

August 22, 1994

Mr. Oliver D. Kingsley, Jr.  
President, TVA Nuclear and  
Chief Nuclear Officer  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: WATTS BAR NUCLEAR PLANT - REQUEST FOR ADDITIONAL INFORMATION (RAI)  
REGARDING ELECTRICAL SEPARATION (TAC M89109 AND M89110)

We have reviewed TVA's July 29, 1994, letter which provided additional information related to electrical separation at Watts Bar (see Watts Bar Safety Evaluation Report, Supplement 13, Section 8.3.3.3(5)). In order to complete our review of that letter and electrical separation issues, we have enclosed seven followup questions. These questions are intended to aid us in determining the applicability of test reports cited in TVA's letter to plant configurations at Watts Bar Nuclear Plant.

This requirement affects nine or fewer respondents and, therefore, is not subject to Office of Management and Budget review under P.L. 96-511.

Sincerely,

Original signed by

Peter S. Tam, Senior Project Manager  
Project Directorate II-4  
Division of Reactor Projects II-4  
Office of Nuclear Reactor Regulation

Docket Nos. 50-390  
and 50-391

Enclosure: Request for Additional  
Information

cc w/enclosure: See next page

DOCUMENT NAME: G:\WBNRAI

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REQUEST FOR ADDITIONAL INFORMATION

WATTS BAR NUCLEAR PLANT, LETTER OF JULY 29, 1994

ELECTRICAL SEPARATION

1. Enclosure 2 to the July 29, 1994, letter describes testing of electrical cable and raceway installations at other plants. Please provide a comparison between the cable materials used at WBN to the cable materials used in the test specimens cited in Enclosure 2 (e.g., cable manufacturer and flammability of cable materials).
2. Do all the installed Class 1E cables used at WBN conform to the flame tests in IEEE Standard 383-1974? If they do not, please discuss how the test results cited in Enclosure 2 are applied to any non-conforming cables.
3. Are there any General Electric TEFZEL cables installed at WBN? The staff is concerned about TEFZEL cables because they failed initial tray-to-tray tests used to support electrical separation criteria at Clinton Power Station.
4. Please explain the following statement contained in WB-DC-30-4, Rev. 13, Section 4.1.2.5, "Non-Class 1E circuits routed in Category I structures are evaluated in order to determine if they are to be classified as associated circuits . . .," in greater detail. Explain why this is necessary with examples of where it is applied.
5. In your discussion regarding the extension of the 600-volt industry tests to the 6.9-kV system at WBN, you stated that internal heating of the source (faulted) cable will cause dielectric breakdown and a ground fault before significant thermal propagation to target cables in adjacent raceways. Provide additional discussion on the basis for this statement, including the potential for the cable to ignite prior to tripping the secondary ground overcurrent protective device, and on the sensitivity (pickup) and time delay of the primary and secondary ground overcurrent protection.
6. Also in your discussion regarding the extension of the 600-volt industry tests to the 6.9-kV system, you stated that dielectric breakdown of the insulation system would result in arcs internal to the cable (conductor shield which is grounded) and that these would be interrupted by either the primary or secondary ground overcurrent protection. Discuss the potential (prior to clearing by the secondary ground overcurrent protection) for the arc to burn through the shield and damage cable in conduit as close as 1-inch due to the indirect heating effects from the arc or the strike of the arc to the conduit.

ENCLOSURE

7. Section 4.1.1.3 of WB-DC-30-4, Rev. 13, states where 1-ft. vertical separation between tray-to-tray non-Class 1E to Class 1E is not possible, spacing may be decreased if adequate access for cable installation is maintained (typically 6 to 9 inches) and the top tray has a solid bottom or bottom cover. Enclosure 3 to the TVA letter cites Wyle Lab Report 17666-02, Configuration 4, as the industry source for this criteria.

That test configuration used a ventilated tray cover on the tray containing the faulted cable. Does WBN also use a ventilated tray cover for these plant configurations? If it does not, please justify this practice relating it to the tested configuration.

Mr. Oliver D. Kingsley, Jr.  
Tennessee Valley Authority

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## WATTS BAR NUCLEAR PLANT

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