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CATD 80206-WBN-02 (LEVEL IIB DEVIATION) - VIOLATION OF QUALITY CONTROL  
INSTRUCTION WBNP-QCI 3.06-3, PARAGRAPH 6.2.9

CATD 80206-WBN-02 documents the issue that Quality Control Instruction WBNP-QCI 3.06-3, Paragraph 6.2.9 states: "Cables shall be terminated by the craftsmen after continuity and insulation testing." Quality Control Procedure WBNP-QCP 3.06-3 requires continuity and resistance testing be performed, but does not specify if the testing is to be done prior to, or after termination. Electrical Quality Control performs continuity and resistance tests after terminations have been completed, which violates WBNP-QCI 3.06-3, paragraph 6.2.9.

Original CAP

Continuity and resistance tests are performed after the lugs are installed and before final termination to the equipment. Cables which have been terminated by craft are determined for checking continuity and resistance. Except for inprocess inspection, terminations are laid down and cables formed before termination slip is signed and the inspector called.

1. Continuity is checked after lugs are installed to assure continuity through lugs on both ends.
2. Terminations are laid down and cable formed before calling the inspector, to save inspection time and to provide an independent verification that cables are broken out to the proper termination.

QCI 3.06-3, paragraph 6.2.9 is being revised to read, "The cables shall be terminated, or reterminated if previously laid down, after continuity and insulation testing."

Revised CAP

Revise the Construction/Modifications Procedure (MAI-3.2) as follows:

1. Perform continuity and resistance testing on all cable prior to connecting to the equipment.
2. It is recommended this testing be performed after the installation of terminal connectors.
3. Terminate or reterminate any cables lifted to perform continuity or resistance testing.

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**Summary of Technical Justification**

1. Align CAP and site implementing procedures with G-38\*, Section 5.0, Testing/Acceptance Requirements for Continuity and insulation resistance tests for insulated power, control, instrument, and thermocouple cable.
2. The problem description states there were two different Construction procedures that were not in agreement as to the sequence of the testing. Only one Construction procedure governs this activity currently.
3. The purpose of the continuity and resistance testing is to test the conductor for breakage, provide positive identification of conductor ends, and test insulation/jacket for protecting the conductor and not the landing of the connectors.

\*Note: G-38 allows continuity testing either before or after lug installation. The two Quality Control procedures were not in accord on the specified sequence. MAI 3.2 is the current governing procedure and implements G-38.

**4.3.2 Level III CAP Deviations**

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

30704-WBN-01  
30704-WBN-02  
80517-WBN-02  
I-85-06-WBN-02  
I-85-06-WBN-03

**4.4 Bellefonte Nuclear Plant (BLN)**

During this reporting period, there was one approved Level II CAP deviation, six Level IIa CAP deviations, 30 Level IIb CAP deviations, and 32 Level III CAP deviations for BLN CATDs.



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4.4.1 Level II, IIa and IIb CAP Deviations

CATD 11103-BLN-01 (LEVEL IIb DEVIATION) - MECHANICAL SHOCK ARRESTORS (SNUBBERS) NEED TO BE REVIEWED, INSPECTED, AND DOCUMENTED IN ACCORDANCE WITH SITE PROCEDURE

CATD 11103-BLN-01 documents the issue that mechanical shock arrestors (snubbers) which were not removed to close INPO finding CC-3.1 need to be reviewed, inspected, and documented in accordance with site procedure BNP-QCP-6.24. The snubbers are then to be protected according to the requirements specified in BNP-QCP-6.24, and wooden boxes installed around them such that the entire snubber, from the rear attachment to the pipe, is completely covered.

Original CAP

Although a draft memorandum was prepared, BLN line management did not formally commit to INPO finding CC-3.1 as is stated on CATD. However, DNC at BLN did take certain actions as a result of INPO finding CC-3.1 at WBNP. Our action consisted of removing all unnecessarily installed snubbers that were located in areas of the powerhouse in which ongoing construction activities could be detrimental to the snubbers. However, those snubbers that were installed in virtually non-accessible areas (i.e., Reactor dome, etc.), or areas in which no ongoing construction activities were scheduled, were left as is. This was due to our position that each installed condition be reviewed on a case-by-case basis and that all snubbers required removal or protection.

Presently, BNP-QCP-6.24 does not contain any protection requirements for installed snubbers during the construction phase as is stated in the CATD. However, as a result of WBNP INPO finding CC-3.1, BNP-QCP-10.27 "Housekeeping" was revised to add section 6.1.2.9.2 for the requirements of adequate snubber protection.

Presently, there are 108 snubbers installed at BLN of which 70 have completed inspections per BNP-QCP-6.24. Snubbers installed on transferred systems only account for 18 of the 108 installed snubbers. Therefore, DNC at BLN will commit to reviewing all installed snubbers per the following guidelines by 12-31-87.

1. Snubbers installed on transferred systems will be left as is.
2. Snubbers located in easily accessible areas will be removed.
3. Snubbers installed in virtually non-accessible areas (i.e., Reactor Dome, etc.), will be left installed, however, inspection will not be performed until just prior to transfer of applicable system. Any completed inspections of snubbers in these areas will be voided.

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Any further proposed corrective actions will depend on corporate actions from CATD 11103-NPS-01 R0.

This response was coordinated with ECTG personnel Don Owens and Drew Chesney.

Nuclear Power's position on mechanical shock arrestors (Snubbers):

There are presently 18 snubbers installed on tentatively transferred systems. To protect these snubbers, the following measures will be taken:

1. Snubbers installed on transferred systems will be left as is (i.e., install.)
2. Standard Practice BLS4 will be revised by 12-31-87 to provide adequate snubber protection.
3. Inspect and perform functional test (per SI-4.7.9.A & .E) to all 18 snubbers presently transferred to Nuclear Power prior to restart of preop test program. SI-4.7.9.A & .E will be written to perform test prior to restart of preoperational testing.
4. At transfer of systems from DNC to Nuclear Power, proof is required that snubbers have been inspected per DNP-QCP-6.25. BLA7.7 will be revised to reflect this prior to accepting next transfer from DNC to Nuclear Power (01-02-89).

Revised CAP

Although a draft memorandum was prepared, BLN line management did not formally commit to INPO finding CC-3.1 as is stated on CATD. However, DNC at BLN did take certain actions as a result of INPO finding CC-3.1 at WBNP. Our action consisted of removing all unnecessarily installed snubbers that were located in areas of the powerhouse in which ongoing construction activities could be detrimental to the snubbers. However, those snubbers that were installed in virtually non-accessible areas (i.e., Reactor dome, etc.), or areas in which no ongoing construction activities were scheduled, were left as is. This was due to our position that each installed condition be reviewed on a case-by-case basis and that all snubbers required removal or protection.



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Presently, BNP-QCP-6.24 does not contain any protection requirements for installed snubbers during the construction phase as is stated in the CATD. However, as a result of WBNP INPO finding CC-3.1, BNP-QCP-10.27 "Housekeeping" was revised to add section 6.1.2.9.2 for the requirements of adequate snubber protection.

Presently, there are 108 snubbers installed at BLN of which 70 have completed inspections per BNP-QCP-6.24. Construction at BLN will commit to reviewing all installed snubbers per the following guidelines:

1. Snubbers located in easily accessible areas will be removed.
2. Snubbers installed in virtually non-accessible areas (i.e., Reactor Dome, etc.), will be left installed, however, inspection will not be performed until just prior to transfer of applicable system. Any completed inspections of snubbers in these areas will be voided.

Any further proposed corrective actions will depend on corporate actions from CATD 11103-NPS-01 R0.

Nuclear Power's position on mechanical shock arrestors (Snubbers):

To protect these snubbers, the following measures will be taken:

1. Site Standard Procedure SSP-12.7 will be revised to provide adequate snubber protection.
2. Surveillance Instructions SI-4.7.9.A & SI-4.7.9.E will be issued to inspect and perform functional tests to snubbers, transferred to Operations (or Plant Staff), prior to restart of the preop test program.
3. At transfer of systems from Construction to Operations (or Plant Staff), proof is required that snubbers have been inspected per BNP-QCP-6.24. BLA7.7, or an equivalent procedure, will be revised to reflect this prior to accepting the next system transfer from Construction to Operations (or Plant Staff)

#### Summary of Technical Justification

The "18 snubbers" specifically addressed in the original CAP were on "tentatively" transferred systems, as stated by the CAP, and therefore, were never "officially" transferred to OPS or Plant Staff. As a result, all snubbers will be handled in the same manner (i.e., inspected and tested via SI-4.7.9.A & SI-4.7.9.E prior to restart of preoperational testing).

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CATD 11300-BLN-01 (LEVEL IIb DEVIATION) - PARAMETERS OF NRC OIE  
BULLETIN 79-02 NOT FULLY ADDRESSED AT BELLEFONTE

CATD 11300-BLN-01 documents the issue that the parameters of NRC OIE Bulletin 79-02 have not been fully addressed at BLN. Performance and completion of inspections/evaluations detailed in the Bulletin are required to ensure complete compliance with the requirements set forth by the Bulletin.

Original CAP

Initial field inspection of pipe support installations prior to 1981 have been completed and submitted to DNE for evaluation. Evaluation of these inspections was not completed due to changing 79-02 requirements and a lack of manpower. It is anticipated that an additional inspection will be required because NRC is requiring a review of much greater depth than had been initially anticipated. It is anticipated that ALL Bellefonte pipe supports will have to meet the requirements of the bulletin. This item is being tracked in the PC3 scheduling network under activity numbers H4881-7902-14 and H4882-7902-14.

Revised CAP

Initial field inspection of pipe support installations prior to 1981 have been completed and submitted to DNE for evaluation. Evaluation of these inspections was not completed due to changing 79-02 requirements and a lack of manpower. It is anticipated that an additional inspection will be required because NRC is requiring a review of much greater depth than had been initially anticipated. It is anticipated that ALL Bellefonte pipe supports will have to meet the requirements of the bulletin. This item is being tracked in TROI under BUL 79-02 (NRC Bulletin 79-02).

Summary of Technical Justification

The original CAP was missing the approval signature.

CATD 19200-BLN-04 (LEVEL IIb DEVIATION) - EVALUATE THE NECESSARY  
CORRECTIVE ACTION TO ADDRESS POTENTIAL DIE CAST ZINC FITTINGS INSIDE  
CONTAINMENT AT BELLEFONTE

CATD 19200-BLN-04 documents the issue to evaluate the necessary corrective action required to address the potential die cast zinc fittings inside containment at BLN.



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Original CAP

The total inventory of source materials such as aluminum and zinc (which produce hydrogen in chemical reaction with the containment LOCA atmosphere) for the containment is documented in the Bellefonte FSAR Chapter 6 Section 6.2.5 (Table 6.2.5-3) and DNE Calculation "Volume Percent of Hydrogen in Containment Following a Loss of Coolant Accident (LOCA)," (NEB831227201). The source materials have been inventoried several times in the past and will be periodically inventoried in the future by DNE's NEB Nuclear Waste and Process Engineering Section. Conduit fittings, including cast zinc fittings, will be included in the inventory process. The inventories are provided to NEB by the various disciplines after a request for inventory is initiated by NEB. The inventory will include distinction between coated and solid cast zinc fittings. FSAR Table 6.2.5-3 is revised after each calculation to reflect the latest calculation results.

