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MAY 13 1991

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

Gentlemen:

In the Matter of the Application of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - NRC INSPECTION REPORT NO. 50-390/91-02
REPLY TO NOTICE OF VIOLATION 50-390/91-02-01

TVA has reviewed the subject inspection report and notice of violation,
and the response is provided in Enclosure 1.

Enclosure 2 lists the commitments made in this submittal.

The delay in the submittal of this response was discussed with Region II
Staff. If there are any questions, please telephone P. L. Pace at
(615) 365-1824.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Mark O. Medford

Enclosures
cc: See page 2

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U.S. Nuclear Regulatory Commission

MAY 13 1991

Enclosures

cc (Enclosures):

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ENCLOSURE 1

REPLY TO NOTICE OF VIOLATION
50-390/91-02-01

Description of Violation

10 CFR 50, Appendix B Criterion V as implemented by TVA's Nuclear Quality Assurance Plan, TVA-NQA-PLN 89, Revision 0, paragraph 6.1, requires that activities affecting quality shall be accomplished in accordance with instructions, procedures, or drawings, and shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Drawings 47W600-1837-1, 47W600-895-2, and Construction Process Instruction (CPI)-8.1.8-J-100A, "Installation of Instrumentation Lines," require that instrument lines slope be within an acceptable band of 1/4- to 1/2-inch.

Examples 1 and 2:

Contrary to the above, on January 29-31, 1991, the inspector found that:

1. Instrument sensing line (2-SENL-67-901A, Emergency Raw Cooling Water) slope was outside the tolerances specified on drawing 47W600-1837-1.
2. Instrument sensing line (1-SENL-65-303A, Emergency Gas Treatment) slope was outside the tolerances specified on drawing 47W600-895-2.

Admission or Denial of the Violation Examples

TVA admits the violation examples occurred as stated.

Reason for the Violation

The exact cause of the instrument sense line damage could not be determined. Construction activities have been identified in the areas of the sense lines. TVA has concluded the examples of inadequate slope appear to be a result of damage to the sense lines after installation and acceptance. The sense lines identified in the violation were inspected on January 5 and August 16, 1990, respectively as part of the Instrument Line Corrective Action Program. The inspection data sheets specifically noted acceptable slope. The identified deficiencies were in the sense line interface area where the instrument lines connect to process piping. In order to account for process pipe movement (both dynamic and thermal), the sense line installation must provide flexibility in the interface area. Installation requirements for the interface area often include relatively small slope tolerances and relatively long spans between supports in order to maintain the required flexibility. Small slope tolerances and long spans between supports make the sense line interface area particularly susceptible to a slope out-of-tolerance condition.

Corrective Steps Taken and Results Achieved

Beyond the two examples of instrument sense line slope deficiencies identified by NRC, TVA identified two additional slope deficiencies. The first discovery was around the time of the subject NRC inspection and involved a sense line located in a known construction area. The other instance was discovered in a walkdown review which was directed by TVA management in response to the NRC inspection findings and was concluded prior to the exit meeting. The walkdown review involved 45 sense lines.

TVA has reviewed the sense line slope requirements provided by the governing engineering specifications. The maximum slope requirements are specifically identified on individual drawings to serve as tolerance requirements for routing purposes. Once the lines are installed, initially inspected, and accepted, some inadvertent bending is permissible so long as minimum slope and maximum ovality requirements are met. Minor slope changes have an insignificant effect on the stress analysis. In consideration of this fact, a revision has been made to the engineering specification to ensure that minimum slope requirements are maintained and to also recognize that minor instrument sense line configuration changes could occur because of plant operating conditions and personnel interaction after initial installation. This revision was completed March 8, 1991.

TVA issued an information notice to WBN employees regarding the importance of maintaining plant configuration and prevention of damage to components on April 26, 1991.

Watts Bar Nuclear Plant now requires, as a condition of plant access, personnel to sign a statement acknowledging the requirement to avoid activities which could be detrimental to equipment. This requirement is set forth in Watts Bar Nuclear Plant's "Construction Project Rules and Regulations." As a further deterrent, a statement was added to these rules and regulations on May 3, 1991, indicating that disciplinary action may result from violating the above requirement. This document will be reissued as part of periodic General Employee Training by May 29, 1991 as a reminder to the employee of his acceptance of this responsibility as well as others.

Corrective Steps To Avoid Further Violation

Using the revised specification discussed above, TVA will reinspect and evaluate slope on sensing lines which have already been installed and accepted by quality control as part of the Instrument Line Corrective Action Program. This program pertains to those sense lines associated with instruments that perform (1) reactor trip actuation, (2) engineering safeguards feature actuation, (3) post-accident monitoring, or (4) automatic actuation of features performing a primary safety function. As exceptions to reinspecting using the revised engineering specification, sense lines that have been insulated will be visually inspected for obvious damage, and sense lines already in a protective area, i.e., sleeves and penetrations, will not be inspected. Sense lines determined to be unacceptable as a result of this evaluation activity will be repaired or replaced.

TVA will provide training to WBN Modifications personnel to demonstrate how easily permanent plant equipment (including sense lines) can be degraded. This training will be developed and implemented by July 29, 1991.

TVA will use the information collected during the line reinspection to identify and review installed line segments which could be particularly susceptible to slope out-of-tolerance conditions. This will include areas where personnel interactions are likely and interface areas where the span between supports or the line routing makes maintenance of the slope value difficult. Design changes will be made as required.

