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File: 0017, E-14

Docket No. 50-346

January 31, 1977

Serial No. 205

Director of Nuclear Reactor Regulations
Attn: Mr. John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Stolz:

One remaining open item concerning electrical separation criteria (SER Outstanding Item 15) for the Davis-Besse Unit 1, is the criteria for conduit separation. During discussions in October and November, 1976 with the NRC staff, we stated that a 1-inch separation between conduit carrying redundant essential class IE circuits had not been a criteria during the construction of the station. To impose such a criteria at this time would require rework, including removal and reinstallation in a number of cases, based on a physical review and field check of conduit installation. This resulted in my letter, Serial No. 157, of November 23, 1976.

The tests and analysis program committed to by us in my November 23, 1976 letter has been completed and the results have shown that in most situations and combinations of circuits, physical separation of conduit carrying redundant essential class IE circuits is not necessary. A copy of a proprietary preliminary report of the extensive test program conducted at Franklin Institute Research Laboratories was given to Mr. Szukiewicz of the NRC staff during a meeting on January 14, 1977.

Based on the results of this test and analysis program, separation criteria for class IE conduit has been established which assures that (1) any failure or occurrence in a class IE conduit will not degrade a redundant essential class IE circuit in adjacent class IE conduits, (2) a failure or occurrence in a non-class IE conduit will not degrade redundant essential class IE circuits in adjacent class IE conduits.

The criteria established are as follows:

1. Conduits carrying control, instrumentation, or power cable (where the power cable is limited to 480 volt or lower and No. 12 AWG or smaller) are allowed to touch each other.

2. Conduit carrying essential class IE 4.16 KV power cables or 480 volt load center power cables will have a 1-inch minimum separation from conduits carrying class IE circuits of a redundant channel.

3. Conduit carrying non-essential 13.8 KV, 4.16 KV, or 480 volt load center power cables that bridge conduits carrying essential class IE circuits of redundant channels will be separated from conduit carrying circuits of the redundant channel to give a minimum separation of 1 inch.

4. Conduit carrying essential class IE power cable of 480 volt or lower voltage with conductor size larger than number 12 AWG, and not covered by 2. above, will meet the following criteria:

   a. Will have a minimum of 1/8-inch separation from the surface of any conduit crossing above which contains an essential class IE circuit of the redundant channel.

   b. Are allowed to touch conduits containing an essential class IE circuit of the redundant channel when installed in a horizontal, side-by-side configuration.

   c. Will have a minimum separation of 1 inch from conduits containing an essential class IE circuit of the redundant channel mounted directly above and running parallel.

5. Conduit carrying non-essential power cable of 480 volt or lower voltage with conductor size larger than number 12 AWG, and not covered by 3. above, that bridge conduits carrying essential class IE circuits of redundant channels will be treated as in 4. a., b. and c. for proper separation from the redundant channel.

This above listed criteria is to apply to, and amplify Note No. 9 shown in Figure 8-20A of the Final Safety Analysis Report and supersedes the criteria contained in my letter, Serial No. 157, of November 23, 1976.

We trust that this will completely close SER Outstanding Item 15 concerning conduit separation.

Yours very truly,

Lowell E. Roe

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