Revised CAP

The total inventory of source materials such as aluminum and zinc (which produce hydrogen in chemical reaction with the containment LOCA atmosphere) for the containment is documented in the Bellefonte FSAR Chapter 6 Section 6.2.5 (Table 6.2.5-3) and DNE Calculation "Volume Percent of Hydrogen in Containment Following a Loss of Coolant Accident (LOCA)," (NEB831227201). The source materials have been inventoried several times in the past and will be inventoried in the future via issuance of a procedural requirement invoked by BLN-14-EP-5.02 that requires review/update of all essential calculations (ie. NEB831227201). Conduit fittings, including cast zinc fittings, will be included in the inventory process. The inventories are provided to NEB by the various disciplines after a request for inventory is initiated by NEB. The inventory will include distinction between coated and solid cast zinc fittings. FSAR Table 6.2.5-3 is revised after each calculation to reflect the latest calculation results.

Summary of Technical Justification

A revision was required to clarify the intent of the frequency of the future inventory process specified in the original CAP. The noted calculation in the CAP, NEB831227201, is an Essential Calculation and per procedure BLN-14-EP-5.02, all essential calculations must be reviewed/updated prior to Fuel Load and maintained current with the plant design.

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CATD 20101-BLN-01 (LEVEL IIB DEVIATION) - A BELLEFONTE DESIGN BASIS DOCUMENT (DBD) HAS NOT BEEN DEVELOPED AS REQUIRED BY NEP 3.2

CATD 20101-BLN-01 documents the issue that a BLN design basis document (DBD) has not been developed or implemented for identifying, updating and maintaining the commitments and requirements database for the life of the plant as required by NEP 3.2.

**Original CAP**

A Design Basis Document (DBD) for each unit is to be prepared before fuel loading of each unit in accordance with NEP-3.2. The DBD will be comprised of those Design Criteria (DC) and System Description (SD) documents that were determined by the Discipline Lead Engineers to be required to define the design basis for BLN. This effort will include the preparation of some completely new documents, the consolidation of some existing documents, and the revision of some existing documents. The DBD will also include those documents which are listed as references in the DC/SD documents. The C/R data base generated for the DBD will be maintained for life of plant per NEP-3.2.

**Revised CAP**

Issue the DBD procedure BLN-9.0-11 that will establish the responsibilities and requirements for preparation and approval of system, structure, and topical Design Basis Documents (DBD).

Develop and issue the DBDs as defined by BLN-9.0-11.

Additionally, issue the BLN DBD Program, which will be established to facilitate retrieving, verifying, and documenting the final BLN design to the source of design input. This program will reflect the quality assurance and regulatory requirements applicable to BLN. BLN will also set up and maintain a computer-based tracking system (equivalent to the C/R database identified in NEP 3.2), such that, when a DBD is revised/issued, the licensing commitments will be evaluated against the design input documents to verify that it is, adequately included, changed, or deleted.

**Summary of Technical Justification**

The necessary DBDs are as detailed in the DBD Program (Ref: Memo #CD-930439). The procedure BLN-9.0-11 details the method and content requirements for DBDs.



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BLN will not have a C/R database; however, will meet the requirements of NEP-3.2 by utilizing an equivalent computer-based tracking system. BLN has electronically filed its complete docket through 1990. This file is searched to identify all existing commitments when developing the DBD as directed by AG-CD-004.

Additionally, the Docket Review Program will identify all commitments, which will be addressed in the DBDs. The next revision of BLN-9.0-11 will invoke these processes as requirements.

CATD 20105-BLN-02 (LEVEL IIB DEVIATION) - BELLEFONTE COMMITMENTS MAY NOT BE ENTERED INTO THE CORPORATE COMMITMENT TRACKING SYSTEM

CATD 20105-BLN-02 documents the issue that some BLN commitments completed before January 1, 1986 (other than commitments related to NRC violations) may not be entered into the Corporate Commitment Tracking System.

Original CAP

ELN Site Licensing will:

1. Get RIM's printout of BLN correspondence (site-specific and Corporate-generic) to NRC between 1/1/86 and 4/15/87 (date Site Licensing completed training on PMP 0605.01).
2. Review for commitments completed before time of submittal.
3. Enter commitments not previously identified into CCTS by 11/1/87.

Revised CAP

1. Obtain BLN docketed correspondence between 6/1/73 to 3/31/92.
2. Review for commitments.
3. Enter commitments not previously identified in CCTS.

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**Summary of Technical Justification**

As part of Site Licensing's effort to validate all BLN docketed commitments, copies of BLN docketed correspondence have been obtained through the FOLIO system. This action expands the scope of the proposed CAP since all docketed correspondence (rather than the period of 1/1/86 to 4/15/87) will be obtained and reviewed for commitments.

Action 3 of the proposed Corrective Action Plan (CAP) for CATD 20105-BLN-02 states, "BLN Site Licensing will enter commitments not previously identified into CCTS by 11/1/87." The phrase "by 11/1/87" has been deleted from this CAP since it cannot be verified that this action has been completed. BLN Site Licensing is currently reviewing the BLN docketed correspondence for commitments. Phase I of this activity involves reading the BLN docketed correspondence (dated 06/01/73 to 03/31/92 as compiled for and provided to BLN by Advanced Science and Technology Associates [ASTA] Corporation) for identification of licensing commitments. Correspondence after 03/31/92 has been reviewed by Site Licensing in accordance with appropriate procedures. Phase II of this activity involves determining whether the commitments identified in Phase I have been completed. Those commitments for which evidence cannot be located to indicate completion or otherwise dispositioned will be entered into the Corporate Commitment Tracking System (CCTS). Phase I is scheduled to be complete by 09/30/93 and Phase II is scheduled to be complete by 09/30/94. Entry of data into CCTS is scheduled to be complete by 12/31/94.

**CATD 20501-BLN-02 (LEVEL Iib DEVIATION) - NO EVIDENCE TO SUBSTANTIATE ELEMENTS OF THE BELLEFONTE ESSENTIAL CALCULATION PROGRAM**

CATD 20501-BLN-02 documents the issue that there is no evidence to substantiate the following elements of the BLN essential calculation program:

- A - Documentation criteria for the classification of calculations as essential, desirable or obsolete.
- B - Verification that calculations have been reviewed for unverified assumptions, reasonable method and approach, etc.
- C - Documentation of an independent review of the list of essential or desirable calculations and the approval of those lists by TVA management.



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**Original CAP**

- A. Each engineering branch within DNE has documented criteria for classification of calculations as essential, desirable or obsolete. These criteria are consistent with those discussed between TVA and NRC (see letter L44 870120 809).
  - 1. Nuclear Engineering Branch (NEB) criteria are spelled out in John A. Raulston memorandums to Those listed (B45 860909 258 and B45 861010 259).
  - 2. Mechanical Engineering Branch (MEB) criteria are spelled out in C. A. Chandley Policy Memorandum MPM 86-04 (B44 860625 002).
  - 3. Civil Engineering Branch (CEB) criteria are spelled out in R. O. Barnett Policy Memorandum PM86-04 (CEB) R1 (B41 861202 002).
  - 4. Electrical Engineer Branch (EEB) criteria are spelled out in W. S. Raughley Policy Memorandum PM86-02 R1 (EEB) (B43 870204 903).
- B. Verification will be done as described in items 4 and 5 of 20501-BLN-01.
- C. Independent review of all lists of calculations is spelled out in the referenced memorandums in item (A) above:
  - 1. NEB requires review, verification, and approval on attachment No. 1 of referenced memorandums.
  - 2. MEB Bellefonte Lead Engineer (LE) controls the calculation log and the management review is obtained through this action.
  - 3. CEB Policy Memorandum requires the compiled list of calculations be reviewed and approved by the branch chief.
  - 4. EEB Policy Memorandum specified the list of calculations as developed by the branch.
- D. See schedule response provided corrective action plan 20501-BLN-01.

**Revised CAP**

- 1. A Program Plan for calculations has been written to implement the Essential Calculation Program at Bellefonte.

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2. Verification of existing calculations will be performed as part of calculation completion using procedure BLN-14-EP-5.02 to ensure that the essential calculations have been reviewed for unverified assumptions, reasonable methods and approach, etc., and any computer software used for calculations has been reviewed for appropriateness and applicability.

The verification review will also document the independent review requirement cited in this concern item.

**Summary of Technical Justification**

The revised CAP provides an alternative method for resolving the CATD problem and achieves the same results. The following describe the BLN methods in more detail:

1. Program Plan for Design Calculations Rev. 2 (U32921217001).
2. Design Calculations Rev 2 (U21930405009).

**CATD 20501-BLN-05 (LEVEL IIa DEVIATION) - NONISSUANCE OF BLEP  
PROCEDURE FOR AN INTERIM CALCULATION REVIEW CHECKLIST**

CATD 20501-BLN-05 documents the issue that an interim calculation review checklist has been issued via policy memo PM86-16 EEB. However, a BLEP procedure has yet to be issued for project use of this checklist.

**Original CAP**

A program is underway to upgrade the BLEP project procedures manual. This includes revising and writing project procedures to incorporate requirements issued since the original issue of the manual. As part of this program PM86-16 will be incorporated into the project procedures system. Training for BLEP personnel will be performed during this same program which will be under TVA personal service contract TV-6704A. Policy memo PM86-16 EEB has been distributed to EEB's on-project supervisors in the interim.

**Revised CAP**

Issue procedures BLN-14-EP-5.02 "Design Calculations," BLN-14-EP-3.02 "Design Verification" governing the issuance, content, verification and personnel procedure training for calculations in accordance with BLN site procedure SSP-2.3, Administration of Site Procedures.



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**Summary of Technical Justification**

1. Bellefonte procedures are found in the BLN Policy and Procedures Manual (PPM), not the BLEP project procedures manual. Procedures are upgraded as new requirements are identified using BLN site procedures.
2. Procedures meet all regulatory requirements necessary to produce calculations which will allow BLN to become a licensed plant.
3. The calculation procedures are to be used by all disciplines but the checklist PM86-16 was only applicable to electrical calculations and is not suitable for review of all electrical calculations. Therefore, the checklist PM86-16 or its equivalent would be found in a administrative guideline not in an upper tier procedure. BLN-14-EP-5.02 and BLN-14-EP-3.02 presently contain calculation review criteria.
4. Personnel are trained to procedures prior to their issuance and later on an as needed basis. This is documented in the BLN training records.

**CATD 22702-BLN-01 (LEVEL IIa DEVIATION) - INCORRECT FITTING SIZE OF DECAY HEAT REMOVAL (DHR) PIPING**

CATD 22702-BLN-01 documents the issue that the fitting of the Decay Heat Removal (DHR) piping coming from the Borated Water Storage Tank (BWST) at the nozzle location is shown as 36-inch diameter on the BLN drawing "Design Criteria Diagram, Decay Heat Removal System" 3BW0612-ND-01, R13 (which is also presented in the BLN FSAR under Figure 5.4.7-1), while the other BLN design documents (which were used for construction) show a 30-inch diameter (App.A, 5.b and 5.h).

**Original CAP**

The decay heat piping interface with the borated water storage tank shown on the design criteria diagram was erroneously shown as the 36-inch welded fitting diameter instead of the 30-inch flow diameter. Design criteria diagram 3BW0612-ND-01 (FSAR Figure 5.4.7.1) will be revised by ECN 3597 to correct this dimension from 36 inches to 30 inches. All other piping-tank interfaces shown on Bellefonte design criteria diagrams for safety related applications will be reviewed to assure this same error has not occurred elsewhere.

