



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SEQUOYAH NUCLEAR POWER PLANT UNITS 1 & 2
SAFETY EVALUATION REPORT FOR EMPLOYEE CONCERNS
ELEMENT REPORT 220.11(B), REVISION 2
"SUPPORT DESIGN GENERAL TEMPERATURE VARIATION CONSIDERATION"

I. Subject

Category: Engineering (20000)
Subcategory: Pipe Design General (22000)
Element: Temperature Variation Consideration (22011)
Concern: IN-85-103-002

The basis for Element Report 220.11(B), Revision 2 is Employee Concern IN-85-039-003 which questioned the pipe/hanger calculation consideration of temperature variations in the thermal analysis.

II. Summary of Issues

The Employee Concerns Task Group (ECTG) report identified the following two issues for the employee concern.

1. The expansion of structural members restrained between two rigid points (such as concrete surfaces) will cause additional loading on members.
2. The thermal expansion of pipe will impose loads on the pipe supports.

III. Evaluation

A technical review of Employee Concerns Element Report 220.11(B), Revision 2 was performed by NCT Engineering, Inc. under NRC Contract No. 05-86-156. The results of this review are summarized in the attached NCT technical evaluation report dated December 8, 1987 on Employee Concerns Element Report 220.11(B), Revision 2.

Element Report 220.11(B), Revision 2 found that the employee concern was valid for the issue of thermal expansion of restrained structural members at Sequoyah. TVA proposed corrective actions to address the finding in the ECTG report. The final verification of TVA's corrective actions has not been completed by the ECTG.

The NCT review of Element Report 220.11(B), Revision 2 and TVA's completed corrective actions found that TVA's review of the issues were acceptable, however, TVA had not completed all of the corrective actions at the time of the review. The NCT report also references Element Reports 218.1 and 218.4 for additional discussions on piping system thermal analysis. The staff

concur with the conclusions presented in the NCT technical evaluation report. In addition to the review of pipe supports, the staff is reviewing the issue of restrained thermal expansion for other structural members as part of the review of the Sequoyah Nuclear Performance Plan. This review will be the subject of a separate staff evaluation.

The NCT technical evaluation report identified two open issues. Based on discussions with ECTG, a concern was identified by ECTG with the implementation of the field modifications. The report recommends review of the final resolution of the ECTG concern with TVA's implementation of field modifications. Additionally, the NCT report recommends review of the four calculations that were to be completed by TVA as a part of the corrective action plan.

IV. Conclusions

Based on the review of Employee Concerns Element Report 220.11(B), Revision 2 and TVA's completed corrective actions, the staff finds that TVA's review of Employee Concern IN-85-103-002 will be adequately addressed when the ECTG verification effort is complete. TVA's completion of the corrective action calculations and the final ECTG verification resolution should be reviewed by the staff prior to restart of Sequoyah. Additional review of piping thermal analysis is contained in the staff's evaluation of Element Reports 218.1 and 218.4. Review of restrained thermal expansion of structural members other than pipe supports will be the subject of a separate staff safety evaluation.

V. Addendum

The safety evaluation report for this element report contained two restart open issues. The first issue involved the receipt of the completed employee concerns element verification report. This report has been received and reviewed by the staff. The second open issue involved TVA's completion of their evaluation of the four pipe supports prior to restart. These pipe supports evaluations were reviewed during an inspection on the week of February 15, 1988. Based on the review of the completed actions, the open restart items are considered resolved.



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SAFETY EVALUATION REPORT BY THE OFFICE OF SPECIAL PROJECTS

EMPLOYEE CONCERN ELEMENT REPORT 21304

"ELECTRICAL PROCEDURES DO NOT PROPERLY

IDENTIFY IEEE STANDARDS"

TENNESSEE VALLEY AUTHORITY

SEQUOYAH NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-327 AND 50-328

I. SUBJECT

Category: Engineering (20,000)
Subcategory: Electrical Procedures (21,300)
Element: Electrical Procedures Do Not Properly Identify IEEE
Standards (21304)
Employee Concern: IN-86-259-X11

The basis for element report 21304 Revision 0, prepared December 15, 1986, is a Watts Bar employee concern stating, "If TVA electrical procedures do not include IEEE standard requirements or their equivalent, numerous problems can result."

II. SUMMARY OF ISSUE

TVA reviewed this concern for applicability to Sequoyah. A TVA review group studied this concern and found that the TVA presentation of electrical information may not always be effective but their review found that electrical standards and requirements have been effectively implemented in Sequoyah electrical designs.

III. EVALUATION

NRC and its consultant, SAIC, reviewed the employee concern. This concern and a similar concern element 21302 entitled, "Inadequate Electrical Testing, Planning and Engineering Participation" were the subject of the February 10, 1987 meeting in the TVA Bethesda offices. Additionally, employee concerns 21301 and 21303 regarding the conduct of electrical calculations and inadequate electrical standards and guides are also related to this concern. In response to the staff's concern expressed in the February 10, 1987 meeting, TVA submitted additional information in their letter of March 19, 1987. In this submittal, TVA demonstrated that the requirements of IEEE Standards 308-1971 and IEEE Standard 317-1971 have been included for the Auxiliary Feedwater System. Based on this, TVA has concluded that the requirements of IEEE Standards have been adequately reflected in the design criteria, guides, standards and specifications.

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During the recent November 30, 1987 NRC audit, NRC and SAIC reviewed the adequacy of the auxiliary feedwater system. Specifically, electrical and systems operational and preoperational test data were reviewed and system performance assessed and was acceptable to the staff.

IV. CONCLUSION

Based on our review of electrical and instrumentation calculations, the auxiliary feedwater system operational performance data, and the similar reviews of electrical adequacy and electrical standards in employee concerns 21301, 21302 and 21303, we can conclude that while some aspects of electrical testing and planning were poorly documented, the recent TVA reanalyses and the operational data show that the electrical design areas appear to be adequately designed and the operational problems are normal and minor. Therefore, this concern is considered to be satisfactorily resolved for Sequoyah.