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October 4, 1983

Docket Nos.: 50-390
and 50-391

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500 A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Request for Additional Information Regarding Environmental Equipment Qualification for the Watts Bar Nuclear Plant, Units 1 and 2

The attached request for additional information has been developed from our review of your August 19, 1983 Environmental Qualification Report. These items must be satisfactorily addressed prior to scheduling an audit at the plant site. In keeping with your current fuel load date of January 1984, we request that you respond to this inquiry by October 17, 1983 to support an audit in the first week of November.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosure:
As stated

cc: See next page

DL:LB#4	LA:DL:LB#4	DL:LB#4
TKenyon:eb	MDuncan	EAdensam
9/29/83	9/30/83	9/30/83

Mr H. G. Parris
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Enclosure

Request for Additional Information
Watts Bar Nuclear Plant, Units 1 & 2
Environmental Qualification Program

1. Based on the information contained in your EQ report, we are unable to determine if all essential systems and components have been identified and included in your harsh environment qualification program. Provide the following additional information for our review:

   a. A comparison of the systems in Tables 3.2-2, 3.2-3 and 3.2-6 of the FSAR with the systems included in your Table 2.1-1 of the EQ report. Justification should be provided for the exclusion of any safety-related systems (e.g., all components of the system are located in a mild environment, system is not required for accident mitigation, etc.). Identify the Class IE function(s), as defined in paragraph b(1) of 10 CFR 50.49, performed by each system. Systems in Table 2.1-1 should correspond to those in Tables 3.2-2, 3.2-3 and 3.2-6.

   b. A list of the TMI Action Plan equipment, required to be environmentally qualified for a harsh environment, that is installed or that will be installed by fuel load and a summary of its qualification.

   c. A list of safety related equipment located in a harsh environment which has been exempted from qualification for harsh environmental conditions. Individual components in exempted systems (identified in 1.a) need not be identified.

   d. The elevation of equipment located in areas subject to flooding.

2. To demonstrate compliance with 10 CFR 50.49, the following additional information is required before an operating license is granted:

a. The scope of 10 CFR 50.49 encompass safety-related equipment required for all design basis accidents. Your submittal address only LOCA and HELB events. Provide information for all additional equipment required for other design basis accidents which result in harsh environments, e.g. fuel handling accident, radioactive gas tank rupture, moderate energy line breaks, etc. Also update the environmental conditions for any environmental zone where these additional DBAs create a more severe environment.

b. The staff has determined that compliance with Rev. 1 of R.G. 1.75 is acceptable to demonstrate partial compliance with paragraph b(2) of 10 CFR 50.49. In accordance with the staff's SER, NUREG-0847, full compliance with the provisions of the R.G. has not been demonstrated. Provide your position with respect to the staff's findings in the SER.

c. Provide a list of all category 1 & 2 post accident monitoring equipment currently installed, or that will be installed before fuel load, that is relied on to provide measurements and indication of the variables listed in Revision 2 of R.G. 1.97. The equipment identified must be included in the environmental qualification program.

3. Section 1.2: Any equipment whose status is identified as II should be considered not qualified unless all the documents demonstrating qualification have been reviewed for their applicability to Watts Bar. Provide justification for interim operation (JIO) for all the equipment with status II or III. Also, confirm that the equipment with status IV will be relocated, shielded or replaced prior to fuel load. If not, then JIO should also be provided for this equipment.

4. Section 2.3: Explain why an event in the valve room will not create a harsh environment elsewhere.

5. Section 3.0: Some of the environmental profiles are marked as preliminary. In the absence of the approved final profile all equipment located in those areas should be considered as not qualified. Prior to the NRC review, approved final profiles should be provided.

6. Section 3.1.1.2: Chemical Spray, same as previous comment. Also, in Section 3.0 Chemical spray is not listed as a harsh parameter, as it should be.

7. Figures 3.0-1 thru 3.0-44 are not legible. Provide full size copies of the drawings.

8. Section 4.1.1: Since analysis alone without partial test data is not an acceptable qualification method, explain what is meant by the statement "no additional margin was considered for qualification by analysis."

9. Accuracy required and demonstrated should be included in the EQ sheets or in Table 3.11. Also, in accordance with the information on page 6.2-3 it appears that the required value of accuracy for BOP equipment has been evaluated.

10. Address the submergence qualification of equipment located outside containment in areas subject to flooding.

11. In many cases a qualification parameter does not envelope the required environmental condition. This is especially true for radiation. It is assumed that in these cases that an analysis has been performed to determine the radiation dose for the specific equipment, instead of the zone. Please provide your bases, assumptions and a sample calculation (e.g. for equipment IFT-3-39) showing how the dose was determined.

