



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

August 7, 1979

MEMORANDUM FOR: Chairman Hendrie
Commissioner Gilinsky
Commissioner Kennedy
Commissioner Bradford
Commissioner Ahearne

FROM: Leonard Bickwit, Jr., ^{LB} General Counsel ^{by Act}

SUBJECT: TMI-1 ORDER

Attached for use at today's meeting is a clean version of the TMI-1 order distributed yesterday.

cc: OPE
OCA
OPA
SECY

CONTACT:
Stephen S. Ostrach
4-3224

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Metropolitan Edison Company, Three Mile
Island Nuclear Station, Unit No. 1

ORDER AND NOTICE OF HEARING

I. The Metropolitan Edison Company (the licensee) is holder 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 (the facility or TMI-1), at steady state power levels not in excess of 2535 megawatts thermal (rated power). The facility is a Babcock and Wilcox (B&W) designed pressurized water reactor (PWR) located at the licensee's site ten miles southeast of Harrisburg, Pennsylvania.

II. On July 2, 1979, the Commission ordered that the facility remain in a cold shutdown condition until further order of the Commission and stated that a hearing will be conducted prior to any restart of the facility. The Commission herein specifies the basis for its concerns and the procedures to govern further proceedings in this matter. For the reasons later set forth, the Commission has determined that satisfactory completion of certain short-term actions and resolution of various concerns described herein are required to provide reasonable assurance that the facility can be operated without endangering the health and safety of the public. The Commission has determined that certain additional long-term actions are, for the reasons given below, required to be completed as promptly as practicable and that reasonable progress on the completion of such actions prior to restart is required, in order to provide reasonable assurance that the facility can be operated safely over the long term. This Order and notice of hearing further establishes procedures for a hearing and decision on the particular issues identified in Section V of this Order. The Commission has determined that hearing and decision

(with review thereof) on the issues specified in this order is required and that such hearing, decision and review on the issues relating to the actions required prior to restart of the facility must be completed prior to any Commission Order lifting the suspension of operation. On the basis of that hearing the Commission will determine whether any further operation will be permitted and, if so, under what conditions.

Accordingly, the Atomic Safety and Licensing Board designated to conduct this proceeding should give priority to consideration of those issues which are related directly to suspension of operation. To the extent feasible, the Board should defer full review of the issues related to the longer-term actions until after the rendering of a partial initial decision regarding the suspension-related issues.

The Commission's July 2, 1979 Order recited that "the Commission presently lacks the requisite reasonable assurance that the . . . Licensee's Three Mile Island Unit No. 1 Facility . . . can be operated without endangering the health and safety of the public." The bases for that conclusion (which remains valid) are:

In the course of its evaluation to date of the accident at the Three Mile Island Unit No. 2 facility, which utilizes a B&W designed PWR, the Nuclear Regulatory Commission staff has ascertained that B&W designed reactors appear to be unusually sensitive to certain off-normal transient conditions originating in the secondary system. The features of the B&W design that contribute to this sensitivity are: (1) design of the steam generators to operate with relatively small liquid volume in the secondary side; (2) the lack of direct initiation of reactor trip upon the occurrence of off-normal conditions in the feedwater system; (3) reliance on an

integrated control system (ICS) to automatically regulate feedwater flow; (4) actuation before reactor trip of a pilot-operated relief valve on the primary system pressurizer (which, if the valve sticks open, can aggravate the event); and (5) a low steam generator elevation (relative to the reactor vessel) which provides a smaller driving head for natural circulation.

Because of these features, B&W designed reactors place more reliance on the reliability and performance characteristics of the auxiliary feedwater system, the integrated control system, and the emergency core cooling system (ECCS) performance to recover from frequent anticipated transients, such as loss of offsite power and loss of normal feedwater, than do other PWR designs. This, in turn, places a large burden on the plant operators in the event of off-normal system behavior during such anticipated transients.

As a result of a preliminary review of the Three Mile Island Unit No. 2 accident chronology, the NRC staff initially identified several human errors that occurred during the accident and contributed significantly to its severity. All holders of operating licenses, except Metropolitan Edison, whose plants were already shut-down, were subsequently instructed to take a number of immediate actions to avoid repetition of errors, in accordance with bulletins issued by the Commission's Office of Inspection and Enforcement (IE). In addition, the NRC staff began an immediate reevaluation of the design features of B&W reactors to determine whether additional safety corrections or improvements were necessary with respect to these reactors. This evaluation involved numerous meetings with B&W and certain of the affected licensees.

