accurately predicting the remaining qualified life of equipment to experience overvoltage condition(s) is questionable when the overvoltage condition cannot be qualified (peak voltage, duration, frequency).
- h. SQN committed on a similar CATD to evaluate the qualified life of devices susceptible to overvoltage and to replace those with unacceptable loss of qualified life.
- i. SQN has committed on a similar CATD to use the Nuclear Plant Reliability Data System (NPRDS) and the Equipment Information System (EQIS) to track and identify failed equipment and to trend failures that are attributed to overvoltage. NPRDS is being implemented at WBN (SSP-6.04).
- j. Regarding overvoltage to existing equipment: Plant routine testing further demonstrates that presently installed equipment is functioning properly. Tracking as trending (as specified in item 3) can then identify future overvoltage failures.

**CATD 30202-WBN-03 - WATTS BAR FSAR NEITHER ENDORSES NOR TAKES EXCEPTION TO ANSI C84.1 AND ANSI C92.2**

CATD 30202-WBN-03 documents the issue that the WBN FSAR neither endorses nor takes exception to ANSI C84.1 and ANSI C92.2.

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**Original CAP**

Revise Watts Bar Design Criteria WB-DC-30-1 to reflect the voltage rating requirements described in ANSI C84.1 and C92.2. Also, revise the FSAR to commit to the same ANSI standards and requirements. These ANSI standards should be utilized to establish acceptance criteria for voltage limits. This acceptance criteria will be reflected into WBN Technical Specifications and appropriate Surveillance Instructions Acceptance Criteria will address voltage limits for normal operation as well as voltage limits for safe operation. DPM N770i, and subsequently GOI-7G and Standard Practice WB-5.2.6, will be revised to include maximum voltage limits for safe operation. The above discrepancies will be identified in PIRWBNEEB86103 (Unit 1) and PIRWBNEEB86104 (Unit 2). Corrective action will be accomplished under these PIRs.

The following steps will be taken to determine if any auxiliary shutdown board equipment was unacceptably degraded due to overvoltage conditions:

1. Determine the maximum voltages that could have occurred in auxiliary power system. This effort will pinpoint the boards that have seen the highest voltages and determine if equipment rated 8KV or 600V ac will need any further consideration.
  - a. OES will review the locally available past recorded voltages for the incoming sources to determine the maximum voltage that has occurred.
  - b. WBEP will use the maximum switchyard voltages in the auxiliary power system.

WBEP will develop an impedance diagram based on the minimum board loading and, by using the maximum switchyard voltages at the source voltages, will calculate the maximum voltages of the boards. Operations will provide EEB with a history of tap changes for the Common Station Service transformers and 6900/480V Shutdown transformers and the existing tap settings.

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2. Review all Class 1E ac electrical equipment for susceptibility to overvoltage. This will narrow the scope of investigation to only the devices that are susceptible to overvoltage.
  - a. WBEP will provide a list of types of equipment that may have been subjected to overvoltage.
  - b. EEB technical specialist will determine which devices are most susceptible to overvoltage and also which devices may have been degraded.
3. Watts Bar Electrical Maintenance will determine if there is evidence of overvoltage induced failures in the maintenance record.

Once the most susceptible equipment has been identified, the maintenance record will be reviewed to determine if an excessive number of these components has required maintenance.

4. Watts Bar Electrical Maintenance will field Test the equipment that is most likely to have been degraded.

In addition to reviewing the maintenance record, a representative sample of susceptible components will be tested to determine if their insulation has been unacceptably degraded.

5. Operations will revise SI-3 to reflect acceptance criteria of the revised WBN Technical Specifications.
6. WBEP will perform load flow studies and coordinate with PSO to determine the optimum transformer taps and switchyard voltages. Minimum load conditions in conjunction with maximum grid voltages will be used to establish transformer tap settings for maximum voltages. Maximum load conditions (LOCA and full load rejection) in conjunction with minimum grid voltages will be used to establish transformer tap settings for minimum voltages. The minimum and maximum voltages and the transformer tap settings will be released on a drawing by WBWP.

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Revised CAP

1. Revise the WBN FSAR (Section 8.1.5.2) to list ANSI C84.1-1970 as a reference.

Summary of Technical Justification

ANSI Standard C92.2 pertains to Preferred Voltage Ratings for Alternating-Current Electrical Systems and Equipment Operating at Voltages Above 230 KV Nominal. This standard is not applicable to WBN and, therefore, should not be endorsed by the WBN FSAR. Maximum and minimum grid voltages are maintained and corrected by the Transmission and Customer Service Group.

