



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

William J. Museler
Site Vice President, Watts Bar Nuclear Plant

JUN 07 1993

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of the Application of) Docket Nos. 50-390
Tennessee Valley Authority) 50-391

WATTS BAR NUCLEAR PLANT (WBN) - NRC INSPECTION REPORT NO. 390, 391/93-23 -
REPLY TO NOTICE OF VIOLATION

This letter responds to Inspection Report 390, 391/93-23 dated May 7, 1993, which identified three violations concerning examples of inadequate corrective action, inadequate design control, and improper specification of test equipment, respectively.

Enclosure 1 contains TVA's response to the subject violations. Enclosure 2 summarizes the commitments made in this letter.

Should there be any questions regarding this information, please telephone P. L. Pace at (615) 365-1824.

Very truly yours,

William J. Museler

Enclosure
cc: See page 2

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Page 2

JUN 07 1993

cc (Enclosure):

NRC Resident Inspector
Watts Bar Nuclear Plant
P.O. Box 700
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNIT 1 REPLY TO NRC'S MAY 7, 1993 LETTER TO TVA VIOLATIONS 390/93-23-01, 390/93-23-02, and 390/93-23-03

DESCRIPTION OF VIOLATION (390/93-23-01)

10 CFR 50 Appendix B Criterion XVI, Corrective Action, requires that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality the measures shall assure that the corrective action taken will preclude repetition.

Contrary to the above, on April 6, 1993, the measures established to correct a coordination problem with the Westinghouse DS-206 type breakers were inadequate to prevent further recurrence of the problem. As a consequence, four Westinghouse type DS-206 breakers with long time and short time (LS) trip devices did not have the required jumper installed to disable a discriminator circuit. This discriminator circuit if not disabled could result in breaker coordination problems.

REASON FOR THE VIOLATION

On March 13, 1992, Design Change Notice (DCN) M-18152 was initiated to defeat the LS Amptector discriminator circuit in Westinghouse DS-206 breakers by adding jumpers. On August 27, 1992, workplanning personnel initiated a Field Design Change Notice (F-DCN) F-20336 against DCN M-18152 because the field changes could not be performed as required. A pre-package walkdown by workplanning personnel discovered that certain breakers were missing in the 480-volt shutdown board cubicles described in DCN M-18152. Additionally, some breakers identified in DCN M-18152 as having type LS Amptectors were found to have type LI Amptectors. (LI Amptectors do not contain a discriminator circuit.) The Modifications Work Completion Statement for DCN M-18152 was signed on January 9, 1993.

A predecessor DCN to DCN M-18152 had been initiated on October 10, 1990. DCN M-12212 was issued to replace/reset the protective devices on various breakers, including breakers on the 480-volt shutdown boards. (Based on calculation WBN-EEB-MS-T108-0008, the protective devices for various electrical boards/components had been determined to be inadequate.) In some cases, DCN M-12212 required breakers with type LI Amptectors to replace breakers with type LS Amptectors. On August 27, 1992, field engineers initiated DCN F-20340 against DCN M-12212 because the field changes could not be implemented as required. Some breaker swaps on the 480-volt shutdown boards could not be made because of breaker physical size differences or the field engineer observed an easier method to accomplish the desired results.

DCNs F-20336 and F-20340 affected many of the same 480-volt shutdown board breakers and were worked simultaneously. The failure to defeat the six LS Amptectors was caused by the following:

1. During the DCN closure process for DCN M-18152, design engineering failed to review the F-DCN (DCN F-20340) written against DCN M-12212 for impact on the work performed. The review of predecessor DCNs during the DCN closure process is required by procedure and would have discovered that DCN F-20336 and DCN F-20340 involved many of the same 480-volt shutdown board breakers. Additionally, the review would have detected the failure to defeat the LS Amptector discriminator circuit on five of the six subject breakers. The cause for this failure is an inadequate design review.
2. A total of 52 workplans were issued to implement DCN M-18152 and predecessor DCN M-12212. Multiple workplanners were assigned to prepare these workplans with no overall accountability assigned. Consequently, a workplan to defeat the LS Amptector discriminator circuit for one Westinghouse DS-206 breaker was not prepared. This was not caught during the DCN closure process. The cause for this failure is an inadequate program for DCN accountability for the work planning process.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

