TENNESSEE VALLEY AUTHORITY

Watts Bar Nuclear Plant
P. O. Box 800
Spring City, Tennessee 37381

March 19, 1987

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. Stewart Ebneter

In the Matter of the Application of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

EMPLOYEE CONCERNS TASK GROUP (ECTG)

Reference: B. J. Youngblood, NRC, to S. A. White, TVA (A02 870224 016) dated February 19, 1987, "Request for Additional Information on Element Report EN 213.4"

Enclosure 1 provides TVA's response to NRC's request for additional information on Element Report EN 213.4.

Please telephone Martha Martin at (615) 365-3587 (Watts Bar) if you have any questions.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

for J. A. McDonald
Watts Bar Nuclear Plant
Site Licensing Manager

RG:DFB
cc (See page 2.):

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U.S. Nuclear Regulatory Commission

cc (Enclosures):
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Enclosure 1

ENCLOSURE 1

Additional Information on Element Report EN 213.4

The following analysis is provided in response to the NRC's request to demonstrate how the requirements of IEEE Standards 308, "Standard Criteria for Class 1E Electrical Systems for Nuclear Power Generating Stations" (Auxiliary Feedwater System only) and 317, "Standard for Electrical Penetration Assemblies in Containment Structures of Nuclear Fueled Power Generator Stations have been included in the SQN electrical procedures and design process.

IEEE Standard 308-1971

a. IEEE Standard 308 provides the following:

- Principal design criteria and the design features of the class 1E electric systems that enable systems (auxiliary feedwater being one of them) to meet the functional requirements under the conditions produced by the design basis events.

- The minimum operational conditions of the class 1E electrical systems (and in turn the auxiliary feedwater system) under which the station is permitted to operate.

- The surveillance requirements of the class 1E electric systems.

b. We have reviewed the design criteria of the auxiliary feedwater system and the class 1E electrical systems, as listed on the following page, to determine how the requirements of IEEE Standard 308 have been included.

- SQN-DC-V-13.9.8, R0 "Auxiliary Feedwater"
- SQN-DC-V-11.2, R3 "125 V Vital Battery System"
- SQN-DC-V-11.2.1, R2 "125 V Fifth Vital Battery System"
- SQN-DC-V-11.4.1, R2 "Normal and Emergency AC Auxiliary Power System"
- SQN-DC-V-11.6, R3 "120 V AC Vital Instrument Power System"
- SQN-DC-V-12.2, R6 "Separation of Electric Equipment and Wiring"

All these design criteria envoke IEEE Standard 308. The review demonstrated that the criteria meet the intent of the standard and provide adequate bases for developing detail design and equipment specifications.

c. A review of electrical design documents related to auxiliary feedwater pump motors A and B provided sufficient assurance of proper implementation of the IEEE Standard 308 requirements outlined in the appropriate design criteria. The major design requirements reviewed were:

- Class 1E Power Systems (AC and DC)
- Vital Instrument AC Power System
- Redundancy
- Independence (Physical and Electrical)

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d. The minimum operational conditions of the class 1E electrical systems (and in turn the auxiliary feedwater system) under which the station is permitted to operate is defined in the "Technical Specification."

e. The surveillance requirements of the IEEE Standard 308 are satisfied as follows:

- Preoperational tests have been performed on the class 1E electrical systems (and auxiliary feedwater system). These tests demonstrate that the equipment operates within the design limits, and the systems are operational and meet the design specifications (re: Test No. TVA-13 and TVA-22).

- Surveillance requirements of the class 1E electrical systems for the auxiliary feedwater system, to demonstrate that the systems and components are operable, are defined by SQN "Technical Specification."

IEEE Standard 317-1971

Inclusion of the requirements of IEEE Standard 317 in the TVA electrical design process is demonstrated by the requirements set forth in the following TVA documents. (All these documents specifically reference and address IEEE Standard 317.)

Design Criteria:

SQN-DC-V-2.15, R0 "Containment Isolation System "
SQN-DC-V-11.3, R5 "Power, Control, and Signal Cables for Use in Category I Structures

Design Guide, Electrical:

DG-E2.2.1, R0 "General Requirements for Medium-Voltage Ac Auxiliary Power Systems"

Design Specification:

Design Specification 1425, for Electrical Penetrations for Sequoyah Nuclear Plant Units 1 and 2, R0, April 25, 1972

Note that the design criteria documents delineate the bases used for developing specifications for purchase, creating design schedules, and providing bases for creation of other documents (e.g., design guides) for defining system design of the containment electrical penetrations.

The design guides and design standards provide guidance for writing the hardware design specification. The specification, in turn, imposes requirements for drawings, documentation, fabrication, shop testing, scheduling, and quality assurance on the hardware vendor.

We have reviewed Design Specification 1425 and find that it includes detailed requirements for all types of penetration assemblies (power, control, etc.) including fabrication, supplier's inspection and tests (e.g., shop inspection, prototype tests, factory production tests), and field tests after installation. All these requirements meet or exceed the requirements of IEEE Standard 317-1971.

TVA concludes that the requirements of IEEE Standard 317-1971 have been adequately reflected in design criteria, guides, standards, and specifications.