



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

SEQUOYAH NUCLEAR POWER PLANT, UNITS 1 AND 2
SAFETY EVALUATION REPORT FOR EMPLOYEE CONCERNS
ELEMENT REPORT EN 231.06(B)
"FIRE PROTECTION SYSTEMS QUALITY ASSURANCE DOCUMENTATION"

1.0 INTRODUCTION

A concern was raised on Bellefonte Nuclear Plant that addresses TVA's review of General Construction Specification G-73, "Inspection, Testing, and Documentation Requirements for Fire Protection Systems and Features," which is applicable to all TVA plants and is, therefore, generic to Sequoyah. The concern was that TVA Engineering did not establish the Quality Assurance (QA) requirements for fire protection features consistent with the requirements of Specification G-73.

2.0 EVALUATION

Category: Engineering (23100)
Subcategory: Fire Protection (23106)
Element: Fire Protection Systems Quality Assurance Documentation
(231.06(B))
Employee Concern: QCP-10.35-1

The basis for Element Report EN23106(B) - SQN, Rev. 2, dated January 27, 1987, is Sequoyah Employee Concern QCP-10.35-1 which states:

"Discrepancy between G-73 designation of fire protection drawings (QA) and engineering treatment of fire protection drawings (as non-QA)."

TVA reviewed the background on the development of the fire protection system design and documentation requirements over the past decade. In general, the fire protection features at Sequoyah were initially designed to conform to the NRC guidelines of Appendix A to Branch Technical Position APCS 9.5-1, "Guidelines for Fire Protection of Nuclear Power Plants Docketed Prior to July 1, 1976." These features were reviewed and found acceptable by the NRC as documented in SER Supplement 1, dated February 1980. Additional modifications were required following issuance of 10 C.F.R. Appendix R to meet the revised NRC fire protection and safe shutdown requirements.

During TVA's evaluation of Specification G-73 and discussions with TVA fire protection personnel, it was determined that this specification was developed

to establish control over the construction activities to assure that the fire protection features were constructed in accordance with the construction documents that were prepared by engineering. Specification G-73 was not intended to provide jurisdiction over design functions. Other engineering design standards, criteria and procedures were available for this purpose. These engineering documents establish the QA requirements that must be applied to all of the fire protection features. Fire protection systems are generally installed under a "limited QA program" and fall under the requirements of G-73 for construction documentation. The "limited QA program" provides a full inspection and documentation program for the construction and installation of fire protection features, but is of a reduced scope from the traditional QA Requirements of 10 C.F.R. 50 Appendix B. However, this program was developed to meet the NRC fire protection guidelines. Fire protection systems which interact with nuclear safety systems such as those in which seismic supports are needed, must conform to the QA requirements of 10 C.F.R. 50 Appendix B. Specification G-73 states that in these situations the requirements of 10 C.F.R. 50 Appendix B are applicable in lieu of the "limited QA program". The responsibility to identify the type QA program to be applied to the applicable fire protection feature is assigned to design engineering.

However, the wording of Specification G-73 gives the impression that this specification has jurisdiction over TVA engineering design. This is not true. TVA has committed to revise Specification G-73 to eliminate this problem. Corrective Action Tracking Document 231.06-SQN-1 has been issued to track completion and implementation of these corrective actions. This is acceptable for restart.

3.0 CONCLUSION

The concern of the apparent discrepancy between the identification of the QA requirements for fire protection features between engineering construction documents and construction QA requirements of Specification G-73 is not valid. Specification G-73 is a construction document prepared by engineering that specifically defers jurisdiction of QA issues to engineering. However, confusion does exist by Specification G-73 as to whether or not QA requirements are deferred to other documents. TVA is to revise Specification G-73 to correct this problem. The NRC staff concludes that TVA's investigation and resolution of the concerns described in Element Report QCP-10.35-1 were adequate. No further NRC action is required.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
TVA EMPLOYEE CONCERN SPECIAL PROGRAM, REPORT NO: 23203
SEQUOYAH ELEMENT, PIPING AND VALVE DESIGN
IMPROPER PIPING INSULATION MATERIAL

I. SUBJECT

Category: Engineering
Subcategory: Piping Design
Element: Improper Piping Insulation Material
Report Number: 23203

II. Summary of Issues

- a. The concerned individual believed that mineral fiber piping insulation material, widely used at Watts Bar Nuclear Plant and Sequoyah Nuclear Plant (SQNP), is easily damaged and deteriorates over a period of time. The individual felt that a "harder" type of insulation should have been used instead.
- b. An employee questioned the acceptability of nonmetallic thermal insulation being installed at SQNP on austenitic stainless steel components in safety-related systems.

III. Evaluation

- a. The concern that mineral fiber piping insulation is easily damaged and tends to deteriorate

The validity of this concern could not be determined. At SQNP there is a limited use of mineral fiber insulation, primarily on piping outside containment. The insulation applied to the pipes are covered with a 0.016 inch thick aluminum jacket and has good resistance to vibration. If damaged, the affected sections can be easily replaced. The acceptability of mineral fiber piping insulation has been demonstrated by satisfactory service experience in widespread power plant applications. Based on its review, the TVA concluded that this concern is not valid for the mineral fiber types of piping insulation installed at SQN.

The NRC staff reviewed the information submitted by the TVA and the applicable NRC guidelines. The staff's evaluation indicates that the use of mineral fiber insulation on piping would not violate the applicable NRC guidelines of 10 CFR 50, Appendix B, GDC 2, and the SRP Sections 3.7.1 - 3.7.4 and 3.9.1 - 3.9.6. In the element report submitted to the staff, TVA stated that mineral fiber insulation used at SQNP is consistent with the SQN Plant Design Criteria and the TVA Insulation Specifications. The staff concurs with the TVA's conclusion that this concern is not valid.

- b. The concern that the type of insulation used on austenitic stainless steel may be of unacceptable quality.

During the investigation of this concern, TVA found that stress corrosion cracking could develop from the contact of austenitic stainless steel with insulating materials containing excessive levels of bleachable chloride and fluoride ions. The NRC guideline on this subject is found in Regulatory Guide (RG) 1.36, "Nonmetallic Thermal Insulation for Austenitic Stainless Steel." The TVA Investigation Report states that although most of the insulating materials installed at SQN were the same as those at other TVA plants that comply with RG 1.36, the compliance at SQN was uncertain because certification was lacking; and future compliance was not assured. The TVA report appropriately recommended documenting compliance with RG 1.36 guidelines and also recommended procedural changes to assure compliance for future replacement insulation purchased by the plant.

In response to the TVA Investigation Report, the SQNP personnel committed to comply with RG 1.36. The plant personnel completed a program of testing installed and stored nonmetallic insulation which

verified and documented compliance with RG 1.36. Furthermore, the SQNP standard practice was revised to comply with the Regulatory guidelines for future procurements of insulation. With implementation of these corrective measures, the utility concludes that the problem identified by the concerned employee is resolved. The NRC staff concurs in its conclusion.

IV. Conclusion

Issue a

The concern that the mineral fiber piping insulation is easily damaged and tends to deteriorate is found to be not valid as a safety issue by the NRC staff.

Issue b

The NRC staff concludes that the actions taken by the utility to correct the problem identified by the concerned employee are acceptable. The corrective measures taken by the utility to comply with RG 1.36 guidelines relative to the insulation procured and used at SQNP in effect resolve the employee's concern that the type of insulation used on austenitic stainless steel may be of unacceptable quality.