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

OFFICE OF THE
CHAIRMAN

September 15, 1978

SECRETARIAT
RECORD COPY

The Honorable Claude Pepper
United States House of Representatives
Washington, D.C. 20515

Dear Congressman Pepper:

I am pleased to respond to your letter of July 14, 1978, in which you requested information concerning the status of fire protection programs in nuclear power plants.

The fire that occurred at the Browns Ferry Nuclear facility in Alabama in March 1975, mainly affected electrical cabling and equipment. Since the fire was serious, and its interaction with plant safety more extensive than had been considered in the design of nuclear power plant fire protection systems at that time, the NRC undertook a substantial upgrading of fire protection provisions at nuclear power plants.

The staff actions included a thorough study of the Browns Ferry fire, a determination of the lessons learned, the development of licensing requirements for both new plants and operating plants, and the commencement of a systematic fire protection review of all licensed nuclear power facilities. In the interim, the most apparent safety implications of the Browns Ferry fire were brought to the attention of other licensees by (a) issuance of Inspection and Enforcement Bulletins directed toward control of ignition sources, housekeeping procedures, and emergency procedures; (b) special inspections of fire stops in operating plants; (c) improved inspection procedure for cables and penetration seals for plants under construction; and (d) alerting licensee's upper management to this concern. These steps provided a prompt increase in fire protection of all plants while the more complex aspects of fire protection were under consideration. This interim protection has been strengthened by imposition of fire protection Technical Specifications in operating licenses covering existing fire protection systems and improved administrative controls for fire brigade strength and training, and control of combustibles and ignition sources within the plants.

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During 1975 and early 1976, the staff developed an extensive set of guidelines for fire protection considerations in new plants. These guidelines were issued in the Standard Review Plan as Branch Technical Position (BTP) ASB 9.5-1. They were also issued for public comment as Regulatory Guide 1.120 in June 1976. The implementation of these guidelines for new plants assures that fire protection is taken into consideration as a basic part of the design, rather than as an add-on after the design is otherwise complete. Combined with the NRC and the nuclear industry's conservative approach to consideration of other potential accidents, we believe that this program will result in an acceptable level of fire protection for nuclear power plants.

A second aspect of the staff's effort includes the backfitting of existing facilities to provide a level of fire protection commensurate to that required for new facilities. This effort is reflected in Appendix A to BTP 9.5-1, which was issued in September 1976. It was followed by a request to all licensees to compare their facility to the new guidelines and prepare an extensive "fire hazards analysis." These analyses were submitted to the NRC between late 1976 and early 1978. Considerable delay in the submittals from licensees was caused by the complexity of the required analyses and the need to obtain qualified fire protection engineers. The NRC staff review of licensees fire protection analyses began in early 1977. These reviewers included fire protection consultants having expertise in various unique aspects of fire protection engineering. The reviews are extensive and address such things as combustibles, detection systems, suppression systems, and administrative controls. The target date to complete the fire protection reviews for operating plants is December 1978.

With regard to your interest in cable fire retardant coatings, a series of small and full scale fire tests were performed by the Sandia Laboratories as a part of NRC's research program to evaluate the effectiveness of fire retardant coatings. The preliminary results of the first three phases of the test program are given in a Sandia report, "A Preliminary Report on Fire Protection Research Program Fire Retardant Coatings Tests," No. SAND 78-0518, dated March, 1978, which is enclosed within Attachment I. Some of the flame retardant coatings tested at Sandia are installed or proposed to be installed in the operating plants as shown below.

PLANTS WHICH HAVE INSTALLED OR PROPOSED TO INSTALL
FLAME RETARDANT COATINGS ON GROUPED ELECTRICAL CABLES

Arkansas 1 & 2	Quad Cities 1 & 2
Brunswick 1 & 2	Rancho Seco
Dresden 1, 2, & 3	Robinson 2
Fort Calhoun	St. Lucie
Haddam Neck	Three Mile Island 2
La Cross	Turkey Point 3 & 4
Pilgrim	

Sandia tested coatings of six companies; however, only three of these, i.e., Flamemaster, Vimasco, and Carboline have been identified in the operating plants. The staff's preliminary review of the Sandia Laboratory fire retardant coating test results were reported in a memo, which is Enclosure 9 of Attachment I.