The evaluation identified design features as discussed above which indicated that B&W designed reactors are unusually sensitive to certain off-normal transient conditions originating in the secondary system. As a result, an additional bulletin was issued by IE which instructed holders of operating licenses for B&W designed reactors to take further actions, including immediate changes to decrease the reactor high pressure trip point and increase the pressurizer pilot-operated relief valve setting. Also, as a result of this evaluation, the NRC staff identified certain other safety concerns that warranted additional short-term design and procedural changes at operating facilities having B&W designed reactors. These were identified as items (a) through (e) on page 1-7 of the Office of Nuclear Reactor Regulation Status Report to the Commission of April 25, 1979.

In addition to the items identified for the other B&W reactors, the unique circumstances at TMI require that additional safety concerns identified by the NRC staff be resolved prior to restart. These concerns result from (1) potential interaction between Unit 1 and the damaged Unit 2, (2) the impact of the Unit 2 accident on the management and technical resources of Metropolitan Edison, (3) the potential effect of operations necessary to decontaminate the Unit 2 facility on Unit 1, and (4) recognized deficiencies in emergency plans and station operating procedures. Based on the above, the Commission's Director of Nuclear Reactor Regulation (NRR) has recommended that the following actions (the "short-term actions") be required of the licensee to resolve the concerns stated herein and permit a finding of reasonable assurance that the facility can safely resume operation.

1. The licensee shall take the following actions with respect to TMI-1:
 - (a) Upgrade the timeliness and reliability of the Emergency Feedwater (EFW) system by performing the items specified in Enclosure 1 of the licensee's June 28, 1979 letter. Changes in design will be submitted to the NRC staff for review.
 - (b) Develop and implement operating procedures for initiating and controlling EFW independent of Integrated Control System (ICS) control.
 - (c) Install a hard-wired control grade reactor trip on loss of main feedwater and/or on turbine trip.
 - (d) Complete analyses for potential small breaks and develop and implement operating instructions to define operator action.
 - (e) Augment the retraining of all Reactor Operators and Senior Reactor Operators assigned to the control room including training in the areas of natural circulation and small break loss of coolant accidents including revised procedures and the TMI-2 accident. All operators will also receive training at the B&W simulator on the TMI-2 accident and the licensee will conduct a 100 percent reexamination of all operators in these areas. NRC will administer complete examinations to all licensed personnel.
2. The licensee shall provide for NRC review and approval of all applicable actions specified in IE Bulletins 79-05A and 79-05B.
3. The licensee shall improve his emergency preparedness in accordance with the following:

- (a) Upgrade emergency plans to satisfy Regulatory Guide 1.101 with special attention to action level criteria based on plant parameters.
- (b) Establish an Emergency Operations Center for Federal, State and Local Officials and designate a location and an alternate location and provide communications to plant.
- (c) Upgrade offsite monitoring capability, including additional thermoluminescent dosimeters or equivalent.
- (d) Assess the relationship of State/Local plans to the licensee plans so as to assure the capability to take emergency actions.
- (e) Conduct test exercise.

4. The licensee shall take actions required to demonstrate that planned decontamination and/or restoration operations at TMI-2 will not impact safe operations at TMI-1. The licensee shall provide separation and/or isolation of TMI 1/2 radioactive liquid transfer lines, fuel handling areas, ventilation systems, and sampling lines. Effluent monitoring instruments shall have the capability of discriminating between effluents resulting from Unit 1 or Unit 2 operations.

5. The licensee shall demonstrate that the waste management capability, including storage and processing, for solid, liquid, and gaseous wastes is adequate to assure safe operation of TMI-1, and that TMI-1 waste handling capability is not relief on by operations at TMI-2.

6. The licensee shall demonstrate his managerial capability and resources to operate Unit 1 while maintaining Unit 2 in a safe configuration and carrying out planned decontamination and/or restoration activities. Issues to be addressed include the adequacy of groups providing safety review and operational advice, the

management and technical capability and training of operations staff, the adequacy of the operational Quality Assurance program and the facility procedures, and the capability of important support organizations such as Health Physics and Plant Maintenance.