CATD 30704-WBN-07 - TRACK PREOPERATIONAL TEST SECTION COMPLETION OF ALL WORKPLAN REVIEWS ON UNIT 1

CATD 30704-WBN-07 tracks Preoperational Test Section completion of all workplan reviews for post modification testing requirements on Unit 1.

Original CAP

Tracking only. During the close out process ensure that a CAQR was initiated.

Revised CAP

- This CATD is no longer required.

- Cancel CAP.
- Correction action not required.
- Close CATD.

Summary of Technical Justification

There was no primary employee concern associated with this CATD. The purpose on the CATD was to track workplan reviews which will no longer be required. TVA has committed to reperform a Preoperation Test Program per Reg. Guide 1.68. (Ref. SCRWS60PSSCA)

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CATD 31211-WBN-01 - DESIGN CHANGE REQUEST (WB-DCR-0696) HAS NOT BEEN COMPLETED

CATD 31211-WBN-01 documents the issue that Design Change Request (WB-DCR-0696) has not been completed. Unless completed, this situation could result in an LER similar to one at Sequoyah (LER-1-86024) which was a technical specification violation.

Original CAP

"DNE will prepare a memo by March 1, 1987, to the Site Director approving DCR 0696 with the exception of item number three. Item number three requests a CRT located outside the Power Block and not in a controlled access area. DNE is concerned that the probability of illegal access to the VAACS computer software will increase. DNE will provide a UPS at each alarm station which will interface with the security diesel. ECN number 6793 has been assigned to implement this DCR.

Revised CAP

Unnecessary. See justification.

Note: [Delete CAP. Corrective action not required. Close CATD.]

Summary for Technical Justification

As stated on page 39 of report number 31200, revision 1, "No evidence was found to support there ever having been a total loss of power to CAS (central alarm station) or SAS (secondary alarm station) that affected all security-related equipment as was described in the concern. CATD 31211-WBN-01 was initiated to track completion of Design Change Request (DCR) WB-DCR-696 to resolve a power interruption problem with the Vital Area Access Control System (VAACS) computers in CAS and SAS.

WB-DCR-696 was never completed due to the site security upgrade program. ECN 6793 was never initiated. The VAACS computers have been removed by TACF 0-91-18-257.

CATD 31211-WBN-01 makes reference to Sequoyah Licensee Event Report (LER) 1-86024. The LER documented that the hourly fire watch required by the Technical Specification was not fully completed. Plant fire watches could not open every door required during the fire watch period due to a power transient on the plant security micro access computer causing a loss of access memory thereby locking all access doors.

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With the new security upgrade system at WBN, the inability to complete a fire watch due to locking of all access doors will not occur. Most of the access doors will go to the unlocked state upon failure of the security system computer system; failure of the security system computer system is unlikely to occur because the computer system is a redundant system and is powered by the security system uninterruptable power system.

For supplemental information the significant DCNs for the site security system upgrade are as follows:

- o M-13665-A: Removes existing powerhouse card readers and associated multiplexers; provides system integration for connection of new hardware under M-14922, M-14923, AND M-13431.
- o M-14922: Provides for removal of existing Central Alarm System (CAS) and installation of new CAS hardware.
- o M-14923: Provides for removal of existing Secondary Alarm System (SAS) and installation of new SAS hardware.
- o M-13431: Provides for installation of the new power distribution UPS.

**SWEC-WBN-13-001 - COMPLETION OF PROCEDURE REVIEW FOR ADEQUATE INDEPENDENT VERIFICATION BY INSTRUMENT AND MECHANICAL MAINTENANCE SECTIONS**

CATD SWEC-WBN-13-001 documents the issue that the NPC Inspection Report 390/85-21 (update of 390/84-73-01) remains open pending completion of procedure review for adequate independent verification by Instrument and Mechanical Maintenance sections.

**Original CAP**

Maintenance Instructions (MIs) will be revised to incorporate Independent Verification (IV) requirements normally as part of the maintenance procedure upgrade effort. A statement has been placed in the prerequisite of instructions that do not contain independent verification requirements to prevent their usage.

**Revised CAP**

- (1) WBN MIs and Instrument Maintenance Instructions (IMIs) will be reviewed and, as appropriate, revised to include IV requirements.

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- (2) Source notes referring to this CATD will be added to SSP-2.03 so that future revisions do not delete the requirement to consider IV in the procedure preparation and review process.
- (3) Source notes referring to this CATD will be added to PAI-10.01, "Preparation of Maintenance Instructions," so that future revisions do not delete the requirement to consider IV in the MI and IMI preparation and review process.
- (4) An independent review of a representative sample of MIs and IMIs will be conducted by Site Quality Assurance.