Further, to minimize collateral damage to equipment, construction workplans will contain a mandatory work instruction, requiring protection of adjacent components, especially those sensitive to damage. This instruction is to be included in prejob briefings. As part of the completion activities for workplans, supervisors must document that they have complied with these work instructions. This process will be in place prior to resumption of construction work.

Date When Full Compliance Will be Achieved

The schedules to perform the reinspection and engineering review discussed above are contingent upon the release of the current construction stopwork order and the resolution of activities associated with the Quality Improvement Plan. These schedules will be submitted to NRC within 45 days of resuming construction work.

Description of Violation

CPI-8.1.8-C-501-A, "Bolting Procedure," requires Unistrut clamps be properly installed and aligned.

Example 3:

Unistrut clamp (1-043-AF-003, drawing 47W625-704) spring nut was misaligned with the Unistrut channel.

Admission or Denial of the Violation Example

TVA admits the violation example occurred as stated.

Reason for the Violation

TVA has determined the Unistrut clamp spring nut misalignment occurred because the installer and the quality control inspector failed to follow the Construction Process Instruction.

CPI-8.1.8-C-501-A, Section 6.6, requires the installation of the Unistrut spring nut to properly align it with the Unistrut channel. The workplan contained a data sheet which was used to document the Unistrut installation. The data sheet, which was directly out of CPI-8.1.8-C-501-A, had been signed as installed and inspected. The Unistrut clamp had been initialed as accepted by the inspector on February 6, 1990.

Corrective Steps Taken and the Results Achieved

The quality control inspector has been instructed on the requirement of Unistrut spring nut engagement with emphasis placed on attention to detail.

The following reinspection plan has been established:

- A sample reinspection of 10 spring nut inspections by the quality control inspector involved will be performed.
- A sample reinspection of 5 other types of inspections by the quality control inspector involved will be performed.
- A sample reinspection of 20 other spring nut inspections by other quality control inspectors will be performed.
- The results of these reinspections will be evaluated at the conclusion of the reinspection activities to determine if further action is warranted.
- These inspections will be completed by June 14, 1991.

Corrective Steps Taken to Avoid Further Violation

TVA will correct the misaligned spring nut cited in this violation by June 14, 1991.

Because of a construction stopwork order, no ongoing work is being performed by the Modifications organization. Before recommending construction, craft will be fully qualified to perform assigned task as a part of the Quality Improvement Program. This program includes a mock-up containing a Unistrut spring nut misalignment for employee awareness training.

Date When Full Compliance Will be Achieved

As discussed above, craft certification for assigned tasks and mock-up training will be completed prior to restarting overall construction activity.

ENCLOSURE 2

LIST OF COMMITMENTS

1. A revision has been made to the engineering specification to ensure that minimum slope requirements are maintained and to also recognize that minor instrument sense line configuration changes could occur because of plant operating conditions and personnel interaction after initial installation. - Complete
2. TVA issued an information notice to WBN employees regarding the importance of maintaining plant configuration and prevention of damage to components. - Complete
3. A statement was added to the Construction Rules and Regulations indicating that disciplinary action may result from violating the requirement to avoid activities which could be detrimental to equipment. - Complete
4. This document will be reissued as part of periodic General Employee Training by May 29, 1991.
5. TVA will reinspect and evaluate slope on sensing lines which have already been installed and accepted by quality control as part of the Instrument Line Corrective Action Program. As exceptions to reinspecting using the revised engineering specification, sense lines that have been insulated will be visually inspected for obvious damage, and sense lines already in a protective area, i.e., sleeves and penetrations, will not be inspected. Sense lines determined to be unacceptable as a result of this evaluation activity will be repaired or replaced. The schedule for this activity will be submitted to NRC within 45 days of resuming construction work.
6. TVA will provide training to WBN Modifications personnel to demonstrate how easily permanent plant equipment (including sense lines) can be degraded. This training will be developed and implemented by July 29, 1991.
7. TVA will use the information collected during the line reinspection to identify and review installed line segments which could be particularly susceptible to slope out-of-tolerance conditions. Design changes will be made as required. The schedule for this activity will be submitted to NRC within 45 days of resuming construction work.
8. To minimize collateral damage to equipment, construction workplans will contain a mandatory work instruction, requiring protection of adjacent components, especially those sensitive to damage. This instruction is to be included in prejob briefings. As part of the completion activities for workplans, supervisors must document that they have complied with these work instructions. This process will be in place prior to resumption of construction work.

9. The quality control inspector has been instructed on the requirement of Unistrut spring nut engagement with emphasis placed on attention to detail. - Complete
10. Sample reinspection will be performed as follows:
 - A sample reinspection of 10 spring nut inspections by the quality control inspector involved will be performed.
 - A sample reinspection of 5 other types of inspections by the quality control inspector involved will be performed.
 - A sample reinspection of 20 other spring nut inspections by other quality control inspectors will be performed.
 - The results of these reinspections will be evaluated at the conclusion of the reinspection activities to determine if further action is warranted.

These inspections will be completed by June 14, 1991.

11. TVA will correct the misaligned spring nut cited in this violation by June 14, 1991.
12. The craft will be fully qualified to perform assigned task as a part of the Quality Improvement Program. This program now includes a mock-up containing a Unistrut spring nut misalignment for employee awareness training. Craft certification for assigned tasks and mock-up training will be completed prior to restarting overall construction activity.