7. The licensee shall demonstrate his financial capability to the extent relevant to his ability to operate TMI-1 safely.
8. The licensee shall comply with the Category A recommendations as specified in Table B-1 of NUREG-0578.

The Commission has additional concerns, which, though they need not be resolved prior to resumption of operation at Three Mile Island Unit 1, must be satisfactorily addressed in a timely manner. The Commission's Director of Nuclear Reactor Regulation (NRR) has recommended that the following actions (the "long-term actions") be required of the licensee to resolve these concerns and permit a finding of reasonable assurance of the safety of long-term operation. These are:

1. submit a failure mode and effects analysis of the ICS to the NRC staff as soon as practicable;
2. give continued attention to transient analysis and procedures for management of small breaks by a formal program set up to assure timely action of these matters;
3. comply with the Category B recommendations as specified in Table B-1 of NUREG-0578; and,

4. improve emergency preparedness in accordance with the following:

- (a) modify emergency plans to address changing capabilities of plant instrumentation,
- (b) extend the capability to take appropriate emergency actions for the population around the site to a distance of ten miles.

III. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's rules and regulations in 10 CFR., it is hereby ordered that:

- (1) the licensee shall maintain TMI-1 in a cold shutdown condition until further order of the Commission following satisfactory completion of the required short-term actions and reasonable progress toward satisfactory completion of those required long-term actions referred to in section IV (such short-term and long-term actions to be considered "required" for purposes of this clause which are determined by the Commission, after review of the Licensing Board's decision, to be necessary and sufficient to provide adequate protection of the public health and safety); and
- (2) the licensee shall satisfactorily complete the long-term actions listed in Table B-1 of NUREG-0578 on the schedule set out in such table and such other long-term actions listed above as promptly as practicable.

IV. The Commission has determined that, in light of the concerns listed above, the public health, safety and interest require that the portion of the order referred to in clause (1) of Section III shall be immediately effective. The long-term actions referred to in such clause shall be those long-term actions listed in section II as to which the Commission, prior to the date of this order, has issued immediately effective orders against other licensees. If the Commission issues immediately effective orders against other licensees imposing requirements with respect to other long-term actions, it will, to the extent appropriate in the circumstances, issue orders, effective immediately, to require that the licensee demonstrate reasonable progress toward completion of such other actions as a condition to restart. If the Board determines that operation can be resumed upon completion of certain specific short-term actions by the licensee, it shall consider the extent to which the licensee has demonstrated reasonable progress toward completion of the long-term actions described in this section. If it finds that the licensee has demonstrated reasonable progress, it shall recommend resumption of operation upon completion of the short-term actions. If it cannot make such a finding, it shall recommend that operation be resumed at a date that it believes appropriately reflects the importance of the action involved, the time lost because such progress had not been made on the prescribed schedule and the overriding need to provide adequate protection for the public health and safety.

V. An Atomic Safety and Licensing Board consisting of _____,
 _____, _____ is hereby established to rule on petitions to intervene, to conduct the hearing ordered herein, and to render an initial decision in accordance with 10 CFR 2.760. The Atomic Safety and Licensing Board will issue a further order specifying the date and place of the hearing and

any prehearing conferences. To the extent practicable the Board should hold its sessions in the vicinity of the facility and it should attempt to schedule some of its sessions in the evening or on weekends to permit the maximum possible public attendance. It is the Commission's expectation that the Board will conduct the proceeding expeditiously, and that it will make every reasonable effort to comply with the tentative hearing schedule attached to this order.

The hearing will be conducted in accordance with the applicable provisions of subpart G of the Commission's Rules of Practice set forth in 10 CFR Part 2. The provisions of 10 CFR 2.715a (consolidation of parties), 2.751a (special prehearing conference and order), 2.752 (prehearing conference and order) shall apply to this proceeding.

The Commission's primary commitment is to a fair and thorough hearing and decision. Given this overriding imperative, the Board is instructed to explore opportunities to shorten the time limits provided in the Rules pursuant to 10 CFR 2.711. The Licensing Board is hereby instructed to consolidate participation of parties pursuant to 10 CFR 2.715a to the maximum extent practicable consistent with the provisions of that regulation. In its review of the Initial Decision, the Commission will invoke 10 CFR 2.711 to shorten time limits where feasible. It is hereby directed, pursuant to 2.760(a), that, upon issuance of the initial decision (or partial initial decision) in this matter, the record be certified to the Commission itself for final decision. Any party may take an appeal directly with the Commission by filing exceptions to the initial decision (or partial initial decision) in accordance with the provisions of 10 CFR 2.762. Commission review of the initial decision will be conducted in accordance with 10 CFR 2.770.