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An action plan will be developed which will include identification of applicable documents and components.

Results will be evaluated and any corrective action required will be handled in accordance with applicable procedures (NEPs).

**Revised CAP**

The decay heat piping interface with the borated water storage tank shown on the flow diagram was erroneously shown as the 36-inch welded fitting diameter instead of the 30-inch flow diameter. Flow diagram 3BE1812-ND-01A R0 (FSAR Figure 5.4.7-1) incorporating DCN K00001-A was issued 12/16/92 to correct this dimension from 36 inches to 30 inches.

**No addition corrective actions required**

All other drawings concerning this pipe contain the correct information and the error can be attributed to a transcription error. No physical changes to plant components are required.

**Summary of Technical Justification**

The Subcategory Report 25000 paragraph 6.4 (page 27) classifies the error as a transcription error. All other associated drawings for this pipe show the correct size and the as-built configuration.

Other minor changes are:

Design Criteria Diagram was changed to Flow Diagram.

Drawing number 3BW0612-ND-01 was superseded by 2BE1812-ND-01A.

FSAR Figure 5.4.7.1 changed to 5.4.7-1.

ECN 3597 was voided and replaced by DCN K00001-A.

**CATD 23702-BLN-04 (LEVEL IIa DEVIATION) - CONFLICT OF PROCEDURE WITH GENERAL DESIGN CRITERIA N4-RPD775A AND NEP-2**

CATD 23702-BLN-04 documents the issue that exceptions to general design criteria N4-RPD775A are permitted without documented justification or approval. This is in conflict with procedure NEP-3.2.



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**Original CAP**

The intent of paragraph 5.1 is to allow deviations from some parts of the guides, standard drawings, practices, and NEC so long as there is no conflict with the criteria without preparing an exception per paragraph 6.1. This does not constitute exceptions to the criteria, but rather, exceptions to the references. N4-RPD775A will be revised for paragraph 5.1 to say, "In so far as practical, design...code. Significant deviations from these references shall be noted on the applicable design drawings."

Additionally, the following commitment was made:

To resolve the apparent conflict between paragraph 5.1 & Procedure NEP 3.2, paragraph 5.1 of N4-RPD775A will be revised. The revision will clarify the documentation requirements for exceptions to the Design Criteria (in accordance with paragraph 6.0 of N4-RPD775A) and for the significant deviations from the standards, codes, guides, & other governing documents referenced for conformance in the Design Criteria (note on the applicable design documents). Completion of the revision is scheduled before fuel loading of BLN Unit 1.

**Revised CAP**

The intent of Paragraph 5.1 of N4-RPD775A was to provide an understanding (for QA purposes) that an industry design standard, code, or guide may exist in the public domain that TVA may not have known about, or chose not to use, and that deviation from these items does not require documented justification...as long as there is no conflict with the Design Criteria. Paragraph 2.0 further supports this interpretation by clearly stating which design standards, codes & guides this Design Criteria plans to conform to. Exceptions to these reference documents are per Paragraph 6.1, which does require adequate justification & full documentation.

Therefore, this CATD is not considered to be in conflict with Procedure NEP-3.2 and no corrective action is required.

**Summary of Technical Justification**

The original CATD Problem Description & the approved CAP were misinterpretations of the handling of exceptions to the Design Criteria. These misinterpretations were due to the lack of a full understanding of the Design Criteria. A more detailed review of this criteria reveals that no problem exists.

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CATD 23801-BLN-05 (LEVEL IIa DEVIATION) - BLN CORRECTIVE ACTION  
PROGRAM REQUIRES ALL DEFICIENCIES TO BE TRACKED AND TRENDED

CATD 23801-BLN-05 documents the issue that TVA has developed a Trend Analysis Program to identify adverse trends associated with cable installations. However, it is not known what cable parameters are trended and if these parameters consider possible effects of harsh environment during accident conditions.

Original CAP

TVA will define the trend parameters associated with cables as part of the trend analysis program implemented by the TROI Program. However the program does not provide for predictive analysis. The TVA test program which will be used to resolve concerns on SQN cable installation includes assurance that possible cable damage would not affect cable reliability when cables are subject to harsh (including wet) environments. The results of the testing program will be shown to be applicable to BLN and other plants or plant specific testing will be conducted.

Revised CAP

Change BLN action only as follows:

No corrective action required.

Summary of Technical Justification

The BLN Corrective Action Program requires all deficiencies to be tracked and trended. This program does not specifically address the parameters associated with cable, however, BLN has sufficiently addressed those parameters critical to cable installation in the following position papers to the NRC: Cable Pullby TAC#79281 RIMS L44 910516 801; Sidewall Bearing Pressure and Jamming 79282; L44 910516 802; Bend Radius 79284; L44 910523 801 and TVA's response to a request for additional information on these cable issues, U12 910830 800.

The following provides additional credibility to the position papers: Safety Evaluation Report by NRC, Docket #50-438/439 (A02 911101005); Nuclear Assurance Assessment dated July 23, 1993, on activities relative to the TVA position papers. (U11 930723 022). Future deficiencies will be tracked and trended in accordance with the BLN C/A Program and corrected as outlined in the position papers and site procedures.



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CATD 23900-BLN-05 (LEVEL IIB DEVIATION) - ENGINEERING - CONSTRUCTION  
MONITORING & DOCUMENTATION (ECM&D) PROGRAM HAS NOT BEEN PROPERLY  
VERIFIED TO ASSURE PERFORMANCE FUNCTIONS

CATD 23900-BLN-05 documents the issue that the ECM&D program has not been properly verified to assure that it performs its intended functions (e.g., printing of Class 1E cable pull slips). TVA has issued Procedure NQAM, Par 1, Section 2.2.1, which requires a "quality assurance for computer software." Office of Construction has initiated a procedure for "control of safety-related software" DNC-GCP-4.5.16-01 (not issued yet). However, there is no evidence that verification and documentation of the program has been completed.

Original CAP

No additional actions are required as this issue is being tracked by NCR DNC-FSB-87-01.

Revised CAP

The CATD Problem Description requires resolution of two questions/issues:

1. Verification of the Engineering - Construction Monitoring & Documentation (ECM&D) program to ensure it performs its intended functions (i.e., printing of Class 1E pull slips), and
2. The Quality Assurance (QA) status of computer software systems at BLN (i.e., issuance of a procedure DNC-GCP-4.5.16-01).

Verification will be provided (per BLN-14-EP-1.01) to show that CCRS, "Computerized Cable Routing System," is the main electrical cable routing database and that ECM&D was basically utilized as a functional tool to assist construction and engineering in keep CCRS current. CCRS has now evolved into CRDS, "Cable Raceway Data System," which is now the QA database responsible for tracking the electrical cable routing.

Verification will also be provided (per Technical Report #TR-92-008) to show that the printing of Class 1E cable pull slips are the only QA information utilized/controlled in ECM&D.

NCR-#DNC-FSB-87-01 provides the corrective action for issuance of DNC-GCP-4.5.16-01. This procedure was later superseded by DNC-GCP-4.5.2-01. The BLN procedure in place today is SSP-2.12, "Control of Computer Application Software."

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**Summary of Technical Justification**

The initial problem description addressed the fact that ECM&D has not been properly verified. An example of cable pull slips was cited. TVA's issuance of NQAM Part 1, Section 2.2.1 was referenced as requiring "Quality Assurance for Computer Software Systems." TVA's initiation of procedure DNC-GCP-4.5.16-01 was cited as not being issued and the conclusion was drawn that no evidence existed to justify verification and documentation of the program's completion.

The last approved CAP, dated August 10, 1987, and Subcategory Report #26600 both deferred corrective actions to NCR DNC-FSB-87-01, which addressed the need to have procedures/instructions in place for "Quality Assurance for Computer Software Systems." Other memorandums were listed in the CAP, however all basically pointed to the same conclusion--resolve the issue surrounding the quality assurance for the computer software systems. Also, a memo from R. W. Bradford to Those listed, dated May 22, 1987 (C10870522006) provided additional confidence that issuance of DNC-GCP-4.5.16-01 would serve for the corrective actions as stated in NCR DNC-FSB-87-01. It appears that those involved with the development and acceptance of the CAP and the contents of the SubCat Report made a conscious decision that initiation of procedures to provide "Quality Assurance for Computer Software Systems" would resolve the CATD. NCR DNC-FSB-87-01 was closed when the procedure was issued and training was completed. Procedure DNC-GCP-4.5.16-01 was later superseded by DNC-GCP-4.5.2-01. The procedure in place today at BLN is SSP-2.12, "Control of Computer Application Software." These actions would initiate the programs to require quality assurance requirements for computer software systems, however, the actual validations of ECM&D and CCRS would not happen until much later.

At the time this CATD was written the main electrical cable routing database in effect was the Computerized Cable Routing System (CCRS). The ECM&D database program was basically used as a functional tool to assist construction and engineering in keeping CCRS current. However, neither ECM&D nor CCRS was QA verified. The only documentation that could be found in the 1987 time period relating to QA verification issue was in a memo from W. S. Raughley to E. O. Massey, dated July 15, 1987 (B21870715001). This memo substantiated that CCRS functions had a high degree of confidence, but have not been "QA verified" at that time. Also, DNC-GCP-4.5.16-01 RO supported the need to QA the cable and raceway database, however, does not specifically demonstrate that it would be ECM&D. Through evolution of time the need to QA verify the CCRS was recognized and finally in 1992 the Cable Raceway Data System (CRDS) was developed.



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The CRDS program became the approved, validated, quality-related computer program utilized for controlling electrical cable routing at BLN. CRDS has effectively replaced its predecessor, CCRS, and is an accumulation of all efforts, CATD-related and otherwise, to provide quality assurance of BLN's cable and raceway databases and resolve outstanding issues. The design validation to resolve this verification occurred in 1992 under AWRS BE 12.0, Rev. 2 and provided deliverables for the System Prospectus, System Delivery Specification, Technical System Design, the Technical Procedure Document and System Acceptance Test Document (BLN-14-EP-5.05), and Technical Report #TR-92-008, "Status Report of Cable and Raceway Data." Further verification of the QA status of CRDS and non-QA status of ECM&D can be found in procedure BLN-14-EP-1.01, "BLN Technical responsibility/Approval Authority for Engineering Products" and its Attachment 3, "Approved Engineering Computer Program List." This procedure/attachment documents that "ECM&D" is a non-QA database for equipment and structures not capable of being placed into EMS and that "CRDS" is the code to assist in the control of cable routing.

The example addressed in the CATD Problem Description on the printing of Class 1E cable pull slips was in reference to the only QA information in ECM&D. This particular information still remains in ECM&D and is utilized in other quality-related calculations. The justification for this particular field is via Technical Report #TR-92-008 R0, Section 5.2, which evaluated and resolved the "cable pull slip" issue to ensure that the pull slips printed from ECM&D did not alter the design data which CRDS read from ECM&D.

CATD 24101-BLN-02 (LEVEL IIa DEVIATION) - NO MASTER RECORD WAS IDENTIFIED FOR CLASS 1E AND NON-CLASS 1E CABLE SPLICES

CATD 24101-BLN-02 documents the issue that no master record such as a splice schedule or list was identified that provides a centralized source of information concerning Class 1E and non-Class 1E cable splices.

