

October 31, 1979

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY	)	Docket No. 50-289
	)	(Restart)
(Three Mile Island Nuclear	)	
Station, Unit No. 1)	)	

LICENSEE'S RESPONSE TO FINAL CONTENTIONS  
OF ENVIRONMENTAL COALITION ON NUCLEAR POWER

The proposed contentions of Environmental Coalition on Nuclear Power ("ECNP") are contained in petitioner's filings of October 5 and 22, 1979.<sup>1</sup> Licensee's response to those contentions follows:

Filing of October 22, 1979

Contention No. 1(a). The plant computer for TMI-1 is old, obsolete, and inadequate to respond appropriately in emergency situations. During the accident at the adjacent TMI-2, the alarm printer on the similar computer at Unit 2 had a delay time of over two and one-half hours at one point, and ran more than an hour behind events for over seven hours. This delay cannot be viewed as having adequately served the needs of the operators of TMI-2, and there is no reason to believe that a similar accident situation, with as severe or worse consequences, cannot occur at TMI-1 and be severely aggravated by slow and ambiguous computer alarm printer readings.

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<sup>1</sup> Thus, Licensee understands ECNP to be advancing the 22 contentions explicitly listed in its filings of October 5 and 22.

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Licensee's Response. Although Licensee does plan to upgrade the TMI-1 computer system and to cover this subject in its Restart Report to the NRC, the TMI-1 computer system was not included in the Commission's bases for suspension of operation of TMI-1 and therefore is not involved in any of the issues specified for this hearing. On this basis Licensee objects to the contention.

Contention No. 1(b). The low volume of primary cooling system water has the effect of reducing time available to operators and the plant control systems to apply remedial measures in the event of a loss of coolant accident (LOCA) such as the TMI-2 accident is now admitted to be. The low water volume design deficiency means that possible operator error and mechanical, electrical, or electronic failure must be minimized so as to prevent either a repeat of the TMI-2 accident or an even worse accident.

Licensee's Response. No objection.

Contention No. 1(c). The electronic signals sent to the control room in many cases record the wrong parameters, and may, thereby, mislead the reactor operator. For instance, in the case of the Electromatic Relief Valve (ERV; the Metropolitan Edison designation is RC-RV2), the signal sent to the control room to indicate a closure of this valve indicates only the electrical energizing of the solenoid which closes the valve, not the actual physical valve closing itself. This misleading signal aggravated the accident at TMI-2. There is no reasonable assurance that this same problem, or comparable ones, cannot arise many times over at TMI-1. It is the obligation of the Suspended Licensee to provide sufficient information on the performance capability of all pertinent components of the control system to reasonably ensure that electronic signals will record, accurately and in a timely manner, all necessary and correct parameters.

Licensee's Response. To the extent this contention challenges the method used to indicate the closure of the electromatic relief value, it is reasonably related to the bases for suspension, is otherwise an appropriate issue for litigation

in this proceeding, and the basis for the contention is set forth with reasonable specificity. However, to the extent the contention questions other "comparable" -- though unspecified -- electronic signals which allegedly record the wrong parameters, Licensee objects to the contention. ECNP not only has failed to identify such other comparable signals, but also has failed to provide any basis for alleging that such other comparable signals may record the wrong parameter. Nor can ECNP cure these defects simply by claiming that it is Licensee's obligation to provide information on the performance capability "of all pertinent components of the control system \* \* \*." Without any indication from ECNP as to which "pertinent components of the control system" it is concerned about Licensee cannot even begin to defend against such a charge or to determine the relevance of the charge to the bases for suspension. Therefore, Licensee objects to that part of contention no. 1(c) which raises vague and generalized challenges to unidentified control systems.

Contention No. 1(d). The TMI-2 accident showed that many monitoring instruments were of insufficient indicating range to properly warn control room operators of ambient conditions. For example, the "hot-leg" thermocouples went off-scale at

620°F and stayed off-scale for over 8 hours for reactor coolant loop A and about 13 hours for reactor coolant loop B. A higher temperature limit would have provided important information to the reactor operators. This situation is unchanged at TMI-1. All monitoring instruments for TMI-1 must be calibrated to provide full and accurate readings of the complete range of possible conditions under both normal and worst-case conditions.

In addition, it is reported that the radiation monitors went off-scale during the TMI-2 accident. It should be noted here that this eventuality was predicted in 1974 by the TMI-2 Intervenor, but dutifully denied by the NRC Staff and the Applicant during the TMI-2 licensing hearings. Needless to say, the TMI-2 Licensing Board accepted the assurances of adequate monitoring offered by the Staff and Applicant. Yet a similar situation still exists at TMI-1. All radiation monitoring equipment must be capable of recording the maximum possible releases of radiation in the event of a worst-possible accident (Class 9) in excess of Design Basis Accidents.

Licensee's Response. To the extent this contention challenges the adequacy of monitoring instruments with respect to core cooling and radiation monitoring, Licensee does not object to the contention. However, to the extent ECNP views this contention as raising questions with respect to other types of unidentified monitoring instruments, it is objectionable for the reasons just set forth above. Moreover, to the extent this contention alleges that radiation monitors must be capable of recording releases from a so-called "Class 9 accident" it is objectionable since the reference to Class 9 accident does not define any particular set of radiation releases. See Licensee's response to contention no. 4 of ECNP's October 5, 1979 filing.



