



BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.

Department of Nuclear Energy

Upton, New York 11973

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September 1, 1978

Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Robert L. Ferguson
Plant Systems Branch

Dear Bob:

SUBJECT: Fire Protection in Operating Nuclear Power Stations - Three Mile
Island Unit 1 (TMI-1) Safety Evaluation Report Review

The Safety Evaluation Report, as developed jointly by the NRC staff and Brookhaven National Laboratory, (BNL), adequately reflects the concerns and recommendations of the consultants. Throughout the reevaluation of TMI-1, there has been general agreement between the NRC staff and the BNL consultants. Based on present data, the proposed fire protection, as set forth in the SER, will give reasonable assurance that the health and safety of the public is not endangered. The following exception represents a differing engineering point of view that should be evaluated by the NRC staff.

Valve Supervision

SER Item 4.3.1.3 indicates that the licensee intends to control the position of sectional valves on the loop main by installing tamper-proof seals on these valves, and inspecting them periodically. A recent Factory Mutual study found that most shut valves were closed for legitimate reasons, then forgotten.

SER Item 3.3.9 requires that valves controlling the supply of water to sprinkler systems protecting the diesel generator rooms and the Control Building be "properly supervised", but does not specify electrical supervision. It is especially important that valves such as those be kept open at all times, and such assurance cannot be provided by valve sealing programs alone. The success of valve sealing programs depends upon ongoing administrative controls that are subject to human failure. In a recent study, Factory Mutual found that most shut valves were closed for legitimate reasons, about 80% of all shut valves directly controlled water to automatic sprinklers, and that only 5% of all shut valves were electrically supervised. In addition, management personnel at 79% of the plants where shut valves were found were concerned over this serious breach in plant

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fire protection. In spite of this concern, the valves were shut, indicating that concern alone is not sufficient. It is recommended that electrical supervision be required on all control valves in the fire protection systems protecting areas containing or exposing safety-related equipment.

The preceding statements are based on a detailed reevaluation of the fire protection program as implemented by the Metropolitan Edison Company at the TMI-1 Nuclear Power Station. The analysis covered a review of the fire prevention, detection and suppression capabilities of the TMI-1 unit as interfaced with the nuclear systems requirements. This was accomplished by utilizing a review team concept with members from Brookhaven National Laboratory (BNL) and the Nuclear Regulatory Commission Division of Operating Reactors staff.

The fire protection evaluation for the TMI-1 Plant is based on an analysis of documents submitted by the Metropolitan Edison Company to the Nuclear Regulatory Commission and a site visit. The site visit was conducted by Mr. T. Lee and Mr. M. Virgillio of the NRC; Mr. E. MacDougall of BNL; Mr. J. Kelvan of Rolf Jensen and Associates, Inc., under contract to Brookhaven National Laboratory; and Mr. J. Riopelle, consultant to BNL. Mr. Riopelle was under contract to BNL to review the manual fire fighting capabilities of the station along with administrative controls.

The TMI-1 review has been conducted under the direction of Mr. E. MacDougall and myself of the Reactor Engineering Analysis Group at BNL, and has had the following major milestone dates.

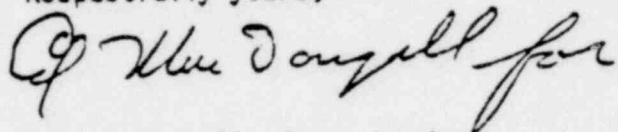
1. On May 15, 1977, Metropolitan Edison Company submitted a Fire Hazards Analysis Report in response to NRC request of May 11 and September 30, 1976. This was received at NRC on May 16, 1977, and by the consultant on January 13, 1978.
2. By letter of April 17, 1978, Metropolitan Edison Company was provided with NRC requests for additional information and staff positions pertaining to fire protection at the Three Mile Island, Unit 1 facility.
3. On May 22-26, 1978, the fire protection Review Team visited the Three Mile Island, Unit 1 facility.
4. On May 26, 1978, a meeting was held at the plant facility at which the Review Team identified additional staff positions and requested the Metropolitan Edison Company's commitment to conform to these positions.
5. On June 12, 1978, Metropolitan Edison Company provided a submittal responding to NRC requests of April 17 and May 26, 1978.
6. By letter of June 28, 1978, Metropolitan Edison Company was requested by NRC to provide additional information and commitment to the staff positions, pertaining to fire protection at the Three Mile Island, Unit 1 facility.
7. On July 14, 1978, Metropolitan Edison Company provided additional response to the NRC request of April 17, 1978.

8. On July 20, 1978, Metropolitan Edison Company provided a submittal responding to the NRC request of June 28, 1978.
9. On August 17, 1978, the NRC issued the draft Safety Evaluation Report on Three Mile Island Power Station, Unit 1.

We have not as yet received the SER review from Mr. Riopelle and therefore, his comments are not included. We will amend this report when we hear from Mr. Riopelle.

This review process has resulted in identifying areas of the plant in which a fire could have undesirable effects on safe shutdown of the reactor and on release of radioactivity to the environment. The Utility's proposed modifications are significant steps in reducing the undesirable effects of a fire in this plant.

Respectfully yours,

A handwritten signature in cursive script, appearing to read "R. E. Hall", written in dark ink.

Robert E. Hall, Group Leader
Reactor Engineering Analysis

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