1. A field and shop walkdown of known Westinghouse DS-206 breakers with type LS Amptectors identified five installed spare breakers and one breaker in the electrical shop which did not have their discriminator circuits defeated. These discriminator circuits will be defeated by July 9, 1993.
2. On May 27, 1993, a memorandum was issued to DCN closure engineers to reinforce their responsibility to account for partially implemented Drawing Change Authorizations (DCAs) to ensure the partials equal a fully implemented DCA. Second party reviewers were reminded to recheck partial DCAs to ensure they are fully implemented.
3. Modifications will review 10 percent of DCNs requiring field work and containing five or more workplans which were closed prior to March 26, 1993. This population consists of approximately 80 DCNs. The 10 percent review selection will be biased towards DCNs having the potential for problems similar to those associated with DCN M-18152 in order to determine the accuracy of the DCN closure process. This review is scheduled to be completed by July 15, 1993.

CORRECTIVE STEPS TO BE TAKEN TO AVOID FURTHER VIOLATIONS

1. Design engineering will issue a memorandum to design personnel cautioning on the importance of checking the impact of predecessor DCNs during the DCN closure process. This action is scheduled for completion by June 30, 1993.

2. Modifications will develop and implement a program of individual DCN accountability for the work planning process by June 30, 1993.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved by July 15, 1993.

DESCRIPTION OF VIOLATION (390/93-23-02)

10 CFR 50, Appendix B, Criterion III, Design control requires that design control measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. These design control measures shall provide for verifying or checking the adequacy of design.

Contrary to the above, at the time of the inspection on April 6, 1993, the design control measures applied to design drawings 1-45W749-1, -1A, -2, and -2A were inadequate to assure that the as-built configuration of the 480 Volt Shutdown Power System was correctly translated into as-built design drawings. As a consequence the normal and alternate power feeders for the diesel auxiliary boards, a load off the shutdown boards, had been deleted from the drawing and were shown as spares when in fact the feeder cables were either still installed or a Temporary Modification was in place.

REASON FOR VIOLATION

The violation occurred because the designer for design change DCN M-12064-A (Relocation of Diesel Auxiliary Board Feeder Supplies) failed to specify certain related design activities (installation of conductor and feeder cable under DCNs M-18154-A and M-19913-A, respectively) as prerequisites to issuance of drawings for DCN M-12064-A. Although the designer correctly determined that the physical work associated with DCNs M-18154-A and M-19913-A was not prerequisite to the physical work for M-12064-A, the absence of these prerequisites in DCN M-12064-A resulted in issuance of configuration control drawings (CCDs) which reflected the final intended configuration prior to all work being completed. The inclusion of these DCNs as predecessor documents within DCN M-12064-A (in accordance with Engineering Administrative Instruction (EAI)-3.05 "Design Change Control") would have prevented completion (and drawing issuance) of DCN M-12064-A until predecessor work was completed.

DCN M-12064-A was issued in May 1992 to relocate the normal and alternate diesel auxiliary board power feeder supplies from the 1600 amp bus to the 3200 amp bus of each of eight 480-volt shutdown boards to resolve breaker coordination and short-circuit problems. This relocation included the addition of circuit breakers, rerouting of the feeder cables, and the installation of current limiting reactors (CLRs) between the 3200A and 1600A buses of each 480-volt shutdown board. The overall design change was to be reflected on WBN's

electrical system key diagram (drawing 1-15E500-2) as well as single-line (drawing series 45W749) and connection diagrams, all of which were included as Drawing Change Authorizations (DCAs, i.e., proposed drawing changes) under DCN M-12064-A. During the development of M-12064-A, it was recognized that the feeder cables were being replaced under DCN M-18154-A due to cable ampacity problems. Therefore, it was decided to combine the cable rework in DCNs M-12064-A and M-18154-A. To facilitate efficient implementation, the modification under M-18154-A was later split such that DCN M-18154-A revised the cable raceway and M-19913-A replaced the cable. Thus, the various design tasks required to implement the overall modification for DCN M-12064-A were as follows:

- DCN M-12064-A - Overall conceptual design
- Installation of CLRs and Breakers
- De-termination of existing cable from 1600A Bus
- Issuance of final drawings