The fire protection credit given for flame retardant coatings applied to electrical cables used in nuclear power plants is limited to (1) reduced ignitability of cable groups and (2) reduced fire propagation through cable groups. For existing plants, coatings are a good technique to achieve the desired effect. Appendix A to the Branch Technical Position (BTP) ASB 9.5-1 requires cable coatings to be used for electrical cable constructions that do not pass IEEE flame tests. For future nuclear power plants, coatings on cables are not required because the electric cable construction is manufactured to meet the IEEE flame tests, thus providing the desired fire protection for electrical cables in these plants. Since Regulatory Guide 1.120, "Fire Protection" and the BTP cover both future plants and those being reviewed now, they do not require the use of a fire retardant coating or electrical cables. However, for the older plants, Appendix A to the BTP does require the use of fire retardant coating to improve the fire resistance of existing fire barrier penetration seals. For conditions tested, the Sandia test results confirmed that the fire retardant coating prevented fire propagation from one cable tray to another.

As for the status of the NRC fire protection review programs for the nuclear power plants located in Florida, Turkey Point has had a site visit by the NRC staff and the issuance of the Safety Evaluation Report (SER) is scheduled for September 1978. The St. Lucie and Crystal River fire protection reviews are scheduled to be completed by December 1978.

Enclosed as Attachment I, are the NRC guidance documents for nuclear power plant fire protection. These should provide the information you need.

If we can be of further assistance, please let me know.

Sincerely,

Joseph M. Hendrie
Chairman

Enclosures:
Attachment I with Enclosures

ATTACHMENT I

Enclosures: NRC Fire Protection Guidance Documents

1. "Recommendations Related to Browns Ferry Fire," NUREG-0050, February 1976.

2. "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-75/087, Section 9.5.1, Fire Protection, Revision 2, which includes "Guidelines for Fire Protection for Nuclear Power Plants." (BTP-ASB 9.5-1), Revision 1.

3. Appendix A to Branch Technical Position APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," dated August 23, 1976.

4. Regulatory Guide 1.120, "Fire Protection Guideline for Nuclear Power Plants," Rev. 1, November 1977 - For Comment.

5. Standard Technical Specifications, November 1977.

6. "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance," June 14, 1977.

7. "Manpower Requirements for Operating Reactors," May 1978.

8. "A Preliminary Report on Fire Protection Research Program Fire Retardant Coating Tests (December 7, 1977 - January 31, 1978)" Sandia Report No. SAND-78-0518, printed March, 1978.

9. Memorandum from Mr. P. R. Matthews to Mr. R. L. Tedesco, "Sandia Lab Fire Retardant Coating Test Results," dated May 11, 1978.

CLAUDE PEPPER
11TH DISTRICT, FLORIDA

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July 14, 1978

Dear Chairman Hendrie:

You will please allow me to bring to your attention a matter of great concern to me and to other Members of Congress, regarding the status of the Commission's investigation and recommendations with respect to methods of fire suppression in nuclear plants. After the hearings of the Joint Committee on Atomic Energy regarding the Brown's Ferry Nuclear Generating Station cable fire, I understand the Commission was to set up or recommend some type of Fire Protection Programs in nuclear plants.

My own state of Florida and other states where such plants are in operation are very much concerned about this situation and such incidents have made it clear that while methods of fire suppression are available, it is preferable and more cost-effective to prevent fires from occuring in the first place. I am advised that to date only a few of the nation's over 60 operating nuclear plants have elected to prevent fire by coating their electrical plants. It seems that the likelihood of fire in nuclear power plants poses a grave risk to the public safety and could jeopardize the future of this energy source. Florida Power & Light Company has used cable coatings for this purpose for some time and one of your inspection groups recently visited their plants.

I would appreciate hearing from you on this matter and being advised as to the status of the Fire Protection Programs in Nuclear Plants at this time.

Kind regards, and

Believe me,

Very sincerely,

Claude Pepper
Member of Congress

Hon. Joseph M. Hendrie, Chairman
Nuclear Regulatory Commission
Washington, D.C. 20555

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