Summary of Technical Justification

This CAP deviation is being processed to delineate the specific actions which will be accomplished prior to closure of the CATD. In addition, this deviation deletes the last sentence of the CAP, regarding the placement of a statement in the prerequisites of instructions to prevent their use. This action is not necessary since, according to the corporate standard and the site procedure on IV, the IV requirements are not currently applicable to WBN until systems are turned over to the plant manager. However, independent verification may be performed when invoked by individual work documents.

The MIs and IMIs will be reviewed and revised as part of the ongoing procedures upgrade effort. The appropriate IV requirements will be incorporated into the procedures as these revisions are processed. SSP-12.06, "Independent Verification," contains the specific requirements which must be incorporated into the above procedures. Programmatically, this is accomplished through SSP-2.03, "Administration of Site Procedures." Appendix G of SSP-2.03, the procedure review checklist, requires that IV be addressed. This checklist is completed by the procedure sponsor and verified by the technical reviewer, thus giving assurance that the IV requirements are properly implemented.

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**CATD SWEC-WBN-68-001 - PROPER NOTIFICATION TO NRC CONCERNING  
SAFETY-RELATED COMPONENTS AND PLANT MODIFICATIONS BEING BUILT ARE NOT  
BEING MADE**

CATD SWEC-WBN-68-001 documents the issue that proper notification to NRC concerning safety-related components being built and plant modifications being made are not being made (A2 850910 001). Fifth diesel generator, fifth vital battery, Unit 2, upper head injection system. Reference 390/85-50-03; 391/41-03 (RIMS A02 850910 001)

**Original CAP**

With respect to the three examples noted in the CATD, the WBN FSAR has been revised to reflect the fifth diesel generator (Amendment 57, January 1986) and the fifth vital battery (Amendment 58, June 1986). NRC has been previously advised by letter and an FSAR revision is in the review cycle for the Unit 2 UHI removal.

WBN has implemented a change control board which evaluates the appropriateness of proposed design changes. The Change Control Board considers the licensing impact of proposed changes and withholds authorization of design change implementation until NRC has not only been notified but also has performed its safety evaluation. This precludes further examples similar to those which occurred in the 1982-1984 timeframe. The handling of current modifications (i.e., RTD bypass removal, core upflow, and Unit 1 UHI removal) demonstrates that these policies are being effectively implemented. Each is conceptually approved, but implementation is on hold pending resolution of associated licensing actions. Therefore, no further corrective action is needed.

**Revised CAP**

With respect to the three examples noted in the CATD, the WBN FSAR has been revised to reflect the fifth diesel generator (Amendment 57, January 1986). The fifth vital battery (Amendment 58, June 1986) and the Unit 2 UHI removal (Amendment 63, June 1990).

WBN has implemented a Change Control Board which evaluates the appropriateness of proposed design changes. The Change Control Board considers the licensing impact of proposed changes.

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Design Change Notices (DCNs) are the vehicle utilized to initiate new scope or changes that are authorized by the Change Control Board (CCB). DCNs are controlled by Engineering Administrative Instruction 3.05 (EAI-3.05) - Design Change Notices. Every DCN is evaluated for possible required revisions to the FSAR prior to being issued. For DCNs that require an FSAR revision, an FSAR Change Request must be issued (per Site Standard Practice 4.02) prior to the DCN being issued.

WBN FSAR amendments are currently scheduled to be issued to the NRC quarterly incorporating required FSAR changes since the last amendment (reference John Vorees May 28, 1992 memorandum to W. L. Elliott. (T03 920528 823).

The above corrective action plan ensures that the NRC is updated frequently of recent design changes and that the FSAR is maintained current.

**Summary of Technical Justification**

Activities/responsibilities of the Change Control Board are defined by WBN Business Practice (BP)-365, Change Control Board.

EAI-3.05, Section 5.1.7d states that "If the DCN requires a change to the Final Safety Analysis Report (FSAR) (text or figure that is not a drawing) issue the change per SSP-4.02 and list the change request, as applicable, in Block 17." In addition, Appendix A of EAI-3.05, instructions for completing Block No. 22 on the DCN form, states "Designate if the change will require a revision to the Final Safety Analysis Report (FSAR). Issue a change request for licensing document per SSP-4.02 when a change is required." SSP-4.02, Management of the Final Safety Analysis Report (FSAR) is the site standard practice that establishes administrative controls for the purpose of maintaining and controlling the FSAR.

**4.3.2 Level III CAP Deviations**

Level III CAP deviations were identified during the closure process for the following 16 WBN CATDs:

10100-WBN-01	21804-WBN-01	23900-WBN-07
11200-WBN-09	22204-WBN-01	30704-WBN-07
20101-WBN-01	22600-WBN-02	30713-WBN-02
20601-WBN-01	23508-WBN-02	50405-WBN-01
20601-WBN-02	23900-WBN-02	SWEC-WBN-74-011-R1
21801-WBN-01		

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4.4 Bellefonte Nuclear Plant (BLN)

BLN remained in an inactive status during this reporting period. There were no BLN CAP deviations processed.