In the conduct of this proceeding the Licensing Board should exercise its authority to seek to ensure that it receives all information necessary to a thorough investigation and resolution of the questions before it. However, it should use its authority under 10 CFR 2.757 to prevent any undue delay to the proceeding resulting from any cross-examination not required for the full and true disclosure of the facts or from other sources mentioned in that section.

The provisions for pre-hearing discovery set forth in 10 CFR 2.740-2.742 shall apply to this proceeding. Furthermore, in several locations, including the Commission's Public Document Room and the TMI Local Document Room in Harrisburg, the Commission will maintain and continuously update a compilation of all publicly available information on the Three Mile Island accident and related matters, and it will also permit informal access to NRC staff considerations of the issues involved in this hearing in the manner in which such access is permitted in reactor licensing proceedings. It shall be an adequate response to any discovery request to state that the information or document requested is available in the public compilation and to provide sufficient information to locate the document or information. Moreover, as provided by 10 CFR 2.740(c) and 10 CFR 2.740(d), the licensing board may and should, when not inconsistent with fairness to all parties, limit the extent or control the sequence of discovery to prevent undue delay or imposition of an undue burden on any party.

The subjects to be considered at the hearing shall include :

- (1) Whether the "short term actions" recommended by the Director of Nuclear Reactor Regulation (set forth in Section II of this Order) are necessary and sufficient to provide reasonable assurance

that the Three Mile Island Unit 1 facility can be operated without endangering the health and safety of the public, and should be required before resumption of operation should be permitted.

- (2) Whether the "long-term actions" recommended by the Director of Nuclear Reactor Regulation (set forth in Section II of this Order) are necessary and sufficient to provide reasonable assurance that the facility can be operated for the long term without endangering the health and safety of the public, and should be required of the licensee as soon as practicable.

While the issue of psychological distress and physical consequences resulting solely from such distress is a matter of real and substantial concern, the Commission has not determined whether it is an appropriate matter to be raised in this proceeding. Any party wishing to raise this subject as a contention, or as an aspect of a separate contention, should brief the Atomic Energy Act and National Environmental Policy Act issues he believes appropriate to the Board as part of the contention acceptance process set out in the Commission's regulations. The Board should then certify that issue to the Commission for final decision prior to the issuance of its prehearing conference order pursuant to 10 CFR 2.752(c), either with or without its recommendation on that issue, as it deems appropriate under the circumstances.

Satisfactory completion of the required actions will be determined by the Director of Nuclear Reactor Regulation. However, prior to issuing its decision the Board shall have authority to require staff to inform it of the detailed steps staff believes necessary to implement actions the Board may require and to approve or

disapprove of the adequacy of such measures. With respect to any uncompleted items the Board shall have authority similar to that provided in 10 CFR 50.57(b) to take such actions or to impose such limitations or conditions as it believes necessary to protect the public health and safety: Provided, that, as provided elsewhere in this order, restart shall not be permitted until satisfactory completion of all uncompleted short-term actions. Any affirmative determination by the Director will be based upon his finding that the actions specified by the Board, or by the Commission on review, have been taken, that the specified implementing procedures employed are appropriate, that the licensee satisfies the financial qualification criteria imposed on an applicant for an operating license, and that there is reasonable assurance that the facility can safely resume operation.

As noted above, the Atomic Safety and Licensing Board should accord priority to the consideration of matters relating to the need for continued suspension of operating authority. Within the limitations of 10 CFR 50.59 and 2.717(b) of the Commission's regulations, the licensee may commence modifications, such as those recommended above by the Director of Nuclear Reactor Regulation, during the pendency of this proceeding at its own risk.

