

June 16, 1994

Dr. Ramesh Shanker, Manager
O&M Technology
Electric Power Research Institute
1300 Harris Boulevard
Charlotte, North Carolina 28262

Dear Dr. Shanker:

The Instrumentation and Controls Branch staff would like to express its appreciation for the opportunity to review the Electric Power Research Institute (EPRI) Report TR-102323 document "Guidelines for Electromagnetic Interference (EMI) Testing in Power Plants - Final Report, April 1994." We have compared the EPRI document to the recently completed draft regulatory guide on EMI and have the following comments.

In general, the staff agrees with the technical explanation of EMI, and the use of test methods and EMI limiting practices per Mil-Std 461, Mil-Std 462, and IEEE Std. 1050 described in the document. However, we find that additional information is needed on the descriptions of EMI mapping, data acquired, and how the recommended guidelines were used at the six plants that were mapped. The specific issues identified by the staff as needing additional clarification and information are described in the enclosure. We would like to meet with you at your convenience to discuss the enclosure.

Please call Eric J. Lee at 301-504-3201 to finalize the agenda, place, and time of the meeting.

Original signed by:

Jared S. Wermiel, Chief
Instrumentation and Controls Branch
Division of Reactor Controls
and Human Factors
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
C. Antonescu

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DOCUMENT NAME: EPRIEMI.LT1

ENCLOSURE

EPRI - TR-102323: Issues Needing Additional Clarification and Information

1. The second paragraph of the Section entitled, "Selecting Systems for EMI Survey" on Page 5-6 states that data are obtained from key safety systems to facilitate comparison of emission levels at similar locations and systems across several plants. However, the descriptions on Pages 5-7 and 5-8 indicate that the Vogtle plant is the only plant that followed the recommended guidelines in the EPRI document when measuring the plant environment. To clarify this, please provide the following information:
 - How many plants fully followed the methods described in the EPRI document?
 - What areas of the plant were mapped? (Was the control room, cable spreading room, turbine deck, switchgear rooms, battery rooms, diesel generator rooms, and remote shutdown panel of each plant mapped?)
 - Explain the bases for the margins for the susceptibility levels in Figures 5-2 through 5-6.
 - Explain the basis for the 6dB margin between equipment susceptibility level and allowable plant level.
2. The document does not provide an explanation of why the EMI field data at the six plants are not in general agreement with each other. (See data for plants C, D, and E in the figures in Section 5.)
3. Explain how the data acquired from point of installation surveys was extrapolated to map the plant's EMI environment. Measuring EMI at a single point or location may be insufficient for deriving an accurate mapping of the room EMI environment because 1) Mil-Std. 461 and 462 are intended for testing a piece of equipment or a subsystem is measured 1 meter away from the equipment, and 2) radiated magnetic fields attenuate very quickly ($1/R^3$ or $1/R^2$ depending on the impedance of the source.)