4.5 Nonplant Specific

During this reporting period, there were nine approved Level II CAP deviations and seven Level III CAP deviations for NPS CATDs.

4.5.1 Level II Cap Deviations

CATD 20000-NPS-01 - IMPLEMENTATION OF NEP-5.2. "REVIEW" IS NOT COMPLETE NOR FULLY EFFECTIVE AT THIS TIME

CATD 20000-NPS-01 documents the issue that implementation of NEP-5.2, "Review" is not complete nor fully effective at this time. The following items need to be addressed:

- Design verification is not fully effective as demonstrated by continued difficulties in completing technically sound corrective actions.
- Means for line management to measure improvements in the quality or design outputs are not in place.
- Systematic interfaces or system reviews are not yet scoped, scheduled, or proceduralized.
- Scope and methodology of operation and maintenance data reviews are not available.
- Technical review branch instructions are not yet issued in EEB, CEB, and NEB. Planning and scheduling of technical reviews have not been completed in any of the branches.

Original CAP

DNE has recognized concerns with the design verification process and has subsequently implemented several short-term solutions. Difficulties in completing technically sound corrective actions as related to design verification will be partially resolved via the development of branch instructions to implement NEP-5.2, "Reviews." NEP-5.2 was issued on June 1, 1986 and supplemented by an Interim Order on December 22, 1986. In accordance with NEP-1.2, "Training," Engineering Assurance (EA) is in the final stages of preparing a NEP-5.2

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training course to DNE branch and project Lead Engineer and above audiences. This training is scheduled to begin in January 1988 and will require approximately 4-6 months before all required personnel are trained. In light of this CATD, NEP-5.2 shall be reviewed by DNE/EA and further revised by February 29, 1988, to require branch instructions to provide for better defined review areas (scope), methodologies for how these reviews will be accomplished by line management, documentation of results and reporting of significant results to the Director of DNE. The methodologies identified above will require consideration of feedback from the design output users (Const, Ops, QA, vendors, etc.) on trends for Field Change Requests, Conditions Adverse to Quality, Engrg Chg Notices, etc. Based on this feedback, DNE management shall initiate corrective actions and preventive action to include correction of root causes to all identified deficiencies. This process will require the technical branch managers and line managers to be more involved in and cognizant of their review responsibilities and corrective actions associated with the design process and employee concerns program.

The design verification and review processes have been further strengthened by a November 19, 1987 Interim Order to NEP-3.1, R1 "Calculations." This order provides details for performing the technical adequacy review as well as providing for documentation of the method of design verification (independent reviewer) used.

DNE shall utilize the EA audit program, which includes design review and verification under the design control audit plan and review and approval as a standard audit attribute for all audits, and NRC and INPU inspections as further measurement tools in determining the effectiveness of the design process.

NEP-3.3, "Internal Interface Control," and NEP-5.3, "External Interface Control," establish or reference procedures covering the DNE requirements and methods to control internal and external design interfaces and for requesting or conveying design information across DNE interfaces. These two NEPs shall be reviewed by EA and appropriately revised by April 15, 1988, to reflect specific review requirements and methodologies for how these reviews are to be conducted, as well as for other interface areas needing systematic/system reviews.

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Relative to TVA's commitment (L44871021800) to issue a division-level procedure to specifically define the interdiscipline responsibilities regarding the specification of system performance criteria, NEP-3.12, "Safety-Related Setpoints for Instrumentation and Controls - Establishment and Validation," was issued on December 15, 1987.

New NEP-6 series procedures, "Change Control," once fully implemented, have been issued to not only meet Corporate Nuclear Performance Plan commitments, but to provide improvements in the design control and modification processes which include extensive interfaces. These procedures will consolidate and integrate the design change control and plant modification processes.

NEP-5.2 provides requirements for conduct of five types of reviews to be used within DNE.

Operation and Maintenance data are a performance review of facilities, both operating and under construction, which may be used as feedback for design improvements, vendor selection reliability and availability evaluation, or as an aid to other DNE reviews. Branch chiefs and project engineers will establish the interfaces necessary for acquiring operation and maintenance data.

The implementation of NEP-2.5, "Nuclear Experience Review," will be a primary interface and support document for input to the operation and maintenance review. The NER program requires that industry and TVA nuclear experience is made available to TVA organizations and that appropriate corrective action, when necessary, is implemented.

NEP-5.2, relative to O&M data reviews, shall be revised by February 22, 1988, to highlight and better establish this interface with NEP-2.5 and provide for documentation and reporting to the Director of DNE the results of these reviews.