- DCN M-18154-A - Installation of raceway for new cable

- DCN M-19913-A - Installation of new cable from Dsl Bds to 3200A Bus

Although notes describing the above were included within the DCNs, the notes in DCN M-12064-A failed to identify the cable installation as a predecessor to completing the final design and issuing updated drawings. As a result, upon the completion of field work specific to DCN M-12064-A (i.e., installation of CLRs and breakers and de-termination of cable), DCN M-12064-A was declared complete and drawings were issued which reflected completion of the overall modification prior to the work being completed under DCNs M-18154-A and 19913-A. TVA notes that although DCN M-12064-A appropriately resulted in de-termination of cables from the 1600A bus and depiction of same on single line drawings, re-termination of some of the power feeders on the 1600A bus occurred using the temporary modification (T-Mod) process. This is an acceptable process to facilitate temporary power connections which are depicted on Main Control Room redline drawings. Removal of the T-Mod would require restoration of the cable configuration in accordance with the current CCD.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

To correct the specific drawing errors for this event, appropriate drawing changes have been or will be issued by June 30, 1993, against the electrical key diagram (1-15E500-2) and DCN M-19913-A to reflect the installation of new power feeders to the 3200A bus.

CORRECTIVE STEPS TO BE TAKEN TO AVOID FURTHER VIOLATIONS

Engineering management will issue an event summary for this issue to appropriate design personnel by June 25, 1993. The summary will emphasize the requirement to identify design prerequisites in both the "design scope" section of DCNs (Block 16) and on the individual DCAs and emphasize the need to identify as prerequisites all DCNs/DCAs affecting final drawing issuance.

Engineering will perform an evaluation to determine whether other design changes could have resulted in premature issuance of drawing updates which conflict with the field configuration. The evaluation will include a sample of 10 recently issued (1992 and 1993) electrical and mechanical design changes involving multiple DCNs. The results of this evaluation and any additional required actions will be summarized in a submittal to NRC by July 9, 1993.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

With respect to the identified discrepancies, TVA will achieve full compliance by June 30, 1993. The schedule for any additional required actions will be provided in TVA's July 9, 1993 submittal.

DESCRIPTION OF VIOLATION (390/93-23-03)

10 CFR 50, Appendix B, Criterion V requires that activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with those instructions, procedures, or drawings. Startup Manual Procedure (SMP) 8.0, Revision 7, paragraph 2.3.D.13, gave the requirement for identifying measuring and test equipment (M&TE) in preoperational test instructions. It stated in part that "M&TE shall be designated by instrument model and/or type including range and accuracy requirements."

Contrary to the above, Preoperational Test Instruction PTI 212-01, Revision 0, received final approval by the Startup Manager on February 2, 1993, without the appropriate range and accuracy requirements for M&TE being specified in the procedure.

REASON FOR VIOLATION

The violation occurred because the procedure writers and reviewers failed to maintain sufficient attention to detail to ensure strict compliance with Startup Manual Procedure (SMP) 8.0, Revision 7, paragraph 2.3.D.13 which stated that "M&TE shall be designated by instrument model and/or type including range and accuracy requirements". The procedure did not provide flexibility for specifying M&TE used for non-critical measurements.

The Preoperational Test Instructions (PTI) are prepared by knowledgeable and experienced personnel who specify the appropriate test equipment to be used to measure acceptance criteria and/or data used as input for acceptance criteria calculations. It is essential that M&TE used for acceptance criteria have the proper range and accuracy for the critical measurements, however, certain other applications such as verifying contact status, continuity, etc. are not dependent on the range and accuracy and requires only that the M&TE properly functions. The PTIs generally specified information sufficient to obtain M&TE suitable for the intended service but failed to comply with the explicit detail of SMP 8.0, Revision 7, paragraph 2.3.D.13. For example, PTI 212-01 specified in step 4.2.1 the need for a multimeter capable of detecting 480V ac and 300V dc, and a 3200

ohm resistor (25 watt minimum), which was considered adequate for the selection of the appropriate test equipment. The reviewers failed to identify that no range or accuracy was specified.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