Original CAP

A master listing of Class 1E and non-Class 1E cable splices will be established and maintained up to date. This listing will facilitate the retrieval of detailed splice records relative to type material number and location and prepared in accordance with BNP-QCP-3.4, BNP-QCP-3.34 and BLEMI-2704.

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Revised CAP

A master listing of all 10 CFR 50.49 cable splices will be established and maintained up-to-date. This listing will facilitate the retrieval of detailed splice records relative to type, material, number, and location and will be prepared in accordance with BNP-QCP-3.4, BNP-QCP-3.34 and BLEMI-2704 or its equivalent.

Summary of Technical Justification

There is not a regulatory commitment for non-Class 1E cable splices. The resources to provide the information to retrieve this data would not be cost beneficial. Only 10 CFR 50.49 Cables require environmentally sealed splices. An approved procedure will be in place prior to implementation.

CATD 30202-BLN-01 (LEVEL II DEVIATION) - SAFETY-RELATED AC POWER SUPPLY BOARD VOLTAGES HAVE BEEN OBSERVED TO BE IN EXCESS OF SAFE OPERATING LIMITS

CATD 30202-BLN-01 documents the issue that safety-related AC power supply board voltages have been observed to be in excess of safe operating limits recommended by DPM N7701 and no provisions have been made to monitor these voltages on a regular basis or reduce the magnitude of the voltages.

Original CAP

Provisions exist through relaying to monitor and alarm high voltages conditions. The observation of high voltage conditions were made using board voltmeters that are designed to give 5 percent accuracy.

Accurate voltage readings were taken on June 19, 1987 and one of the four 6.9 kV safety related boards was above the safe operating limits recommended by DPM N7701. A voltage monitoring program will be placed into effect August 1, 1987. DNE will be sent voltage data on a periodic basis for evaluations of voltage readings that exceed recommended levels in DPM N7701. If corrective action is required, the action will be completed prior to fuel loading or as needed to prevent equipment damage.

Revised CAP

No corrective action required.



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**Summary of Technical Justification**

DPM N7701 was issued to give the TVA nuclear plants guidance on the allowable voltage ranges for their safety-related boards. The main purpose of the DPM was to require that the board voltages not fall below the values given in Table 2. The maximum voltages given in Table 1 are recommendations only - as specified in the paragraph above the table which states:

"Bus voltages should ordinarily be maintained within the ranges listed in Table 1 for optimum operation of equipment. Operation beyond these ranges (Table 1) is permissible but should be limited in extent, frequency, and duration. Minimum limits for safe operation of equipment are listed in Table 2."

Therefore, there is no BLN requirement to stay below the maximum voltage value (7240 V) given in the DMP's Table 1. Note that the values given in Table 2 are undervoltage limits only.

This is further supported by the information given in letter L02890424881 page 5 which shows that the DPM was not mandatory. Also, the Revision 0, "Description of Change" block of document W06890606873 states that the procedure " is provided for information and guidance."

W06890606873 also cancelled DPM N7701, and in the cancelling revision block (dated 05/05/89 states: "Commitments are identified in applicable system design criteria documents for each plant."

The system design criteria document for Bellefonte's safety-related electrical boards is General Design Criteria No. N4-RPD775A. Page 11 of this Design Criteria states:

"The selection of degraded under and overvoltage and time delay setpoints shall be determined from an analysis of the voltage requirements of the Class 1E loads at all onsite system distribution levels. This analysis will be included in the AC Auxiliary Power System Review (D288-G10190RP). The expected degraded undervoltage setpoint is 6000 to 6560 volts. The expected degraded overvoltage setpoint is 7260 volts."

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This expected voltage setpoint is carried forward in the Power Systems Operations Relay Setting Sheets for the overvoltage relays (# 3996 84 for the 1ET1-A board). These relays give annunciation to alert the operator of an overvoltage condition and thereby allow him to take steps to reduce the board voltage, if possible.

The expected value of 7260 volts will be verified as all electrical calculations are being re-performed. These new calculations will determine the allowable maximum voltages on the boards and the relay settings will be revised, as required, based on these values. These calculations are scheduled to be completed in September of this year with any new relay setting sheets developed in 1994.

The concern states ". . .no provisions have been made to monitor these voltages on a regular basis or reduce the magnitude of the voltages." There is an overvoltage monitoring system installed on the boards, however, it is not in service at this time as the overvoltage relays have been removed and sent to Sequoyah. No replacements have been installed or ordered as the plant is in deferment status. Also, the Plant Monitoring System for Unit 2 is out of service and there are no plans to place it into service until Unit 2 is removed from deferment status.

The boards are now being supplied by the Reserve Station Service Transformers (RSSTs) and will continue to be so until the Main Transformers and Unit Station Service Transformers (USSTs) are placed back in service. The USSTs have Load Tap Changers (LTCs) which automatically regulate the plant board voltages. However, the RSSTs do not have LTCs and, as such, the plant board voltages are directly tied to (and will swing with) the 161 kV switchyard voltages. The RSSTs are set on tap #1 which is the + 5% tap (169,050 V). This means that a 161 kV switchyard voltage of 169,050 V will give a low side board voltage of 7200 V. The 161 kV switchyard voltages are recorded and these recordings are maintained as plant records. A review of the first few weeks of randomly-selected recordings (dated 10/22/89, 11/13/90, 12/30/91, 1/17/92, 2/23/92 and 11/23/92) showed that the 161 kV switchyard voltage normally ranged between 166 kV and 169 kV. It occasionally went down to 165 kV and a few times (for short durations only) got as high as 171 kV. This means that the medium voltage board voltages ranged between 7070 V and 7198 V and occasionally went down to 7027 V and up to 7283 V.

Overvoltage protection is necessary to prevent equipment degradation due to overvoltage conditions over long periods of time. There are very few safety-related loads actually energized during this time of plant deferment and non-energized loads are not subjected to the potential overvoltage conditions.



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The original proposed correction action states "A voltage monitoring program will be placed into effect August 1, 1987." This corrective action was never implemented and is not required as all plant equipment will be subjected to preoperational and startup testing prior to system turnover. This testing will ensure that any degraded equipment will be identified (and can be corrected) prior to declaring a safety system operable.

The safety-related board voltage monitoring system will be placed back in service prior to system turnover, thereby assuring that any future board overvoltage conditions will be identified and can be evaluated.

A monitoring system is not cost-effective, will provide no added value over the required testing and should not be implemented.

CATD I-84-33-BFN-07 (LEVEL IIb, VIATION) - OFFICE OF ENGINEERING DID NOT PERFORM GENERIC EVALUATION OF PROBLEMS IN THE PIPING ANALYSIS AREA

CATD I-84-33-BFN-07 documents the issue that NSRS concluded that the Office of Engineering did not perform generic evaluation of problems in the piping analysis area. The NSRS recommendation should be followed. (Bellefonte Element Report 218.04 (D) contains some related issues.)

1. Inaccurate and incomplete piping analysis criteria.
2. Documentation of WBN piping analysis in RIMS is incomplete.
3. Procedures for performing, verifying, and documenting WBN piping analysis do not exist.
4. Some data used to perform piping analysis is inadequate. Examples are: valve data, operating modes, insulation data, and response spectra.
5. Training in the use and application of the design criteria, procedures, methods, and reports used to perform piping analysis is inadequate.
6. Inadequate verified computer programs have been used in analysis.
7. Inadequate schedule versus available manpower resulted in a lack of an independent review.

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8. Poor coordination between CEB, SWP, and OC resulted in information not being shared and requests not being handled on a timely basis.
9. Those weaknesses which apply to the alternate analysis only are:
  - A. The 47A053 Series drawings issued to OC to perform alternate analysis are inadequate. The drawings do not require documentation of the analysis and have never been verified or approved by CEB as a substitute for CEB 76-5 Report. The 47A053 drawing series does not consider the effect of thermal expansion load on supports when the temperature is 120 degrees F or less.
  - B. The drawings issued to OC for alternate analysis were used by insufficiently trained OC personnel to perform design functions without DNE supervision.

NOTE: Only the affected portions of the CAP are listed below.  
This deviation was later amended by another deviation.

**Original CAP**

The following nine corrective actions correspond to the nine findings listed in the problem description:

1. Correction action described in Employee Concerns Report CATD No. 218.04 (D), Employee Concerns Report 21807-BLN-01, PIRBLNCEB8630, PIRBLNCEB8633, PIRBLNCEB8701, and PIRBLNCEB8626. The Piping Analysis Review and Update Program, which shall be administered by a personal services contractor, shall correct the following deficiencies: (1) referencing of voided and/or superseded procedures by CEB-EP 21.12, the Bellefonte Rigorous Analysis Handbook, and Simplified Analysis Handbook, and (2) incompleteness of BLN-RAH-302, BLN-RAH-503, BLN-RAH-701, and BLN-SAH-603.
2. Corrective action described in PIRBLNCEB8633, NCRBLNCEB8213, and NCRBLNCEB8423. As a result of determining the corrective action plan for this item, CAQR BLF870200 has been written and its corrective action shall be implemented.
3. This problem does not exist.



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4. Corrective action described in NCRBLNCEB8307, NCRBLNCEB8417, NCRBLNCEB8301, PIRBLNCEB8619, PIRBLNCEB8639, CAQRBLF870016, NCR 79-18, NCRBLNCEB8201, NCRBLNNEB8605, BLEP-20, and NCRBLNCEB8006. The Piping Analysis Review and Update Program, which shall be administered by a personal services contractor, shall develop a controlled and documented valve index containing current valve information.
5. This problem does not exist.
6. Corrective action described in NCRBLNCEB8303.
7. Corrective action described in NCRBLNCEB8215.
8. This problem does not exist.
9. This condition does not exist on Bellefonte because DNE is no longer preparing any analysis calculations.

NOTE! THIS APPROVED CAP WAS DEFINED IN MORE DETAIL ON ATTACHMENTS 1 - 8 BUT IS NOT LISTED IN THIS REPORT EXCEPT FOR THE PORTIONS CHANGED.

On Attachment 4: (Only affected portion is listed)

"A controlled and documented valve index containing current valve information needs to be developed."

On Attachment 8: (Only affected portion is listed)

CEB analysis personnel are now part of the project organizations. Also, DNE representatives are present onsite to interface with DNC. DNE no longer prepares any analysis calculations. All design work is performed by DNE.

Revised CAP

1. Correction action described in Employee Concerns Report CATD No. 218.04 (D), Employee Concerns Report 21807-BLN-01, PIRBLNCEB8630, PIRBLNCEB8633, PIRBLNCEB8701, and PIRBLNCEB8626.. Per TVA/BLN's commitment to NRC, "Transmittal of TVA's Position Regarding Structural Analysis Methods & Criteria for Piping, Tubing, & Supports" (L44910313803) the following deficiencies will be evaluated and/or corrected: (1) referencing of voided and/or superseded procedures by CEB-EP 21.12, the Bellefonte Rigorous Analysis Handbook, and Simplified Analysis Handbook, and (2) incompleteness of BLN-RAH-302, BLN-RAH-503, BLN-RAH-701, and BLN-SAH-603.