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Implementation of these requirements will be addressed under branch instructions and schedules as shown below. DNE branch implementation of NEP-5.2 requirements will be governed by branch instructions issued/to be issued in accordance with the following schedule:

NEB: April 25, 1988	Scheduled Issue
EEB: February 29, 1988	Scheduled Issue
CEB: February 1, 1988	Scheduled Issue
MEB: October 1, 1987	Issued (MEB 123.11)

Engineering Assurance will ensure that these branch instructions, to include MEB 123.11, contain sufficient guidance, requirements, and direction for the adequate performance of the review function governed by the above changes to NEP-5.2.

Revised CAP

NP STD-9.3 RO "Plant Modification and Design Change Control," and STD-9.5 RO, "Design Engineering Practices," were approved April 24, 1991 as part of the Nuclear Procedures System upgrade. STD-9.3 was subsequently improved and R1 was approved October 15, 1991. STD-9.3 provides a standard program for preparation, review, and approval of design changes. It invokes STD-9.5 for preparation and review of individual design deliverables included in design changes and design verification. STD-9.5 establishes a standard approach for preparation, review, verification and approval of designs. Each STD is implemented through Site Standard Practices (SSPs) that control the interfaces between Site Engineering and other site organizations and engineering procedures that control design activities and interfaces within (or for) Site Engineering.

Design Verification

Design verification will be performed in accordance with the requirements of STD-9.3 and STD-9.5. By April 15, 1992, Corporate Engineering (CE) will revise NEP-5.2 and/or approve new engineering procedures to clearly define implementation of the design verification requirements.

The design verification and review processes for calculations have already been strengthened through changes to NEP-3.1, "Calculations" that provide details for performing the technical adequacy review (in Att 9) and provide for documenting the method of design verification used (in Att 6).

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By June 30, 1992, CE will include assessment of the design verification function in the CE design engineering oversight activities. CE will use NQA, NRC, and INPO inspection/review results as further measurement tools in determining the effectiveness of the design process.

**Design Interfaces**

Design interfaces within the engineering organizations will be controlled by the engineering procedures. Design interfaces between site engineering organizations and other site organizations will be controlled by SSPs. Design interfaces between TVA organizations and contractors will be controlled by contract documents.

**System Reviews**

System reviews of design changes and reviews by affected plant organizations will be performed in accordance with STD-9.3 and its implementing SSPs.

**Operations and Maintenance Data Reviews**

Operations and maintenance data reviews for design changes will be performed in accordance with STD-9.3 and its implementing SSPs.

**Summary of Technical Justification**

Reorganization of Nuclear Power has deleted DNE as one organization under one VP and created separate site and corporate engineering organizations reporting to different VPs. This change, along with the complete rework of the Nuclear Procedures System mandates an alternative approach to the corrective action for this item.

EA no longer exists. NP Management Directive 1.3 assigns responsibility for oversight and monitoring of nuclear plant design engineering to CE.

STD-9.5 defines the QA program design interface requirements and imposes these requirements on the implementing procedures.

NP STD-6.8, "Instrumentation Setpoint, Scaling, and Calibration Program," defines the program requirements. NEP-3.12 controls internal engineering activities and interfaces. The STD and NEP are in place.

NP STD-9.3 and its implementing SSPs control design changes. The NEP-6 series procedures have been cancelled.

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Engineering procedures that control reviews will only require the reviews necessary to satisfy QA program requirements and external commitments as specified in NP STD-9.5.

Review of design changes by site organizations is controlled by STD-9.3 and its implementing SSPs.

Review of O&M data is controlled by STD-9.3 and its implementing SSPs.

NP STD-4.4 controls the NER program. NEP-2.5 was cancelled September 23, 1991.

DNE and DNE branches no longer exist. The current Management Directives do not provide for CE department instructions to control site design engineering activities.

**CATD 20000-NPS-03 - EMPLOYEES' ATTITUDES TOWARD QUALITY AND MANAGEMENT EFFECTIVENESS**

CATD 20000-NPS-03 documents the issue that no method currently exists by which TVA ONP management can measure shifts in employees' attitudes toward quality and management effectiveness.

**Original CAP**

The quantifiable measurement of improvement in DNE management effectiveness and shifts in employees' attitudes towards quality and management may best be achieved through a continuous review and assessment of indicators generated through formal and informal processes.

