Met-Ed / GPU

Metropolitan Edison Company
Post Office Box 542
Reading Pennsylvania 19640
215 929-3601

Writer's Direct Dial Number

September 14, 1979
GQL 1164

Director of Nuclear Reactor Regulation
Attn: R. W. Reid, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Fire Protection Program

The purpose of this letter is to summarize the results of the study and tests conducted to fulfill the requirements of Item 3.2.2, Cable Separation, of the TMI-1 Fire Protection Safety Evaluation Report (FPSER). The due date for this letter was extended to September 14, 1979 per the August 30, 1979 telecon between your Mr. D. C. DiIanni and our Mr. W. S. Stanley.

Item 3.2.2 of the TMI-1 FPSER requires that: 1) A study or test be done to verify the effectiveness of the asbestos board fire barriers in preventing the spread of a cable tray fire to other trays and in protecting redundant cable trays from the effects of an exposure fire, and 2) Additional fire protection modifications be proposed if the study or test results indicate a need. Two reports were generated to address these requirements: Review of Cable Installation at Three Mile Island Nuclear Station, Unit 1 by Gilbert Associates, Inc. (GAI Report No. 2042); and Cable Raceway Fire Barrier Tests, Three Mile Island Nuclear Station, Unit No. 1 by Southwest Research Institute (SRI Project No. 03-5681-001). Six (6) copies each of the two reports have been forwarded separately.

The GAI Report was prepared to confirm that the conduit and cable trays were installed according to the specifications by which TMI-1 was built, and to determine a representative "worst case" cable tray and conduit configuration for the fire test of the asbestos fire barriers.

As indicated in our letter of July 13, 1979 (GQL 0893), tests of the asbestos board fire barriers were conducted on July 5 and 6, 1979. Three tests were done. Tests 79-1 and 79-2 were conducted in accordance with the test procedures described in our letter of May 18, 1979 (GQL 0692), as modified by the resolution of NRC comments described in your letter of August 6, 1979. Test 79-3 was conducted at the suggestion of the NRC. The results of these tests are described below.

A006
S1,1D

961184

7909180384

F

Test 79-1

The purpose of this test was to test the effectiveness of the fire barrier design in preventing the spread of a cable tray fire to a nearby tray.

After 45 minutes, the methane burners could not ignite a self-sustaining flame in the "A" cable tray, as originally intended. Nonetheless, Met-Ed believes that the test did prove the effectiveness of the barrier in preventing a tray-to-tray fire spread. This conclusion is supported by the data as follows: 1) The temperature at the point of methane burner application reached approximately 850°F, 2) Temperatures on the other side of the barriers did not exceed approximately 225°F, and 3) None of the energized test circuits failed.

Test 79-2

The purpose of this test was to test the effectiveness of the fire barrier design in preventing damage to redundant cable trays from the effects of an exposure fire.

After 30 minutes, well past the peak of the test exposure fire, none of the energized test circuits failed. The quantity of transient combustibles used for the exposure fire exceeded the amount permitted by the procedure used at TMI-1 to control transient combustibles. Since none of the test circuits failed, Met-Ed believes that this test did show the effectiveness of the fire barrier design in preventing damage to redundant trays from the effects of an exposure fire.

Test 79-3

This test was conducted at the suggestion of the NRC to test the ignitability of the cables being used. The test was conducted because of the inability to ignite the cables in test 79-1. The cables were stacked in a manner not representative of plant installation. After 6 minutes and 30 seconds, a self sustaining flame was achieved. This flame extinguished itself in 45 seconds.

It is the opinion of Met-Ed, Gilbert Associates, Inc., and Southwest Research Institute that this test did not show the effectiveness of the fire barrier design, but that the only thing proven was the ability to ignite a haphazardly laid cable arrangement. This type of arrangement does not exist at TMI-1.

Met-Ed believes that the test results adequately demonstrate that the asbestos board barriers protecting cable trays at TMI-1 will prevent 1) the spread of a cable tray fire to a nearby tray and 2) damage to redundant circuits during an exposure fire. Therefore, Met-Ed believes no modifications beyond those already planned are necessary. Met-Ed seeks NRC concurrence with this position.

Sincerely,

J. G. Herbein
Vice President
Nuclear Operations

JGH:WSS:mrm