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2. Corrective action described in PIRBLNCEB9633, NCRBLNCEB8213, and NCRBLNCEB8423. As a result of determining the corrective action plan for this item, CAQR BLF870200 has been written and its corrective action shall be implemented.
3. This problem does not exist.
4. Corrective action described in NCRBLNCEB8307, NCRBLNCEB8417, NCRBLNCEB8301, PIRBLNCEB8619, PIRBLNCEB8639, CAQRBLF870016, NCR 79-18, NCRBLNCEB8201, NCRBLNNEB8605, RLEP-20, and NCRBLNCEB8006. The Engineering Management System (EMS) will be developed to provide an information system that will serve as a repository for the Master Equipment List (MEL), i.e., current valve information.
5. This problem does not exist.
6. Corrective action described in NCRBLNCEB8303.
7. Corrective action described in NCRBLNCEB8215.
8. This problem does not exist.
9. The 47A053 drawing series and their implementation will be reviewed for adequacy and concurrence with the CEB 76-5 report. the effect of thermal expansion loads on the 47A053 drawing series for temperatures between 120 degrees F and 20 degrees F will be addressed in CATD 21801-BLN-01.

NOTE! THE REVISED CAP WAS DEFINED IN MORE DETAIL ON ATTACHMENTS 1 - 8 BUT IS NOT LISTED IN THIS REPORT EXCEPT FOR THE PORTIONS CHANGED.

On Attachment 4: (Only affected portion listed)

Engineering Management System (EMS) will provide an information system that will serve as a repository for the Master Equipment List (MEL) which represents the design and operational characteristics of the as-installed plant baseline configuration.

On Attachment 8: (Only affected portion listed)

All design engineering work (i.e., stress analysis and support designs) is now performed by an onsite nuclear engineering work force, which has many established procedures and programs to control the interface coordination between onsite organizations.



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Note: Other minor changes are as follows:

NCM 2.1 was replaced by QAM 2.1, R3.  
NCM 2.2 was replaced by QAM 2.2, R4.  
NEP 1.2 was replaced by SSP-1.3.  
NEP 3.0 was replaced by BLN-9.0-11.  
NEP 3.1 was replaced by BLN-14-EP-5.02.  
NEP 3.2 was replaced by BLN-DM-SA-2.0.  
NEP 3.5 was replaced by BLEP-06 and BLEP-2.0.  
NEP 3.8 was replaced by BLN-14-EP-5.05.  
NEP 5.1 was replaced by BLN-DM-SA-2.0.  
NEP 5.2 was replaced by BLN-14-EP-3.02.  
NEP 6.0 was replaced by BLN-14-EP-3.06.  
NEP 7.0 was replaced by BLN-14-PP-6.0 Series.  
Rigorous Analysis Handbook:  
    Sections 100-102,  
    Sections 200-212, and  
    Sections 300-304 were replaced by BLN-DM-SA-2.  
CEB-EP-21.12 was replaced by BLN-DM-SA-2.0.  
CEB-EP-121.03 was replaced by NEP 3.5 which was replaced by  
    BLEP-06 and BLEP-20.  
NCR (CEB) 79-18 was closed.

Summary of Technical Justification

CATD CAP not signed. The minor changes do not change the intent or results of the CAP, but bring it up-to-date with current organizational structures and processes.

CATD I-84-33-BFN-07 (LEVEL IIb DEVIATION) - OFFICE OF ENGINEERING DID NOT PERFORM GENERIC EVALUATION OF PROBLEMS IN THE PIPING ANALYSIS AREA

CATD I-84-33-BFN-07 documents the issue that the NSRS concluded that the Office of Engineering did not perform generic evaluation of problems in the piping analysis area. The NSRS recommendation should be followed. Bellefonte Element Report 218.04 (D) contains some related issues.

1. Inaccurate and incomplete piping analysis criteria.
2. Documentation of WBN piping analysis in RIMS is incomplete.
3. Procedures for performing, verifying, and documenting WBN piping analysis do not exist.

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4. Some data used to perform piping analysis is inadequate. Examples are: valve data, operating modes, insulation data, and response spectra.
5. Training in the use and application of the design criteria, procedures, methods, and reports used to perform piping analysis is inadequate.
6. Inadequate verified computer programs have been used in analysis.
7. Inadequate schedule versus available manpower resulted in a lack of an independent review.
8. Poor coordination between CEB, SWP, and OC resulted in information not being shared and requests not being handled on a timely basis.
9. Those weaknesses which apply to the alternate analysis only are:
  - A. The 47A053 Series drawings issued to OC to perform alternate analysis are inadequate. The drawings do not require documentation of the analysis and have never been verified or approved by CEB as a substitute for CEB 76-5 Report. The 47A053 drawing series does not consider the effect of thermal expansion load on supports when the temperature is 120 degrees F or less.
  - B. The drawings issued to OC for alternate analysis were used by insufficiently trained OC personnel to perform design functions without DNE supervision.

NOTE: Only the affected portions of the CAP are listed below.  
This revised submittal amends an earlier Level IIb deviation.

Original CAP

NOTE: Only the following sentence in Item #9 is affected:

"The 47A053 drawing series and their implementation will be reviewed for adequacy and concurrence with the CEB 76-5 report. The effect of thermal expansion loads on the 47A053 drawing series for temperatures between 120 degrees F and 20 degrees F will be addressed in CATD 21801-BLN-01."



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Revised CAP

- a. Develop and obtain approval of a new criteria for qualification of small bore piping which resolves adequacy questions concerning the 3GB0053 drawing series and general notes.
- b. Verify or develop supports, as required, to be utilized in conjunction with the implementation of the new small bore piping analysis criteria.
- c. Inactivate the 3GB0053 drawing series, as required.

Summary of Technical Justification

The proposed revision represents a change in the method of resolving BLN's 053 drawing series; however, it will not affect the overall results of the original CAP (i.e., qualification of the 3GB0053 drawing series...small bore piping seismic supports & general notes).

The CAP for CATD 21801-BLN-01 dispositioned the effects of thermal expansion loads between 20 degrees and 120 degrees as not significant and not required.

NOTE: This CAP deviation revises item 9 of the previously approved Level IIb CAP deviation. The remainder of the CAP is unchanged by this deviation.

CATD SWEC-BLN-04-003 (LEVEL IIb DEVIATION) - PORTIONS OF FIRE PROTECTION SYSTEMS DO NOT CONFORM TO DESIGN OF NFPA CODES

CATD SWEC-BLN-04-003 documents the issue that deviation 438, 438/83-10-01, Fire Protection Automatic Start and Relief Valve: Portions of Fire Protection Systems do not conform to design of NFPA codes.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective Action is in process. This CATD is issued for tracking purposes only. NRC Deviation 438, 549/83-10-01 is being tracked by Licensing.

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Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-04-004 (LEVEL IIB DEVIATION) - EXTERIOR FIRE PROTECTION WATER SYSTEM NOT INSTALLED UNDER A QA/QC PROGRAM

CATD SWEC-BLN-04-004 documents the issue of Deviation 438, 439/83-10-03, Fire Protection Water System: The exterior Fire Protection Water System was not installed under a QA/QC program. NRC stated that EN DES EPl.55, Fire Protection Quality Assurance Program, when implemented, will probably meet the requirements of SRP 9.5.1.

Original CAP

Corrective action is in process. This CATD is issued for tracking purposes only.

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only for NRC Deviation 438, 439/83-10-03.

Summary of Technical Justification

The original CAP was missing the required approval signature. Additions to the original CAP were for clarification only.

CATD SWEC-BLN-04-005 (LEVEL IIB DEVIATION) - IMPROPER FIRE DAMPER INSTALLATIONS

CATD SWEC-BLN-04-005 documents the issue of Deviation 438, 439/83-10-05, improper fire damper installations. This CATD to remain open pending completion of necessary fire damper installation modifications by TVA.

Original CAP

(The original CAP was missing the required approval signature.)



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Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC Deviation 438, 439/83-10-05 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-04-006 (LEVEL IIB DEVIATION) - REEVALUATION OF HYDROSTATIC TESTS OF FIRE PROTECTION PIPING SYSTEMS

CATD SWEC-BLN-04-006 documents the issue of IFI 438, 439/83-10-04, Reevaluation of Hydrostatic Tests of Fire Protection Piping Systems. This CATD to remain open until completion of hydro testing by TVA Mechanical Engineering Group.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC IFI 438, 439/83-10-04 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-07-001 (LEVEL IIB DEVIATION) - DEVELOPMENT OF VALVE MAINTENANCE REQUIREMENTS

CATD SWEC-BLN-07-001 documents the issue of Violation 438 439/85-01-01, Development of Valve Maintenance Requirements. The PM program for safety-related valves with Limitorque operators does not ensure prompt corrective action.

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Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC Violation 438, 439/85-01-01 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-07-002 (LEVEL IIB DEVIATION) - INADEQUATE PROCEDURES FOR UT EXAMINATIONS ON CONTAINMENT PENETRATIONS

CATD SWEC-BLN-07-002 documents the issue of Violation 438, 439/83-24-01, Questionable UT examinations, URI 438, 439/85-01-02, Exam requirements for electrical penetrations. Procedures are inadequate for performing UT examinations on containment penetrations.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. CATD is issued for tracking purposes only. NRC Violation 438, 439/83-24-01 and URI 438, 439/85-01-02 are being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.



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CATD SWEC-BLN-07-003 (LEVEL IIB DEVIATION) - RECORDS FOR REACTOR  
COOLANT BOUNDARY COMPONENTS DO NOT VERIFY POST WELD HEAT TREATMENT AND  
MATERIAL COUPON NOTCH TOUGHNESS

CATD SWEC-BLN-07-003 documents the issue of URI 438, 439/84-06-01, Post weld heat treatment: Records for reactor coolant boundary components do not verify proper post weld heat treatment and material coupon notch toughness.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC URI 438, 439/84-06-01 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-10-001 (LEVEL IIB DEVIATION) - FAILURE TO PROVIDE ANNUAL  
EYE EXAMINATIONS FOR QC PERSONNEL

CATD SWEC-BLN-10-001 documents the issue of Violation 438, 439/85-07-01, QC personnel eye examinations: TVA failed to provide annual eye examinations for QC personnel. Examinations are currently being given every three (3) years.

Original CAP

Corrective action is in process. This CATD is issued for tracking purposes only.

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC VIO 438, 439/85-07-01 is being tracking by Licensing.

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Summary of Technical Justification

The original CAP was missing the required approval signature. Additions to the original CAP were for clarification only. Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-11-001 (LEVEL Iib DEVIATION) - FAILURE TO ESTABLISH ADEQUATE MEASURES FOR STORAGE OF VALVES AND MOTORS

CATD SWEC-BLN-11-001 documents the issue of Violation 438, 439/85-08-01, Storage of Valves and Motors. TVA failed to establish adequate measures for storage of valves and motors.

Original CAP

Corrective action is in process. This CATD is issued for tracking purposes only.

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC Violation 438, 439/85-08-01 is being tracked by Licensing under VIO 85-08-01.

Summary of Technical Justification

The original CAP was missing the required approval signature. Additions to the original CAP were for clarification only. Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-12-001 (LEVEL Iib DEVIATION) - DEFICIENCIES IN THE PREVENTATIVE MAINTENANCE PROCEDURES

CATD SWEC-BLN-12-001 documents the issue of follow-up to Violation 438, 439/85-01-01 Preventative Maintenance Procedure: Reference SWEC-BLN-07. Deficiencies in the preventative Maintenance procedures for valves are not corrected in a timely manner.

Original CAP

(The original CAP was missing the required approval signature.)



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Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC Violation 438, 439/85-01-01 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item.