Training - DNE is committed to supporting the ONP program to schedule approximately 3,700 management and supervisory personnel through the three day Supervisory Development Course (SDC) and/or the six day Managing for Excellence (MFE) courses. In addition, selected DNE and ONP managers are attending the Franklin Institute's "Focus on Time Management" seminar. These training programs are critical in ensuring that managers and supervisors manage equitably and professionally in order to increase the effectiveness and morale of ONP

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employees. Equally important is the manager's responsibility to ensure that employees are properly trained through formal and informal programs and processes as defined in NEP, Branch, and Project Instructions. Within DNE, NEP-1.2, "Training," prescribes the responsibilities and requirements of DNE branches, projects, and staffs for the identification, development, and conduct of training.

To determine the effectiveness of management training, and thereby the management effectiveness, DNE will support a Division of Nuclear Training evaluation proposal to develop a program to qualitatively and quantifiably measure the effectiveness of managers after attendance at one or both of the above training courses. The proposal encompasses a plan to complete questionnaires and personal interviews with three evaluation groups: course participants, their superiors, and more importantly, their subordinates. The results of this program will be used to gauge and analyze employee attitudes towards management effectiveness. DNE will develop and issue a memo-andum to the Division of Nuclear Training endorsing this proposed program by February 19, 1988.

**Performance Indicators** - There are a number of performance indicators that DNE management will look at to determine management effectiveness. The quality of the DNE product can be measured against the number of documented deficiencies and conditions adverse to quality; review and results of trending programs; quality of procedures and instructions; and significant results of NEP-5.2 reviews reported to DNE management. Both NEP-9.2, "Trending of Conditions Adverse to Quality," contain specific requirements for the programmatic and technical trending and reporting to management of conditions adverse to quality on both a monthly and semiannual basis, respectively.

**External Surveys** - INPO and the NRC have conducted management effectiveness inspections of TVA. Implementation of new commitments from these types of evaluations will establish management effectiveness indicators.

**Walking Spaces** - The Manager of Nuclear Power has instituted an informal management practice called "Walking Your Spaces." This process requires that managers and supervisors get out and talk to their people, determine what problems exist, and know what is going on. This program is an excellent tool to assess employee attitudes and concerns.

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DNE 1988 Goals and Objectives - DNE is in the final process of establishing 1988 objectives and goals via a J. A. Kirkebo memorandum to branch chiefs and project engineers dated December 21, 1987 (B05 1221 001). Encompassed within these objectives is the enhancement of employee trust and confidence by providing an atmosphere for professional and leadership growth where enthusiasm is recognized and rewarded. Additionally, emphasis is being placed on technical excellence in deliverables through more involvement by line personnel, demonstration of DNE ownership of the design, and managing to obtain closure of activities. Projects and branches will be required to develop a set of measurable goals to implement these objectives. DNE shall also sponsor a management meeting in January 1988 to emphasize this objective as a top priority.

DNE management sponsors and conducts round table discussions with DNE personnel on an ongoing and continuous basis.

Fulfillment of commitments addressed under CATD No. 20000-NPS-01 relative to improvements in the design verification and review processes, coupled with the inherent feedback to executive management, shall further demonstrate management effectiveness in these areas.

Revised CAP

Document the completion of the November 1991 Employee Opinion Survey.

Summary of Technical Justification

The November 1991 employee survey directly addresses the stated employee concern. The original CAP is no longer valid due to reorganization and references to training, etc. are obsolete.

CATD 30600-NPS-01 AND 30600-NPS-02 - PROBLEMS EXISTING WITH PROCEDURES RELATED TO FIRE PROTECTION

CATDs 30600-NPS-01 and 02 documents the issue as noted in the Findings, Preliminary Analysis, and Collective Significance sections of report 30600, that various problems exist with procedures related to fire protection. These problems include procedural content, personnel error in following procedures, and lack of adequate process to ensure commitments are reflected in procedures. These discrepancies were observed at three of TVA's four nuclear sites.

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**Original CAP**

The Division of Nuclear Services is actively pursuing the initiation of the fire protection program assessment and improvement project. The assessment of fire protection related procedures and the correction of deficiencies is included within the scope of the project. Assurance that commitments are appropriately reflected in these procedures and adequacy of the implementation of the procedures is part of the scope of this project. This project is currently to be completed by July 1988.

**Revised CAP**

Establish a procedure system to govern nuclear activities including activities at the nuclear plants.

Upgrade operating plant procedures to ensure commitments and requirements are systematically identified and incorporated into appropriate procedures.

Develop instructional guidance, requirements, and responsibilities for personnel involved in test activities, including performance, completion, and review.

**Summary of Technical Justification**

The original corrective actions were based upon DNS pursuing an assessment and improvement project.

During this time period, TVA had documented and taken initiative to correct similar deficiencies in procedural content and conduct of personnel. This initiative included implementation of a procedure system that identified and produced standard processes for procedure development (including assurance that commitments are adequately reflected in the procedures), verification, approval, performance, review and document control. In addition, procedures dealing with the conduct of operations, maintenance, and testing were produced to provide guidance, requirements, and responsibilities for those personnel involved in the performance of operating, maintenance, and testing activities.