A review of all issued PTIs, Acceptance Test Instructions (ATI), and Generic Tests (GT) was directed by the Startup Support Manager. The review determined that M&TE requirements were properly specified in all issued Generic Tests in accordance with SMP 6.0, Revision 10, and that nine PTIs and eleven ATIs contained incomplete range and accuracy specifications of M&TE as required by SMP 8.0, Revision 7. The following PTIs and ATIs were found deficient:

* PTI 211-01	ATI 001-05
PTI 212-01	ATI 020-01
PTI 212-02	* ATI 200-01
PTI 212-03	* ATI 201-01
PTI 212-04	* ATI 203-01
PTI 235-C1	* ATI 206-01
PTI 236-01	* ATI 225-01
PTI 030J-01	* ATI 226-01
* PTI 200-01	* ATI 238-01
	ATI 239-01
	* ATI 244-01

For those PTIs and ATIs which are not implemented, change notices (CN) to correct deficient M&TE specifications for range and tolerance will be issued prior to test start. For those which are completed or started, Startup and Test (SUT) will conduct an evaluation of the impact of the nonconforming M&TE specifications on the tests, and will implement retesting if M&TE specification is determined to have an adverse impact on test results. The PTIs and ATIs for systems which have been turned over to Operations (identified by an asterisk in the above list) will be evaluated by June 30, 1993 and all other corrective actions are scheduled to be completed by system turnover.

The Startup Support Manager issued a memorandum on April 13, 1993, to the Test Working Group (TWG) and Joint Test Group (JTG) highlighting this identified problem and reinforcing the requirements of SMP 8.0, Revision 7.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATIONS

The Startup Support Manager issued a memorandum on April 30, 1993, to the Startup Test Engineers, Test Working Group, and Joint Test Group emphasizing the need for attentiveness to the detailed requirements of SMP 8.0.

SMP 8.0 has been revised (Revision 9) to provide clarification for the specification of M&TE in PTIs and ATIs.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved by final system turnover for the above tests.

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT UNIT 1 REPLY TO NRC'S MAY 7, 1993 LETTER TO TVA VIOLATIONS 390/93-23-01, 390/93-23-02, and 390/93-23-03

LIST OF COMMITMENTS

The following summarizes commitments made in Enclosure 1:

Violation 390/93-23-01

1. Discriminator circuits for the six Westinghouse ES-206 breakers with type LS Amptectors which did not have their circuits defeated will be defeated by July 9, 1993.
2. Modifications will review 10 percent (approximately 80) of DCNs requiring field work and containing five or more workplans which were closed prior to March 26, 1993. The review will be biased towards DCNs having the potential for problems similar to those associated with DCN M-18152 and will be completed by July 15, 1993.
3. Design engineering will issue a memorandum by June 30, 1993, to design personnel cautioning on the importance of checking the impact of predecessor DCNs during the DCN closure process.
4. Modifications will develop and implement a program of individual DCN accountability for the work planning process by June 30, 1993.

Violation 390/93-23-02

1. To correct the specific drawing errors for this event, appropriate drawing changes have been or will be issued by June 30, 1993.
2. Engineering management will issue an event summary for this issue to appropriate design personnel by June 25, 1993.
3. Engineering will perform an evaluation of 10 electrical and mechanical DCNs to determine whether other design changes could have resulted in premature issuance of drawing updates which conflict with the field configuration. The results of this evaluation and any additional required actions will be summarized in a submittal to NRC by July 9, 1993.

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT UNIT 1
REPLY TO SRC'S MAY 7, 1993 LETTER TO TVA
VIOLATIONS 390/93-23-01, 390/93-23-02, and 390/93-23-03

LIST OF COMMITMENTS (CONTINUED)

Violation 390/93-23-03

1. For those PTIs and ATIs which are not implemented, change notices (CN) to correct deficient M&TE specifications for range and tolerance will be issued prior to test start.
2. For those PTIs and ATIs which are completed or started, Startup and Test (SUT) will conduct an evaluation of the impact of the nonconforming M&TE specifications on the tests, and will implement retesting if M&TE specification is determined to have an adverse impact on test results and will be completed by system turnover.
3. The PTIs and ATIs for systems which have been turned over to Operations will be evaluated by June 30, 1993.