



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

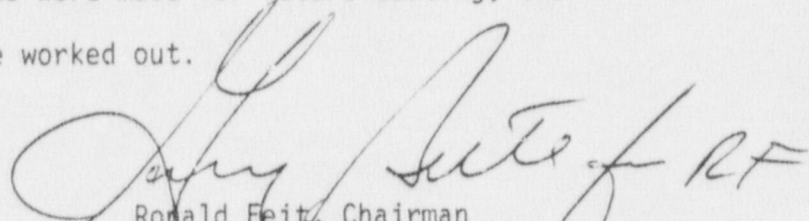
OCT 30 1978

MEMORANDUM FOR: Those on Attached List

FROM: Ronald Feit, Chairman
Fire Protection Research Review Group

SUBJECT: MEETING OF FIRE PROTECTION RESEARCH REVIEW GROUP -
SEPTEMBER 26, 1978

Enclosed are summary notes for the subject meeting. Basically, the meeting was called to review the preliminary results of the UL vertical cable tray fire test of September 15, 1978. The response of the sprinkler system and the extent of damage to the cables were discussed. While recommendations were made for future testing, the specific details remain to be worked out.


Ronald Feit, Chairman
Fire Protection Research Review Group
Division of Reactor Safety Research

Enclosure: as stated

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ADDRESSEES FOR MEMORANDUM DATED _____

R. Tedesco, DSS
C. Long, DSS
P. Matthews, DSS
V. Benaroya, DSS
G. Harrison, DSS
E. Sylvester, DOR
R. Ferguson, DOR
B. Snyder, PE
T. Quay, PE
D. Notley, SD
D. McDonald, NRR
T. Dunning, DOR
V. Thomas, IE
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FIRE PROTECTION RESEARCH REVIEW GROUP

MEETING REPORT

Name of Author: Ronald Feit

Date and Place: September 26, 1978, Bethesda

Participants:

R. Tedesco, DSS	R. Ferguson, DOR
C. Long, DSS	B. Snyder, PE
P. Matthews, DSS	T. Quay, PE
V. Benaroya, DSS	R. Feit, RSR
G. Harrison, DSS	G. Bennett RSR
E. Sylvester, DOR	

Purpose: To review the results of the first in a series of vertical cable tray fire tests at Underwriters Laboratories.

Preliminary Test Results

The first of a series of vertical full-scale cable tray fire tests was conducted at UL on September 15, 1978. The test results were discussed during the meeting and again at UL on October 3, 1978*, and although the report by UL was not completed on September 26, 1978, the Chairman cited the following preliminary conclusions. (These conclusions do not necessarily represent a review group consensus.)

1. Automatic sprinklers capable of passing the UL standard test UL-199, "Automatic Sprinklers for Fire Protection," installed in a conventional ceiling pattern may not actuate in response to a small fire of the type and duration used for this test.
2. Cable damage and circuit failure can be expected for cable not qualified to the IEEE-383 flame test and a cable tray barrier design as constructed for the test and for the type of simulated fire used for the test.

Future Testing

There was general sentiment that it is premature at this time to conduct further tests with non-383 qualified cable simulating a flammable liquid spill until a seal specification or technical position is developed and accepted.

The Chairman offered some suggested plans for separate testing of seals that have been discussed with Sandia. These tests would consist of developing a test method for determining how good a seal is required to prevent fire propagation through the seal. If this testing is considered to be worthwhile these

* The summary of this meeting will be documented in a separate memo from Gary Bennett.

tests would be conducted at Sandia. With respect to full-scale tests, the Chairman said he had discussed with Sandia the continuation of the UL test program and he is proposing that the testing at UL be continued with separate effects tests to determine the significance of both separation and barriers. After proper documentation of existing damage, the five trays used in the first test can be used for these propagation tests but they could not be reused in a test where the effects of a floor fire from a liquid spill would be evaluated.

Two tests were proposed by the Chairman in this next series. The first test would use three bare trays. A donor or ignition tray would be separated from the other two trays by three-inch space between side rails and a 36-inch space between faces just as trays 3, 4 and 5 were in the test conducted on September 15. Tray 3 would be used as the donor or ignition tray. The test would be instrumented to determine the significance of the separation distances in preventing propagation and to establish heat fluxes around all trays with particular emphasis on the area near the ceiling. This would help establish in a quantitative way the effect of separation. If this test results in propagation or a condition that is likely to result in propagation, an identical test would be conducted with each of two trays covered with a protective barrier. Heat flux measurements in the vicinity of the ceiling and instrumentation within the protected trays would answer the question raised during the review group meeting with regard to the importance of the top (ceiling) barrier seal in preventing fire propagation between the barrier and the ceiling. This potential propagation mode would result from the hot gas being driven in front of the flame and through the barrier to ceiling seal once the donor fire has spread to the top of the donor tray. Automatic sprinklers and smoke detectors could be installed and instrumented during both tests to establish a data base for later testing. However, no suppression would be utilized for these tests.

The Chairman concluded by stating in his opinion it would not be worthwhile to proceed with another full-scale proof test unless some basic data is first obtained from separate effects tests as described above.

There was some discussion of the types of future tests to be conducted with some sentiment for getting the most information out of the UL trays by running the aforementioned propagation-type tests. However, no firm commitments were made. The Chairman noted that early agreement was needed if tests were to be fit into the current UL schedule.