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**CATD 700-NPS-02 - IMPLEMENT BROAD-BASE MANAGEMENT DEVELOPMENT PROGRAM**

CATD 700-NPS-02 documents the issue that a broad-based Management Development Program must be implemented to upgrade the competence of individual managers in the short term and ensure the succession of able managers in the longer term.

**Original CAP**

The existing CAP missing approval signatures.

**Revised CAP**

**1. Succession Planning:**

Nuclear Power (NP) is currently implementing a process to identify job requirements, replacement candidates and development plans for its organization's key positions. Systematic replacement planning program is to be implemented by June 1, 1989.

**2. High Potential Individuals:**

A draft model for key performers or high potential employees has been submitted to the Manager of Nuclear Human Resources. Implementation for high potential and other aspects of a management development program should begin by June 1, 1989, with a full implementation schedule to be determined at a later date.

**3. Systematic Plan for Training Managers:**

The core curriculum identified in L07 870729 902, is still being implemented and is planned for completion by June 1, 1989. This action should close this specific action item. A core curriculum will be ongoing for new managers and supervisors. Planning is currently underway to identify the needs for sequential training and to integrate on-going training with the identification of needs and plans for development of individual managers. The schedule is targeted for implementation by June 1, 1989.

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**4. Procedure for Steady Recruiting:**

Because of the current downsizing, entry level recruiting will be minimal. Management development and other actions to utilize current resources will be used to offset a steady influx at the entry level.

**5. Accountability Process for Assessing Performance on Management Development Goals:**

The implementation of the Performance Planning and Evaluation (PPE) System ties effective, timely PPE training to the Vice President's performance rating. The NP goals and objectives process, and implementation of the Human Resources Development (HRD) model currently under review will provide additional mechanisms for accountability.

**6. Individual Assessment and Development of NP Managers:**

This item is addressed in item 3 above.

**7. A Process for Selecting Managers with Review by Higher Echelons:**

Standard 2.1.4 on Selection is being developed and will address management review.

**8. A NP-wide Communication Plan:**

Implementation of planned communication has been ongoing since June 1987. Currently, the Office of Governmental and Public Affairs is developing a new plan to meet the needs of the current organization. The first emphasis will be the communication of NP objectives and goals which is scheduled for implementation by March 1, 1989. Training needs will be addressed as we plan long-term training and development. A task force will also make recommendations addressing the need to enhance professionalism in NP. Recommendations are planned by April 3, 1989, with implementation of approved recommendations to follow.

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**Summary of Technical Justification**

No changes in the existing CAP are proposed. The existing CAP is missing the required approval signatures. All corrective actions proposed by the CAP have been implemented. The purpose of this request is to obtain the required approval signatures for the CAP in accordance with NP STD-1.2.

**CATD 700-NPS-04 - COMPLETION OR INITIATION OF EXTENSIVE CORRECTIVE ACTION OF CONCERNS FROM THE OFFICE OF NUCLEAR POWER EMPLOYEES**

CATD 700-NPS-04 documents the issue that the Office of Nuclear Power employees must be made aware as rapidly as possible that their concerns have already resulted in the completion or initiation of extensive corrective action.

**Original CAP**

The CAP was previously incomplete.

**Revised CAP**

Make employees aware of corrective actions in place or in formative stages that respond to the concerns by:

1. Providing a set of reports documenting the program findings and TVA responses.
2. Providing an employee feedback program.

**Summary of Technical Justification**

Pages 4 through 7 from the ECSP Report, Report 7 (Management and Personnel) addresses the intent of this CATD. TROI action steps 03 and 04 further bound the CATD requiring the initiation and completion of an "employee feedback" program and the issuance of all ECTG reports.

**NOTE:** The originally intended CAP did not receive the appropriate approval signatures. The revised CAP is submitted for approval per STD-1.2.

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**CATD 717-NPS-14 - FRAGMENTED TRAINING RECORDS**

CATD 717-NPS-14 documents the issue that training records are fragmented throughout Nuclear Power.

**Original CAP**

A Nuclear Employee Training System (NETS) has been developed for use in Nuclear Power. This computer system will continually track all training received by Nuclear Power employees. The system is being used by DNC as well as DNT but not interactively. Consideration is being given to combining the two operations which will allow a more centralized view of Nuclear Power Training (T25 861211 804).

**Revised CAP**

STD-2.9, "Records Management," will be issued to provide standard requirements for storage and retrievability of records, including training records, in Nuclear Power. STD-1.3, "Training of Personnel," will be issued to require Document Control and Records Management to maintain records of plant personnel, NT to enter required training into NETS, and records to be transferred when personnel transfer. TRN-1, "Management of Training," will be issued to define requirements for the use of NETS by NT and other Nuclear Power organizations for tracking required training. No further action is required.

