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FEB 6 1981

MEMORANDUM FOR: M. S. Farmer, Acting Chief
Plant Instrumentation, Control & Power Systems Branch
Division of Reactor Safety Research

FROM: R. Feit
Plant Instrumentation, Control & Power Systems Branch
Division of Reactor Safety Research

SUBJECT: TRIP REPORT TO UNDERWRITER LABORATORIES

Enclosure 1 is my trip report to Underwriter Laboratories on January 15, 1981 to discuss the Browns Ferry Replication Fire Test. Enclosure 2 is the list of attendees from that meeting.

R. Feit
Plant Instrumentation, Control & Power Systems Branch
Division of Reactor Safety Research

Enclosures: As stated

cc: L. H. Sullivan, NRSR

8103050850
PDR

NRSR:PICPSB
RFeit:sh
02/05/81

TRIP REPORT

FEB 6 1981

Date: January 15, 1981

Place: Underwriter Laboratories, Northbrook, Illinois

SUBJECT: REPLICATION FIRE TEST

The purpose of the Fire Protection Review Group meeting was to discuss the Browns Ferry Replication Fire Test. The following are the conclusions and agreements:

1. The Underwriter Laboratories proposed a test room that consists of an open-ended enclosure constructed in a larger test building. This was agreed upon.

2. The walls of the enclosure will be constructed of cinder block and the ceiling of ceraform board.

3. The air flow values obtained from TVA (.5 to 25 ft/min) are low enough that it can be duplicated by natural convection in the test building. Sandia agreed to make sure that there are no air ducts in the ceiling directly above the simulated fire zone.

4. The cable trays and conduits will be terminated at the floor level. Calculations, made by Dr. Hunter of APL, showed that the heat conduction through the floor would be small. However, a floor seal will be fabricated that will functionally duplicate the seal design in the plant.

5. The overhead sprinkler and deluge system will be constructed as in the plant without the long connecting pipes. The delay time after initiation will be obtained by calculation and not be duplicating the long water line in the plant. The calculations will be based on the nominal flow out of the sprinklers which will be obtained from TVA.

6. The conduit in the plant is, of coarse, open at both ends. It was agreed that the test, with only the top end opened, is reasonable. Also, it was agreed that the cable will be installed in the conduit using a normally-used pulling compound.

7. The details of the floor drain and floor pitch will be obtained from TVA. This could affect the test if the water, from the deluge system directly above the trays, fills the floor channel which will also contain the exposure fire fuel. This would cause the fuel to flow onto the floor.

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8. A section of failure criteria will be added to the test plan. A failure is considered to be loss of any cable in more than one safety division. Based on the Sandia and UL review of the drawings received from TVA, this can occur if there is a short or open circuit failure in any of the following.

   (a) Tray KS-ES-II and conduit 3A-ES-50-1,
   (b) Conduits 3A-ES-2501-II and 3A-ES-50-1, or
   (c) Tray TK-ES-II and conduit 3A-ES-50-1.

   The method used to detect failure will be identical to that used during the last UL cable tray fire test which is a low voltage, low current circuit. The circuit current will be monitored to determine short, or open, conditions.

9. The cable mix in the Sandia test plan was agreed upon.

10. Ten uncoated cables will be used in one tray (KS-ES-II).

11. Further details are needed for the junction box. Following receipt of this information, a decision will be made as to how much detail must be reproduced. This delay should not impact the schedule if the information can be obtained within the next month.

12. The cable coating will be put on to a specification of 1/4-inch dry (minimum) with no opening left between cables (i.e., the coated tray will be a solid barrier).

13. Smoke and heat detector response time, as well as sprinkler calibration, will be determined by separate effects test. A minimum of three tests for each will be conducted. If there is a significant spread in the data, more than three tests will be conducted. These separate effects tests will include the ten uncoated cables.

14. Sandia will prepare an instrument list for review by the Fire Protection Review Group. Temperature measurements will be made on the conduit wall and inside the cable tray between the cable and coating. This measurement will be used to determine if the tray can be reused for additional testing, if no failures have occurred during the first test.

15. NRR will provide the guidance for the fire brigade after the brigade response time has been established. The question of brigade response time has not been agreed upon.

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ATTENDEES

Leo Klamerus, Sandia
Don Dube, Sandia
Leon Pryzbla, UL
Bill Christian, UL
Ron Feit, NRC
Scott Hudson, NRC
Loren Hunter, APL

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