

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)	
)	
METROPOLITAN EDISON COMPANY)	
JERSEY CENTRAL POWER & LIGHT)	DOCKET NO. 50-289
COMPANY, AND)	
PENNSYLVANIA ELECTRIC COMPANY)	
)	
(Three Mile Island Nuclear Station)	
Unit No. 1)		

MODIFICATION OF CONDITIONS OF EXEMPTION

I.

Metropolitan Edison Company, Jersey Central Power and Light Company, and the Pennsylvania Electric Company (Met Ed or the licensees), are the holders of Facility Operating License No. DPR-50 which authorizes the operation of the nuclear power reactor known as Three Mile Island Nuclear Station, Unit No. 1 (TMI-1 or the facility), at steady reactor power levels not in excess of 2535 megawatts thermal (rated power). The facility consists of a Babcock & Wilcox (B&W) designed pressurized water reactor (PWR) located at the licensees' site in Dauphin County, Pennsylvania.

II.

On April 27, 1978, the Commission granted the licensees of TMI-1 an Exemption from the requirement of 10 CFR 50.46(a) that Emergency Core Cooling System (ECCS) performance be calculated in accordance with an acceptable calculational model which conforms to the provisions in Appendix K. This Exemption added license conditions requiring limitation

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of operating power level, adherence to certain operating procedures, and submission of additional analyses of ECCS performance.

Following submission of additional information by the licensees and review by the staff, the previously imposed license conditions were amended by Modification of Conditions of Exemption, dated May 19, 1978. The license conditions, as modified, would: (1) require submission of a reevaluation of ECCS cooling performance wholly in conformance with 10 CFR 50.46, except for the credit for completion of operator action within 10 minutes after initiation of the event; (2) limit the maximum steady state reactor core power level to 2535 MWt; and (3) require operation in accordance with procedures described in the licensee's letters of April 27, 1978, as supplemented by letter dated May 23, 1978 (except that the maximum time for completion of operator action was 10 minutes).

Since that time, B&W has provided in their letter of August 11, 1978 additional information concerning the simplified input used in the FOAM code portion of the ECCS performance analyses submitted May 3, 1978. The staff has reviewed this additional information and on the basis of this review has concluded that the small break LOCA analyses which used this simplified FOAM code input method are acceptably conservative and in conformance with the performance criteria of 10 CFR 50.46 and Appendix K to Part 50. As noted previously, however,

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these analyses assume completion of the local operator action as described in Met Ed's letters of April 27 and May 3, 1978, within 10 minutes following the initiation of the event.

The original concern in this matter derived from an unexpected but nevertheless inadequate assessment of a spectrum of breaks. This deviation from 10 CFR 50.46 has been ameliorated on a temporary basis by the actions discussed herein. However, continued reliance on prompt operator action to perform the required steps to assure plant safety over a period of years into the future is undesirable and should be remedied as promptly as possible. To this extent, the original defect still remains until modifications are made to eliminate the reliance on prompt operator actions. To remedy this defect Met Ed submitted on July 24, 1978, a description of a proposed plant modification which would eliminate reliance on the prompt operator action noted above. Following discussion of the proposed modification with the staff, an improved alternate modification was proposed by Met Ed's letter of November 21, 1978. In the letter of November 21, 1978, Met Ed committed to complete implementation of this proposed modification at TMI-1 prior to operation following the 1980 refueling outage. Additional information on possible implementation schedules was provided in Met Ed's letter of December 29, 1978.

Met Ed, by letter dated February 23, 1979, requested an extension of the exemption from the provisions of 10 CFR 50.46 until such modifications were implemented.

With respect to this request for an exemption, we note that the conclusions drawn in our Modification of Conditions of Exemption of May 19, 1978 remain valid and have been further supported by our subsequent conclusions regarding the acceptability of the simplified input used in the FOAM code. Accordingly, we conclude that operation of TMI-1 at power levels up to 2535 MWt in accordance with the referenced procedures for operator action until modifications are completed to achieve full compliance with 10 CFR 50.46 will not endanger life or property or the common defense and security.

We have reviewed the modification proposed by Met Ed to eliminate reliance on prompt operator action. This modification is designed to mitigate a small break LOCA, assuming a loss of off-site power and the failure of one engineered safeguards electrical bus, without requiring any operator action. The leg "A" HPI line will be connected to the "C" HPI line, and the "B" leg HPI line will be connected to the "D" HPI lines. These cross connect lines will

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assure delivery to the RCS of the minimum required ECCS flow assuming the limiting single failure occurs simultaneously with a LOCA. Met Ed has also committed to verify the design characteristics of the modified HPI system with cross connect lines installed, during preoperational testing using both permanently and temporarily installed flow instrumentation.

Therefore, based on our review of Met Ed's submittal we conclude that upon installation of the modification, as proposed, and upon completion of testing to verify attainment of the flow split assumed in Met Ed's submittal of May 3, 1978, the ECCS will fully conform to the requirements of 10 CFR 50.46.

Thus, while the ECCS for TMI-1 does not fully comply with our requirements, appropriate actions have been taken to remedy the defect in a timely manner, and to mitigate the consequences of a small break LOCA, should such an accident occur prior to implementation of acceptable modifications. As a condition of continuing this exemption, adherence to prescribed operator actions and implementation of the proposed modifications at an appropriate outage during Cycle 5 or prior to operation in Cycle 6 are being made conditions of the facility operating license.

These conditions will remain in force only for the interval until the proposed modifications of the ECCS are completed. The public interest is served by issuing this exemption for TMI-1 in that in the absence of an exemption, shutdown of the facility would be required. Loss of this large block of generating capacity could adversely affect electric system reliability and thus possibly adversely affect the public.

III.

Copies of the following documents are available for inspection at the Commission's Public Document Room at 1717 H Street, Washington, D.C. 20555, and are being placed in the Commission's local public document room at the State Library of Pennsylvania, Harrisburg, Pennsylvania:

- (1) the application for exemption dated February 23, 1979;
- (2) supplementary information contained in letter from J. G. Herbein (Met Ed) to R. W. Reid (NRC), dated May 3, July 24, November 21 and December 26, 1978;
- (3) letter from J. H. Taylor to S. A. Varga (NRC), dated August 11, 1978;

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- (4) Modification of Conditions of Exemption in the matter of Metropolitan Edison Company, Jersey Central Power and Light company, and Pennsylvania Electric Company, Three Mile Island Nuclear Station, Unit No. 1, dated May 19, 1978; and
- (5) this Exemption in the matter of Metropolitan Edison Company, Jersey Central Power and Light Company, and Pennsylvania Electric Company, Three Mile Island Nuclear Station, Unit No. 1.

IV.

WHEREFORE, in accordance with the Commission's regulations as set forth in 10 CFR Part 50, the conditions of the exemption from the requirements of 10 CFR 50.46(a) granted the licensees on April 27, 1978, as amended by Modification of Conditions of Exemption dated May 19, 1978, are further amended so that effective this date the exemption is conditioned as follows:


- (1) until implementation of the modifications defined in (2) below, the facility shall be operated in accordance with the procedures for operator action described in Met Ed's letter dated April 27, 1978, as supplemented by letter dated May 3, 1978; and

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(2) authorization to operate the facility in the absence of implementation of the modifications to eliminate reliance on prompt operator action, as described in the licensee's letter of November 21, 1978 is limited to the earlier of the following:

- (a) completion of operating Cycle 5; or
- (b) at such time after September 1, 1979 when it is determined on the basis of realistic estimates that an existing or projected reactor outage will last at least 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Victor Stello, Jr., Director
Division of Operating Reactors
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 16th day of March 1979.