CATD SWEC-BLN-13-001 (LEVEL IIb DEVIATION) - CONCERN WITH OVERALL  
ENGINEERING ADEQUACY REGARDING ANCHOR BOLTS

CATD SWEC-BLN-13-001 documents the issue of follow-up to Violation 438, 439/85-02-01, Engineering Inadequacy: Reference SWEC-BLN-06-001. TVA presented erroneous engineering arguments concerning anchor bolts, which raised further NRC concern with overall engineering adequacy.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC Violation 438, 439/85-02-01 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing Licensing tracking item.

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**CATD SWEC-BLN-18-001 (LEVEL IIa DEVIATION) - INSPECTION PROCEDURES DO NOT PROVIDE GUIDANCE FOR PIPE SUPPORT GAPS**

CATD SWEC-BLN-18-001 documents the issue of Violation 438, 439/85-13-02, Pipe Support Inspection Procedures. Inspection procedures do not provide guidance, nor is in compliance with Specification G-43, for determining when measurements for pipe support gaps are to be taken.

**Original CAP**

Corrective action is in process. This CATD is issued for tracking purposes only for NRC Violation 438, 439/85-13-02.

**Revised CAP**

Corrective action is not required.

**Summary of Technical Justification**

Violation denied by TVA Final Report (L44850621808). Package sent to NRC 07/07/92.

**CATD SWEC-BLN-21-001 (LEVEL IIb DEVIATION) - RESOLVE CALIBRATION BLOCK ATTENUATION PROBLEMS**

CATD SWEC-BLN-21-001 documents the issue of IFI 438/85-10-02, Ultrasonic Test on Steam Generator Welds: Resolve problems in order to close IFI referenced above. Ensure N-UP-19 is in complete compliance with ASME Code, Sec. V, para. T-424. Resolve calibration block attenuation problems.

**Original CAP**

(The original CAP was missing the required approval signature.)

**Revised CAP**

Corrective action is in process. This CATD is issued for tracking purposes only. NRC IFI 438/85-10-02 is being tracked by Licensing.

**Summary of Technical Justification**

Issues are currently tracked to closure by an existing Licensing tracking item.



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CATD SWEC-BLN-22-001 (LEVEL IIb DEVIATION) - HVAC INSPECTION  
INCOMPLETE DUE TO OMISSION OF FOUR SECTIONS

CATD SWEC-BLN-22-001 documents the issue of Violation 438, 439/85-22-02, HVAC Duct Maps: Heating, Ventilation, and Air Conditioning (HVAC) Duct Maps, used to identify each duct section needing inspecting, omitted four (4) sections causing the HVAC inspection effort to be incomplete.

Original CAP

(The original CAP is missing the required approval signature.)

Revised CAP

Corrective action is in process. CATD is issued for tracking purposes only. NRC Violation 438, 439/85-22-02 is being tracked by Licensing.

Summary of Technical Justification

Issues are currently tracked to closure by an existing Licensing tracking item.

CATD SWEC-BLN-25-063 (LEVEL IIb DEVIATION) - INADEQUATE HOUSEKEEPING  
IN THE ELECTRICAL CABLE TRAYS AREA

CATD SWEC-BLN-25-063 documents the issue of NRC SALP - Cable Tray Housekeeping: Housekeeping in the area of electrical cable trays are inadequate.

Original CAP

(The original CAP is missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC SALP item is linked to NRC Violations 85-06-01 and 85-15-01, which are being tracked under VIO 85-06 and NC0850320001 respectively.

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Summary of Technical Justification

Issues are currently tracked to closure by an existing Licensing tracking item.

CATD SWEC-BLN-25-091 (LEVEL IIB DEVIATION) - INCORRECT FITTINGS ON TUBING INSTALLATION

CATD SWEC-BLN-25-091 documents the issue of NRC SALP - Inadequate QC Inspections and Drawings: QC accepted incorrect fittings on tubing installation. Inspection drawings do not clearly reflect inspection boundaries.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NCR BLN 3984 was written to address SALP issue.

Summary of Technical Justification

NCR BLN 3984 was written in response to the issue identified in the SALP Report and will be used to track SALP item to closure.

CATD SWEC-BLN-25-092 (LEVEL IIB DEVIATION) - UNTIMELY CORRECTIVE ACTION COMPLETIONS FOR INSTRUMENT AND CONTROL CONSTRUCTION DEFICIENCIES

CATD SWEC-BLN-25-092 documents the issue of NRC SALP - Corrective actions for construction deficiencies: Corrective action completions for instrument and control construction deficiencies were not always timely.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC SALP item is being tracked against NRC Violation 438, 439/85-12-03.



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Summary of Technical Justification

While noted in the I&C section of the SALP, this deficiency ties directly to a violation cited earlier in IR 85-12 (85-12-03). This item will be tracked to closure by VIO 438, 439/85-12-03.

CATD SWEC-BLN-25-094 (LEVEL IIb DEVIATION) - FIRE DAMPER INSTALLATIONS DO NOT CONFORM TO INDUSTRY STANDARDS AND PRACTICES

CATD SWEC-BLN-25-094 documents the issue of NRC SALP - Fire Damper installations: Fire damper installations do not always conform to generally accepted industry standards and practices.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC SALP item is identified to Licensing item NCO860202001 (Unit 1) and NCO860202002 (Unit 2).

Summary of Technical Justification

Issues are currently tracked to closure by an existing Licensing tracking item. This item was reported as a deficiency to the NRC on May 28, 1986: BLRD-50-438/84-33 and 439/84-31. See NCRBLNMEB 8403.

CATD SWEC-BLN-25-095 (LEVEL IIb DEVIATION) - OBSTRUCTION OF OVERHEAD PLANT EQUIPMENT

CATD SWEC-BLN-25-095 documents the issue that the discharge pattern of some of the Auxiliary Building fire sprinkler heads is obstructed by overhead plant equipment.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC SALP item is being tracked against URI 438, 439/84-24-02.

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Summary of Technical Justification

Issues are currently tracked to closure by an existing licensing tracking item. URI 438, 439/84-24-02 was identified in NRC IR 84-24.

CATD SWEC-BLN-25-104 (LEVEL IIb DEVIATION) - DESIGN CONTROL QA AUDIT PROGRAM DEFICIENCIES

CATD SWEC-BLN-25-104 documents the issue of NRC SALP - Design Control QA Audit Program: The Design Control QA Audit Program contains deficiencies and is not sufficiently comprehensive.

Original CAP

Corrective action is in process. This CATD is issued for tracking purposes only.

Revised CAP

Corrective action is in process. This CATD is issued for tracking purposes only. NRC VIO 438, 439/85-03-01 is being tracked by Licensing.

Summary of Technical Justification

The original CAP was missing the required approval signature. Additions to the original CAP were for clarification only. Issues are currently tracked to closure by an existing Licensing tracking item.

CATD SWEC-BLN-25-105 (LEVEL IIb DEVIATION) - DEFICIENCIES IN THE STORAGE AND MAINTENANCE OF SAFETY-RELATED EQUIPMENT

CATD SWEC-BLN-25-105 documents the issue of NRC SALP - Equipment Storage and Maintenance: There are deficiencies in the storage and maintenance of safety-related equipment.

Note: This CAP deviation was later amended by another Level IIb CAP deviation.

Original CAP

Corrective action is in process. This CATD is issued for tracking purposes only.

Revised CAP

NRC SALP item is linked to NRC Violation 438, 439/84-20-01 which is tracked by Licensing.



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Summary of Technical Justification

The original CAP was missing the required approval signature. Additions to the original CAP were for clarification only. Issues are currently tracked to closure by an existing Licensing tracking item.

CATD SWEC-BLN-25-105 (LEVEL IIb DEVIATION) - DEFICIENCIES IN THE STORAGE AND MAINTENANCE OF SAFETY-RELATED EQUIPMENT

CATD SWEC-BLN-25-105 documents the issue of NRC SALP - Equipment Storage and Maintenance: There are deficiencies in the storage and maintenance of safety-related equipment.

NOTE: This CAP deviation amends an earlier Level IIb deviation.

Original CAP

NRC SALP item is linked to NRC Violation 438, 439/84-20-01 which is tracked by Licensing.

Revised CAP

NRC SALP item is linked to NRC Violation 438, 439/84-20-01 which is tracked by Licensing. The original violations were based upon requirements that were contained in site procedure QCP-2.4 Rev. 8 (BLN Protective Coating for Concrete and Carbon Steel). Site procedure SSP-10.1 (Procurement of Materials and Services) was issued to require that the initiator of procurement requisitions identify the storage requirements for any paint/protective coating materials being procured. Site procedure BLN-9.0-13 (Preparation of Engineering Procurement Packages) was issued to require that the Procurement Engineer identify the storage level and any special storage requirements for each procurement package processed. Site procedure SSP-10.2 (Material Receipt and Inspection) was issued to require that the Receipt Personnel and Inspectors verify that the storage level of paint/protective coating materials received was per the procurement package, Engineering instructions, or manufacturers recommendations. Site procedure SSP-10.3 (Handling and Storage of Materials and Spare Parts) was issued to control and maintain the storage level and/or special storage requirements that were established at receipt.

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The approved CAP tracked the deficiency to resolution through inspection and the closure of NRC violations 438, 439/84-20-01. These violations cited BLN for not maintaining protective coating material storage as per site procedure QCP-2.4 Rev. 8 (BLN Protective Coating for Concrete and Carbon Steel) Appendix B, Section 2.1.6. The original violation was identified when BLN was in full construction activity and the painting program was at its fullest scope. Since that time, BLN has undergone many changes and transitions, such as completion of all major construction, deferment, and finally restarting project completion. As these changes and transitions have evolved, the associated procedures and responsibilities have also changed.

The original referenced procedure QCP-2.4 (BLN Protective Coating for Concrete and Carbon Steel) Revision 8 is no longer active or applicable.

Protective coating materials should be purchased in a very limited amount since it is anticipated that materials will only be required for touchup and modifications; however, if any major coating rework is required prior to operation, then the new procedures will assure the quality of the coatings is maintained. The revisions now in place assure that all materials not just coatings are properly stored and maintained to continue qualifications and warranties through installation and operation.

Protective coating materials will be stored as per the Engineering and/or manufacturers recommendations and therefore all qualifications for the material will be maintained. The storage conditions in the protective coating materials (paint) warehouse (Building WC) has been maintained within the original 50 degrees F. to 100 degrees F. temperature range. Storage monitoring records (hydrothermograph charts) are reviewed by the PM/Storage Coordinator and no deficiencies have been noted. A random review of these records confirm that the temperature has been maintained within the specified ranges from the time that BLN-1.5-8 (Handling and Storage of Materials and Spare Parts) Rev. 0 (10/15/91) became effective until the present. The exterior of Building WC adjacent to the entry door is labeled "50 degrees F. MIN. and 100 degrees F. MAX." Any protective coating materials that are identified to require temperature ranges more restrictive than specified will be controlled on an individual case by case basis.

The quality of the protective coating materials has not been degraded in any manner by the procedure changes. The current method does ensure that the qualifications and manufacturers warranty of the protective coating materials are maintained and controlled.