VI. If the Licensing Board should issue a decision authorizing resumption of operation upon completion of certain short-term actions by the licensee and a finding that in its judgment the licensee is making reasonable progress toward completion of the long-term actions specified in this order as to which the Commission has issued immediately effective orders against other licensees, and subsequently if staff certifies that those short-term actions have been completed

to its satisfaction, the Commission will decide within 35 days after such certification whether the provision of this order requiring the licensee to remain shut down shall remain immediately effective. Any motions relating to the lifting of immediate effectiveness must be received by the Secretary of the Commission within 10 days of issuance of the certification, and any responses to such motions must be received by the Secretary 7 days later. The Commission shall issue an order lifting immediate effectiveness if it determines that the public health, safety or interest no longer require immediately effectiveness. The Commission's decision on that question shall not affect its direct appellate review of the merits of the Board's decision.

VII. By [20 days from publication] the licensee may file a written answer to this Order and any person whose interest may be affected by this proceeding may file a written petition to intervene. Petitions for leave to intervene must be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. If a petition for leave to intervene is filed by the above date, the Atomic Safety and Licensing Board established by this Order will rule on the petition and issue an appropriate further order. An order wholly denying a petition for leave to intervene shall be appealable by the petitioner to the Commission itself within ten days after service of the order. An order granting a petition for leave to intervene shall be appealable to the Commission itself by a party other than the petitioner on the question of whether the petition should have been wholly denied.

As required by 10 CFR 2.714, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding, and how that interest may be affected by the results of the proceeding. The petition should specifically explain the reasons why intervention should be permitted with particular reference to the following factors:

- (1) the nature of the petitioner's right under the Atomic Energy Act to be made a party to the proceeding;
- (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and
- (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest.

The petition should identify the specific aspect(s) of the subject matter of the proceeding as to which petitioner wishes to intervene.

Not later than fifteen days prior to the first prehearing conference scheduled in the proceeding, the petitioner shall file a supplement to the petition to intervene which must include a list of contentions which are sought to be litigated in the matter, and the bases for each concern set forth with reasonable specificity. A petitioner who fails to file such a supplement which satisfies these requirements with respect to at least one contention will not be permitted to participate as a party.

An answer to this Order or petition for leave to intervene should be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Section, or may be delivered to the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. by _____, 1979. A copy of the petition should be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 and to Mr. George F. Trowbridge, Shaw, Pittman, Potts and Trowbridge, 1800 M Street, N.W., Washington, D.C. 20036, attorney for the licensee. Any questions or requests for additional information regarding the content of this Notice should be addressed to the Chief Hearing Counsel, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Nontimely filings of petitions for leave to intervene, amended petitions or supplemental petitions will not be entertained absent a determination that the petitioner has made a substantial showing of good cause for the granting of a later petition. That determination will be based on a balancing of the factors specified in 10 CFR 2.714(a)(i)-(v) and 2.714(d).

VIII. Copies of the following documents are available for inspection at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C. and are being placed in the Commission's local public document room at the State Library of Pennsylvania, Government Publications Section, Education Building, Commonwealth and Walnut Streets, Harrisburg, Pennsylvania 17126.

[List of documents to be submitted with staff's Technical
Submittal]

For the Commission

SAMUEL J. CHILK
Secretary of the Commission

Dated at Washington, D.C.

this ____ day of _____, 1979.

Milestone	Time Consumed (Days)	Total Days Into Proceeding
Publication of Notice (Detailed Order)	0	0
Filing of Intervention Petitions	20	20
Answers to Petitions	15	35
Time for Amending Petitions and for Negotiations re Contentions	25*	60
Time between filing Amended Petitions and Contentions and Special Prehearing Conference	15	75
Publication of Special Prehearing Conference Order	5*	80
(Discovery begins)		
Discovery completed	60*	140
During discovery period:		
-Objections to Special Prehearing Conference Order 10 days		
-Possible further refinement of contentions		
-Publication of SER - approxi- mately 15 days prior to end of discovery		
Prehearing Conference	-	140
Prehearing Conference Order	5*	145
Filing of Testimony	20*	165
(Assumes objections to prehear- ing Conference Order filed simultaneously)		
Begin Hearings	15	180
Complete Hearings	60*	240

* Indicates estimate, not governed by rules; all other times are governed by rules.

Milestone	Time Consumed (Days)	Total Days Into Proceeding
Filing of Proposed Findings	40	280
Reply to Proposed Findings	10	290
Decision by Board	45*	335

* Indicates estimate, not governed by rules; all other times are governed by rules.