**Summary of Technical Justification**

This change more appropriately addresses the original issue raised in the Subcategory Report concerning training records. NETS is a computer application that tracks employee training records; it does not address storage and retrieval of these records. Nuclear Power's Document Control and Records Management Program was developed and implemented specifically to perform this function in Nuclear Power. STD-2.9 R-0 was issued April 1, 1991. STD-1.3 R-0 was issued April 4, 1991. TRN-1R-0 was issued March 25, 1991.

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**CATD 90900-NPS-05 - PIPING INTERFERENCES INDICATE INADEQUACIES IN THE DESIGN REVIEW PROCESS**

CATD 90900-NPS-05 documents the issue that interferences with fixed ladder rungs are numerous throughout the plant. Some piping interferences greater than two inches in diameter indicate inadequacies in the design review process.

**Original CAP**

The clearance requirements for fixed ladders are given in OSHA General Industry Standard 1910.27(c). This standard can be found in the TVA Occupational Health and Safety Manual. In order to prevent piping interferences with fixed ladder in the future, appropriate Watts Bar Mechanical personnel involved in pipe routing will be given instruction in Health and Safety Course HS164 (TVA Health and Safety Design Criteria). This program outlines the various facility design criteria that is provided or referenced in the General Industry (1910).

**Revised CAP**

Develop a design standard (DS-M18.2.17) which lists mandatory personnel safety design requirements.

Issue a General Engineering Specification (G-94) which addresses clearance requirements between piping and other features.

Enter the required source noting activity into the engineering work tracking system.

**Summary of Technical Justification**

The previously approved CAP contained several DNE (now CE) commitments which could not be verified as complete. Correspondence from RWC to WRB dated 1/14/87 (B20 870112 003) transmitted an alternative CAP which was intended to supersede the approved CAP. However, the CAP deviation was never formally approved through the deviation process.

The revised CAP defines the work actually completed to resolve the CATD.

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CATD I-85-373-NPS-02-10 - VALIDITY OF NDE ON-THE-JOB (OJT)  
DOCUMENTATION

CATD I-85-373-NPS-02-10 documents the issue of the validity of NDE OJT documentation.

Note: Only the affected portions of the CAP are listed below.

Original CAP

This CAP deviation request only applies to Item 3. "Extension of the records search for work initially performed under questionable qualifications at plants other than Sequoyah."

Revised CAP

Determine the competency of NDE inspectors with a lack of sufficient OJT, or at least a lack of complete documentation of sufficient OJT.

Summary of Technical Justification

The proposed CAP provides reasonable assurance that TVA's NDE inspectors are at least as competent as others in the industry; and that there is no reason to believe there was widespread lack of sufficient OJT among the inspectors. Additionally, the proposed CAP provided reasonable assurance, that no adverse impact on safety-related equipment exist as a result of unsubstantiated OJT. This premise is based on the following information:

- o The investigation at SQN via a records search revealed that no generic problem related to the adequacy of NDE OJT existed. (Reference Report CATD I-85-373-NPS-02-10 partial closure of corrective action of SQN.)
- o The SQN investigation results combined with statements from NSRS Report I-86-109-SQN and the Phase II welding project reports provides a basis for determining that no adverse impact on safety-related equipment exists as a result of unsubstantiated OJT.

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- o The proposed CAP provides reasonable assurance that the NDE inspectors were qualified to perform the examinations. A sample of NDE examinations was selected for reexamination. The sample selection process was based on two criteria: (1) the examinations were performed by inspectors who fell within the lowest 25 percent (by test score) of their class at the POTC; and (2) the examinations were performed within three months of their initial certification. The results are documented in the proposed CAP.
- o A comparative assessment of TVA NDE training with other industry groups revealed that the duration of TVA NDE training is from 1 1/2 to 2 times that of industry-advertised training programs and from 1 1/2 to 3 times that required by NRC commitment. The comparative assessment is documented in the proposed CAP.
- o NDE inspectors attending TVA's NDE training program have a failure rate of approximately 20 percent which indicates the measure of quality required by the NDE training program.
- o On November 11, 1987, the POTC issued a Comprehensive On-The-Job Training Manual (QC0090). The program requires that OJT be documented.

4.5.2 Level III CAP Deviations

Level III CAP deviations were identified during the closure process for the following seven NPS CATDs:

717-NPS-14  
20000-NPS-02  
30400-NPS-01  
31303-NPS-01  
40300-NPS-01  
40700-NPS-01  
80454-NPS-01