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4.4.2 Level III CAP Deviations

Level III CAP deviations were identified during the closure process for the following 32 BLN CATDs:

10300-BLN-01	23105-BLN-01	24101-BLN-01
10400-BLN-01	23701-BLN-01	30801-BLN-01
17101-BLN-04	23701-BLN-02	40700-BLN-04
19200-BLN-03	23702-BLN-01	40700-BLN-05
20406-BLN-01	23702-BLN-02	40700-BLN-06
20501-BLN-06	23801-BLN-01	40700-BLN-07
21302-BLN-01	23900-BLN-01	80104-BLN-02
21302-BLN-02	23900-BLN-02	80154-BLN-01
21302-BLN-03	23900-BLN-05	80154-BLN-02
22205-BLN-01	24000-BLN-01	80201-BLN-02
22911-BLN-01		
22911-BLN-03		

4.5 Nonplant Specific

During this reporting period, there were two Level II CAP deviations, five Level IIa CAP deviations, two Level IIb CAP deviations, and four Level III CAP deviations for NPS CATDs.

4.5.1 Level II, IIa and IIb CAP Deviations

CATD 10900-NPS-03 (LEVEL IIb DEVIATION) - QUESTIONABLE PIDG LUGS ON SOLID CONDUCTORS

CATD 10900-NPS-03 documents the issue that terminations using PIDG lugs on solid conductors have been questioned in SCR WBNEEB8537. The condition also exists at SQN.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Replace PIDG terminal lugs or add solder to PIDG terminal lugs for those used in safety-related circuits where failure would create a safety concern.

To prevent recurrence, TVA has revised General Construction Specification G-38 to specify the correct lugs to use. Also, construction and plant implement and inspection procedures have been revised.

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Summary of Technical Justification

The original CAP was not changed. The purpose of the CAP deviation was to obtain the missing approval signature.

CATD 11200-NPS-01 (LEVEL IIa DEVIATION) - NO DNC CORPORATE REVIEW OF SITE WORK CONTROL PROGRAMS

CATD 11200-NPS-01 documents the issue that there is currently no DNC corporate review of site work control programs. Lack of such a review precludes the transfer of program enhancements from site to site and violates the Nuclear Procedures System Policy issued by S. A. White on June 6, 1986, which says that the procedures used at each site for a given task should be the same.

Original CAP

Work on the Nuclear Standards Program is currently in progress. May 1987 is the target date for completion of the Standards. Subsequent to the completion of the ONP Standards, implementing standards for the Nuclear Construction Program Manual can be initiated. There will be division level Construction Engineering Procedures (CEPs), General Construction Engineering Procedures (GCEPs), Modification and Addition Procedures (MAPs), and Technical Performance Procedures (TPPs) written to provide a corporate position for standardization of the construction and modification work control program. There may exist some differences between the sites, but this is due to site specific requirements.

Revised CAP

TVA has maintained the same concept of controlling work as the Nuclear Procedures System Policy with only minor differences. The Site Specific Procedures (SSPs) must meet the requirements of the Nuclear Power Standards (STD) with some variation allowed to address specific site conditions.

STD 9.3, Plant Modification and Design Change Control, establishes the requirements for control of plant modifications. An SSP is written specifically for each site to control the design and implementation of plant modifications at the site. The approval process for the site procedure includes the site nuclear engineering and procedures units which assures compliance with the STD.



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In addition to the above, engineering requirements are established by the General Specifications (G-Specs). Modification and Addition Instructions (MAI) are written to control the work so that the installed modification conforms to the requirements of the applicable G-Specs.

Transfer of enhancements from one site to another is attained through the process by which the standard and G-Specs are issued and revised.

**Summary of Technical Justification**

The work at the operating sites and Watts Bar Unit 1 is controlled under Nuclear Standard 9.3.

The Division of Nuclear Construction has been eliminated. Future construction projects within Nuclear Power may be accomplished either under the direction of TVA or under the direction of a contractor.

For those construction projects completed under the direction of TVA, the work control program will adhere to Nuclear Power Standards and G-Specs.

For those construction projects to be completed under the direction of a contractor, there will no longer be a need for coordination between sites, as these will be completed in accordance with the contractor's work control programs and turned over to TVA control as completed.

**CATD 30403-NPS-01 (WATTS BAR PORTION ONLY: LEVEL IIa DEVIATION) -  
PROBLEMS WITH STANDING WATER IN ELECTRICAL MANHOLES AT ALL SITES**

CATD 30403-NPS-01 documents the issue that problems were identified with standing water in electrical manholes at all sites. Although this is not considered safety-related, a potential safety issue may exist with regard to "water treeing" of insulation on level V voltage cables. CATD 30403-SQN-01 was written for DNE to address this issue at SQN; however, because this issue is generic, a response should be made applicable for all sites.

**Original CAP**

TVA will take corrective action for this CATD in two phases.

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For the first phase, the following actions will occur:

1. Sump pump deficiencies will be corrected in all Class 1E/CSSC manholes and handholes except those used for cabling to the additional diesel generator buildings. This will include sump pump power supplies, controls, and piping, and will be accomplished using applicable maintenance instructions (if the above cannot be accomplished prior to restart of SQN unit 2 it shall be acceptable to use temporary means to ensure the water level is maintained below the cables within the manhole/handhole.)
2. Existing high potential and/or megger test results for all Class 1E/CSSC medium and low voltage power cables routed through the manholes and handholes will be obtained. If test results are not available, tests will be performed in accordance to applicable site procedures or instructions. These test results will be evaluated to determine if the cables are adequate for their application. Any found to be inadequate will be replaced.

The second phase of the evaluation will include the following:

1. TVA will evaluate all Class 1E/CSSC cables and splices in all manholes/handholes for fitness of duty relative to past and future submergence with respect to manufacturer's test data.
2. TVA will investigate and determine the root cause of known MH/HH flooding. This investigation will include as a minimum identification of and deficiencies in the following:
  - a. Sump, sump pump, and piping design and installation.
  - b. Reliable, automatic operation of sump pumps with controls and power connection protected from flooding.
  - c. Water-tightness of covers and gaskets.
  - d. Location of covers above grade.
  - e. Internal sealing to prevent excessive leakage.
3. TVA will determine corrective action to prevent recurrence which may include the addition of water level alarms and the incorporation of an upgraded Preventative Maintenance Program.



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Revised CAP

The existing WBN Manhole Design and Preventive Maintenance Program will assure safety-related (Class 1E) voltage level V cables will not be subjected to long-term flooding. The degrading mechanism of insulation water treeing at WBN will not be present. Therefore, no corrective action is required.

Summary of Technical Justification

Conduit duct bank manholes serve the same function as junction boxes by providing a cable pullpoint and location for splices while supporting/protecting the cables from damage, including missiles and earthquakes.

WBN manholes containing Class 1E cables are designed and constructed to resist flooding because:

- 1) structure is poured-in-place concrete;
- 2) steel cover is equipped with a gasket and bolted in place; with manhole opening extending above grade;
- 3) Interface with conduit duct banks are sealed with PVC strips; and
- 4) spare sleeves are plugged.

If leakage should occur, from the manhole or duct system, sump pumps with level switches for automatic pump operation are located in the manholes to prevent water accumulation. WBN has instituted a Preventive Maintenance Program for the cleaning and restoration of Manhole Sump Pumps. The program (PM) identification is O-PMP-040-0015 File 01 and requires inspection to be performed every six months which is more conservative than NCO910175002 which committed inspection every 12 months for sump pump operability and flooding. As required by the PM, these inspections are carried out by Work Orders which record the as-found condition.

SSP 6.03, "Preventive Maintenance Program," requires equipment degradation to be identified and corrected before malfunction occurs. Inspections which identify breakage to preclude proper sump pump operation will trigger work initiating documents to repair the problem. SSP 6.03 further requires (after WBN begins commercial operation) components to be monitored and trended through the "Equipment History and Failure Trending Program" per SSP 6.04. This trending will prove valuable in considering alternative design for components which frequently require maintenance.

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Therefore, the evidence presented above assures that adequate design will restrict the water accumulation into those manholes, and Preventive Maintenance procedures will ensure that cables will not be subjected to long-term flooding in the duct bank system. The water treeing effect of cable insulation is therefore not a problem at WBN. By assuring cables are not subjected to long-term flooding in manholes and all splices of Class 1E cables are qualified for submergency, the degrading mechanisms that would cause cable failure are eliminated.

In addition, WBN does not have the flooding problems experienced at SQN because of the different grade elevations compared to the lake level. SQN and WBN are located on Chickamauga Lake, with the lake level between sites experiencing a negligible elevation gradient (maximum normal pool is EL 683.0 at both sites). For WBN, the majority of manholes containing Class 1E cables are located where the grade is at EL 728 - with the lowest grade elevation for a manhole containing Class 1E cables at EL 714 (manholes 8A & 9B), and cable trays containing Class 1E voltage level 5 cables in these manholes at EL 702'-8". SQN manholes are located at grade EL 706 or lower, with the cables of concern at a proportionally lower elevation. Therefore, hydraulic loading (water pressure) on the manhole/conduit banks is higher at SQN, with a subsequent increase in the flooding effect.

A review of previous inspection results per the PM concluded that isolated cases of minor manhole flooding was evident and caused by inoperative sump pumps. Work Requests were initiated to correct the problem. Inspections by NE during the cable replacement program for cable damage and ampacity confirm that V5 cables show no evidence of subjection to flooding in manholes. Therefore, operative pumps would contain water within the sump.

CATD 30700-NPS-01 (LEVEL IIa DEVIATION) - LACK OF CORPORATE GUIDANCE, CONTROL, AND OVERVIEW OF THE PORC PROCESS AT WBN, SQN, AND BFN

CATD 30700-NPS-01 documents the issue that as noted in the Findings and Collective Significance sections of report 30700, there is a lack of corporate guidance, control, and overview of the PORC process at WBN, SQN, and BFN.



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Original CAP

A corporate-level revision to the adm. plant technical specifications (TSs) (Section 6) will be prepared and will be proposed to the NRC as applying to all TVA nuclear plants. This is planned to be submitted to NRC by 12/30/87. Further, appropriate standardized PORC practices among sites will be prepared and used as an audit base. Implementation of corporate procedure 0604.04 will provide a further degree of standardization and a reduction in the extraneous PORC workload. All of these efforts will improve the effectiveness of the annual DNQA audits and routine ISEG monitoring. These efforts will also allow the continuing NSRB overview to be more focused on substantive consistency among plants.

Revised CAP

No corrective action required.

Summary of Technical Justification

No revision to section 6 of the technical specifications will be submitted to the NRC. Reviews have been performed to determine what differences exist in the technical specifications between sites. These reviews have not revealed any problems in the existing technical specifications due to the differences. In fact, Sequoyah indicated a desire not to standardize the technical specification section 6, noting that it did not appear to be a prudent use of TVA or NRC resources (reference S53 930205 801).

The Collective Significance section of the subcategory report 30700 states that the Plant Operations Review Committee (PORC) deficiencies were identified by NRC, DQA audits, and INPO. It goes on to state that site specific corrective actions were either in progress or had already been completed. Further review of current data indicates that some of the same organizations originally referenced in the concern as having found deficiencies in the PORC process have more recently reviewed PORC activities at BFN and found no deficiencies (reference Browns Ferry Inspection Report 93-02) and have cited no deficiencies at Sequoyah and Watts Bar over the past two years of inspection reports. After reviewing the matter, it has become clear that there is no requirement or immediate necessity to standardize section 6 of the technical specifications between sites. Therefore, revisions to section 6 of the Technical Specifications are not required.