12. For NSSS as well as BOP equipment it is the responsibility of the applicant to demonstrate qualification with a time margin of at least one hour for all equipment required to operate for less than 10 hours.

In the event it is necessary to use time margin evaluation techniques, the following information, as a minimum, shall be documented.

1. Application of time margins less than one hour shall be justified for each piece of equipment, including any judgements regarding the survivability limits of the equipment.

2. The required operability time shall be justified with consideration for a spectrum of breaks and the potential need for the equipment later in an event or during recovery operations.

3. It shall be demonstrated that failure of the equipment after the required operability time will neither mislead the operator to take an improper action nor further degrade the event by causing a failure in systems necessary for mitigation of the event.

4. The margin applied to the required operability time, when combined with the other test margins, shall account for the uncertainties associated with the design, production tolerances, testing techniques, and the number of units tested.

The omission of specific information or a commitment to the time margin positions of the staff is regarded as an open item (e.g. WBN-MEB-78-0134 etc.).

13. Table 6.1, page 5, item 10, under the column with heading of temperature, please confirm that referenced figure 20-A is the same as marked figure 6.20-A.

14. Table 6.1 page 4, item 8, under the column with heading of Integrated radiation dose under accident condition, please confirm that the value of radiation dose is 1×10^7, not 1 x 10.

15. Section 6.1, page 2, Item 3, Instrument Room is located at an elevation of 693' while Figure 3.0-5 shows Instrument Room is located at an elevation of 716. Please clarify the discrepancy. Also, if 693' is the correct elevation, how are the instruments protected from flooding?

16. In order to review the qualification information for any particular equipment, numerous charts and tables have to be referred to which makes it unnecessarily difficult to review. A cross reference should be provided at one location, so the information can be easily reviewed.

17. The Rosemount RTD model numbers given on NEB-68-23 and 24 do not agree with these given in WBN Table 1.1, pages 96 thru 100.

18. EQS No. WBN-NEB-XX-25 identifies the manufacturer as Namco, while table 3.11-8 page 2 identifies the same equipment as being manufactured by Snap Lock. Please clarify this apparent discrepancy.

19. WNB-NEB-68-14 references an excerpt from the Sequoyah operating license, which considers the Barton 763 and 764 model transmitters (Lot 1) qualified for interim operation until the second refueling outage. However, it should be noted that similarity of the application of these transmitters should be established. Also all equipment must be qualified by the deadline specified in 10 CFR 50.49 (g). Hence, qualification by the second refueling outage is not applicable to equipment in Watts Bar.

20. Provide a brief description of your maintenance and surveillance program. The scope and content of a maintenance/surveillance program for safety-related equipment that is acceptable to the staff is defined in ANS-3.2/ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants." This standard is endorsed by RG 1.33, Revision 2, "Quality Assurance Program Requirements (Operation)." Provisions for preventing or detecting age-related degradation in safety-related equipment are specified by ANS-2.3/ANSI N18.7-1976 and include (1) utilizing experience with similar equipment, (2) revising and updating the program as experience is gained with equipment during the life of the plant, (3) reviewing and evaluating malfunctions of equipment and obtaining adequate replacement components, and (4) establishing surveillance tests and inspections based on reliability analyses, frequency and types of service, or age of the items, as appropriate.

On the basis of the above considerations, affirm that the ANS 3.2/ANSI N18.7-1976 standard has been used in the development of the maintenance surveillance program, or provide a description of the program including why the scope and content of the program is equivalent to that defined in the standard. Regardless of whether the ANS 3.2/ANSI N18. 7-1976 standard was used, the maintenance/surveillance program description should address how the program will detect age-related degradation caused by synergistic effects and low dose rate effects of radiation. Additionally, describe and justify any differences in the approach to maintenance/surveillance for equipment located in a harsh environment versus equipment located in a mild environment. Also, provide information on the specific maintenance/surveillance programs to be applied to 1) Cables located inside containment, lower compartment 2) Limitorque valve operators, 3) Barton transmitters, 4) Conax electrical penetrations, and 5) ASCO Solenoid Valves.

21. Confirm that connector and flexible conduits are not used at Watts Bar. If they are being used, then qualification information should be submitted for these items.

22. Provide a list of all safety-related mechanical equipment located in a harsh environment in the format you provided in your July 27, 1983 letter. From this list the staff will select approximately three items of mechanical equipment for which documentation of their environmental qualification should be provided for review. Also, the results of your review for all mechanical equipment in harsh environment areas should be provided and corrective actions identified. Justification for interim operation must be submitted prior to fuel load for any mechanical equipment whose qualification cannot be established.