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CATD 31212-NPS-01 (WATTS BAR PORTION ONLY: LEVEL IIa DEVIATION) -  
ACCEPTANCE CRITERIA FOR THE "PAT-DOWN" SEARCH FUNCTION HAS NOT BEEN  
ADEQUATELY ADHERED TO BY PSS

CATD 31212-NPS-01 documents the issue that during periods of inoperative electronic search equipment, acceptance criteria for the "pat-down" search function has not been adequately adhered to by PSS.

Original CAP

- A. Action to be taken to identify similar instances of inadequate pat-downs will be through an established ongoing audit/evaluation program. The Nuclear Regulatory Commission (NRC) and the Division of Nuclear Quality Assurance (DNQA) will perform annual audits and/or unannounced inspections. Site Security managers and the Nuclear Security Branch (NSB) will perform ongoing evaluations of the program and officers. Shift supervisors will perform on-shift performance evaluations. All will be documented.

At Watts Bar Nuclear Plant (WBN) the action to be taken will start when the security program reenters a schedule that completes training of individual officers and places the security program in an operational state for fuel load license. The target date to complete the actions necessary to have the program in place is 30 days prior to the future established fuel load date for Unit 1.

At Sequoyah Nuclear Plant (SQN), the target date to complete the action necessary to have the program in place is prior to a future established restart date of Unit 2. This plan is already being performed at SQN preparatory to restart. The Site Security Manager has already performed an operational readiness test. NRC is completing its second preparatory inspection in four months (March 6, 1987). DNQA completed its annual audit on February 6, 1987.

- B. Actions to be taken or planned that correct identified instances of inadequate pat-downs will be through remedial training and/or disciplinary action. Each case will be judged on its own merits. Additionally, action completion dates will be assigned according to each case need.



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- C. Actions to be taken or planned and dates of completion that will preclude recurrence of inadequate pat-downs are provided in the above paragraphs. It is noted that individual inaction or willful poor performance are not factors that can always be controlled. However, experience has shown that the plan will provide management with the best tool available.
- D. For action completed to date, see above paragraphs. The results of the plan will be evidenced when fuel load license is received at WBN.

Revised CAP

Delete any reference to WBN from the original corrective actions. Original corrective actions for SQN remain the same.

The proposed corrective actions for WBN are listed below.

- A. Prior to scheduled security lockdown and implementation of regulatory requirements detailed training will be provided to all security officers. This training will include a detailed description of approved methods of conducting a pat-down search. In addition, officers will be required to demonstrate these pat-down search methods as a part of the training. Pat-down search processes will be addressed in annual retraining provided in conjunction with the Training and Qualification Plan (T&Q) requirements.
- B. Site Security procedures will be developed and issued which address specific requirements on processes associated with pat-down searches and related activities.
- C. All identified instances of apparent failure to conduct adequate pat-down searches will be evaluated on a case-by-case basis. Confirmed instances of failure to conduct adequate pat-down searches will be addressed through remedial training and/or disciplinary action, as appropriate.
- D. Corrective actions addresses above will be completed 30 days prior to security lockdown. This date will allow completion of all required initial training and procedure implementation. Annual retraining will be conducted each year on or before the anniversary date of initial training.

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The security lockdown date will be determined by the scheduled fuel load date for Unit 1.

At the present time, the tentative date for security lockdown is scheduled for January 15, 1994 and is based on an April 15, 1994 fuel load date.

**Summary of Technical Justification**

Initial concerns stated that pat-down searches are not conducted in a thorough manner, especially if detection equipment is not in working condition or is not otherwise available. Concern IN-85-311-00401 stated that a small pistol could be brought onto the WBN site and into the protected area without difficulty by concealing it in the crotch area; due to the fact that the crotch area is not covered by the pat-down technique used at WBN and the relative insensitivity of the metal detectors to small metal objects concealed in the center of the body area.

Regulatory requirements do not require a specific search of the crotch area. 10 CFR 73.55 states when the licensee has cause to suspect that an individual is attempting to introduce firearms, explosive, or incendiary devices into the protected areas, the licensee shall conduct a physical pat-down search of that individual. Whenever firearms or explosives detection equipment at a portal is out of service or not operating satisfactorily, the licensee shall conduct a physical pat-down search of all persons who would otherwise have been subject to equipment searches. These processes ensure adequate protection against sabotage by an insider.

Concern IN-86-107-00301 stated personnel are required to empty their pockets prior to passing through explosive/metal detectors. However, if an individual sets one of the device alarms off, they are allowed to put items back into their pockets prior to receiving the mandatory pat-down search. CI expresses that this practice detracts from the effectiveness of the pat-down search.

As stated previously, this activity is not specifically addressed in regulatory requirements. Industry-wide practices do not include a search of the crotch area. Normally personnel are not allowed to leave small items in their pockets during a pat-down search.



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WBN training lesson plan (WBN T19) will address pat-down search methods to be used by site security personnel. During training, security officers will be instructed to search the groin area to ensure compliance, not embarrassment. Officers will be required to perform an actual pat-down search to ensure officers understand how to correctly perform a pat-down search. This practical examination must be performed to the satisfaction of the training instructor. In addition, training will be conducted in a manner which instructs security officers to pay special attention to breast pockets and other pockets. Officers will have to be able to identify all items contained in pockets during the pat-down search. This is normally accomplished by having the person being search empty the contents of all pockets prior to submitting to the pat-down search. Contents will not normally be returned to the pockets until the pat-down search is complete.

WBN Site Security procedures will also provide information and describe processes utilized to conduct pat-down searches.

Inspections and audits which are conducted may not encompass the search processes. Adequate training and effective procedure development/implementation are the best methods to address the corrective actions necessary to ensure searches are conducted properly and consistently.

At WBN, the corrective actions to be taken will start when the security program reenters a schedule that includes training of individual officers and places the security program in an operational state for a fuel load license. The target date to complete the actions necessary to have the program in place is 30 days prior to a future established fuel load date for Unit 1.

**CATD 40300-NPS-01 (LEVEL IIa DEVIATION) - LACK OF CONTROL OF SCRAP MATERIAL**

CATD 40300-NPS-01 documents the issue that there is a lack of control of scrap material. A program needs to be implemented that would control scrap or retired material from the work area through removal from the site.

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**Original CAP**

ONP Standard 1.2.28, "Saleable Scrap - Identification, Segregation, Storage, Control, and Sale," which will supersede the present procedure, DPM N72A14, Section II, Part II, "Saleable Scrap - Sale, Grading, Segregating, Storage, and Control," will be written to define the requirements and responsibilities for the control of scrapped material at all TVA nuclear facilities. The standard will regulate the handling will regulate the handling of scrap or retired material from the work area through the removal from the site.

**Revised CAP**

In accordance with TVA-NQA-PLN89-A, Rev. 3, Section 8.3, Nuclear Power Standards 6.1, 6.2, and 10.4 have been issues containing requirements that prevent scrap material from being installed in safety-related applications.

Business Practice BP-219 was issued to establish recommended procedures which adequately regulate the handling of scrap material from the work area through the removal from site.

**Summary of Technical Justification**

The QA program, implemented through Nuclear Power Standards, ensures that only correct and accepted items are installed and used. STD-10.4 requires site personnel assuming control of material to verify the correct identity of an item or component prior to installation. STD-6.1 requires documented evidence that an item is the correct material prior to installation. STD-6.2 outlines material requirements for Work Orders (WO) including verification of material. Adherence to these requirements prevents scrap or any other unauthorized material from being installed.

All nuclear plant sites except SQN have complied with the BP. SQN has not yet elected to comply with BP-219 due to there being no regulatory requirements for the control of scrap material. In addition, STDs 6.1, 6.2 and 10.4 identify requirements to prevent the installation of scrap or unauthorized materials.



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CATD 707-NPS-01 (LEVEL II DEVIATION) - UP-TO-DATE ORGANIZATION  
BULLETINS HAVE NOT BEEN ISSUED FOR THE DIVISION OF NUCLEAR ENGINEERING  
AND THE DIVISION OF NUCLEAR CONSTRUCTION

CATD 707-NPS-01 documents the issue that up-to-date organization bulletins have not been issued for the Division of Nuclear Engineering and the Division of Nuclear Construction.

Original CAP

(The original CAP was missing the required approval signature.)

Revised CAP

Employee Relations and Development will maintain up-to-date organization charts for Nuclear Power and the Nuclear Power, Administrative Support and Procedures organization will develop and maintain a documented system of organization descriptions.

Summary of Technical Justification

The CAP for this CATD is missing the required approval signature and is submitted for SMRC approval in accordance with Nuclear Power Standard STD 1.2, section 3.3.7.

The proposed CAP satisfies the intent of the original CAP. Minor modifications have been made to update the CAP to the current organizational structure.

CATD 717-NPS-04 (LEVEL II DEVIATION) - MANAGEMENT CONTROLS ARE NOT IN  
PLACE TO ENSURE THE QUALITY OF JOB DESCRIPTIONS

CATD 717-NPS-04 documents the issue that Management Controls are not in place or not sufficient to ensure the quality of job descriptions meet or exceed the qualifications of a regulatory document.

Original CAP

(The original CAP was missing the required approval signature.)

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Revised CAP

Implement in Nuclear Power, management guidelines governing the administration of position descriptions and qualifications, which identify responsibilities for ensuring position descriptions are current and accurate, and include proper minimum qualifications requirements. Guidelines will also address the minimum qualifications of positions governed by regulatory or national standards.

Summary of Technical Justification

The CAP for this CATD is missing the required approval signature and is submitted for SMRG approval in accordance with Nuclear Power Standard STD 1.2, section 3.3.7.

The proposed CAP satisfies the intent of the original CAP. Minor modifications have been made to update the CAP to the current organizational structure.

CATD R-85-07-NPS-01 (BELLEFONTE PORTION ONLY: LEVEL IIB DEVIATION) -  
APPOINTMENT OF RECORDS MANAGER TO ENSURE RECORDS OF QEB EQUIPMENT AND  
MATERIALS ARE INDEXED AND STORED

CATD R-85-07-NPS-01 documents the issue that a manager should be appointed to ensure that records of QEB source inspected equipment and materials are indexed and stored. The scope should include all past and future QEB source inspected procurement records for SQN, WBN, and BLN.

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

Original CAP

BLN - Following activation of BLN, this CATD will be reopened and site specific corrective actions will be developed.

Revised CAP

BLN

1. Site Standard Practice SSP-2.9 was issued and assigns responsibility for the site Records Management program to the Management Services Manager. SSP-2.9 requires all records to be indexed as needed for retrievability.



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2. Future procurement records will also be subject to the requirements of the SSP-2.9, which will ensure continued maintenance of Quality Assurance Records by Management Services.
3. Resolve SCAR BLP870208.

**Summary of Technical Justification**

All BLN records maintained in Knoxville (including QEB records) were shipped to the site for storage during deferral.

SCAR BLP870208 identified discrepancies in the submittal of BLN contract records to MEDS (now RIMS). Corrective action for this SCAR includes verification that all contract records (including QEB records) are filmed and indexed into RIMS. This will ensure future retrievability of BLN contract documentation. As part of the SCAR corrective action, the BLN QEB source-inspected records will be included in Site Records Management program, under the responsibility of the Management Services Manager to ensure records are assembled and stored in a retrievable manner.

**4.5.2 Level III CAP Deviations**

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

19200-NPS-02  
21804-NPS-01  
23801-NPS-09  
24000-NPS-01