Contention No. 1(e). The accident analyses performed by both the Staff and Applicant were inadequate. Over the previous few years, and even in the brief preoperational and operational life of TMI-2, a series of feedwater transients had been observed in B & W reactors. A seemingly unrelated problem with the "power operated relief valve" (PORV), whose first malfunction was on or about March 29, 1978, combined with a feedwater transient to bring about the March 28, 1979, accident at TMI-2. This sequence of multiple failures at TMI-2 could have been prevented if either the Applicant or the inspection arm of the NRC had been diligent concerning safety matters. This kind of multiple failure, combined with reactor operator errors, underscores the inadequacy of the accident analysis at TMI-2 and at TMI-1. There is no assurance that other "small break" "loss of coolant accidents" cannot occur at TMI-1 with similar or greater consequences. The Suspended Licensee should remain in suspension until a thorough and objective analysis of the accident hazard, with the compounding problem of possible operator error, and offsite consequences have been completed, and it is objectively shown that TMI-1 is safe to operate. The "reasonable assurance" of safety assumed at TMI-2 was shown to be nonexistent through real experience.

Licensee's Response. To the extent this contention calls for further analysis of the spectrum of small break loss-of-coolant accidents, it is related to one of the issues specified in the August 9 Order and Licensee has no objection. To the extent that the contention calls for coupling these analyses with unspecified operator errors, it lacks sufficient specificity to enable Licensee either to respond to the contention or to determine its relevance to the bases for suspension.

Contention No. 1(f). Many vital instruments, instrument controls, and other components in the containment building of TMI-2 lost their ability to operate because they were not considered "safety-related". As examples, the pressurizer level indicators contained components which were not designed

to withstand the high radiation levels (reported to be as high as 30,000 R per hour). The failure of these was accelerated by the water environment in the containment building. Similar instruments and control systems apply in Unit-1. That these instruments were not required to be safety grade points out clearly the inadequacy of the safety analyses of the Staff and Applicant.

Licensee's Response. But for the reference to pressurizer level indicators, this contention lacks the necessary specificity as to which "vital instruments, instrument controls, and other components in the containment building" ECNP believes should be safety grade. As to the pressurizer level indicators, Licensee does not object to a contention alleging that such indicators should be safety grade. The rest of the contention is objectionable for failure to adequately inform Licensee of the nature of the claim being advanced. See 10 C.F.R. § 2.714(b); Northern States Power Co. (Prairie Island Nuclear Generating Plant, Units 1 & 2), ALAB-107, 6 A.E.C. 188, 194 (1973); Philadelphia Electric Co. (Peach Bottom Atomic Power Station, Units 2 & 3), ALAB-216, 8 A.E.C. 13, 20 (1974); Kansas Gas & Electric Co. (Wolf Creek Generating Station, Unit 2), ALAB-279, 1 N.R.C. 559, 576 (1975). Without further specification it also is impossible to determine the relevance of the contention to the bases for suspension.

Contention No. 1(g). The TMI-2 accident showed the need for water level instruments inside the reactor pressure vessel (RPV), as well as instruments to detect steam formation. In addition, this accident demonstrated the need for a vent for hydrogen at the top of the RPV. These deficiencies still exist at TMI-1 and must be corrected to provide substantially more than reasonable assurance that there will be adequate information concerning thermodynamic and all other conditions inside the reactor in the event of worst-case accidents.

Licensee's Response. No objection. If ECNP intends the last sentence of this contention to require a safety finding more stringent than "reasonable assurance," such a standard is inconsistent with the requirements of the Atomic Energy Act of 1954. See 10 C.F.R. § 50.57(a)(3); Power Reactor Development Co. v. International Union of Electrical, Radio & Machine Workers, 367 U.S. 356 (1961).

Contention No. 1(h). The exemption for TMI-2 in 1975 from new safety requirements which would have required immediate isolation of the containment structure to prevent the leakage of radioactive gases to the atmosphere also applies to Unit 1. Immediate isolation of containment must be assured at TMI-1 by requisite additions or modifications of equipment or control technology.

Licensee's Response. No objection.

Contention No. 1(i). The interface between the operator and the reactor, the control room panel, is not adequate to provide the appropriate and necessary information to the operators in the event of an accident. Control room and control panel design of TMI-1 must be altered to assure that all appropriate and necessary information is available to, received by, and comprehensible to operators and that control room facilities maximize ability of operators to respond to accident conditions quickly and accurately.

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Licensee's Response. This contention is objectionable because it lacks both the necessary specificity and a reasonable basis. ECNP has failed to identify with any particularity the alleged inadequacies of the control room panel. Nor has ECNP identified the "appropriate and necessary information" which it believes must be available to the control room operators but presently is not available in the Unit 1 control room. The contention is so vague and generalized that it fails to adequately inform Licensee of the nature of ECNP's concerns. See cases cited with respect to contention no. 1(f). Without further specification it also is impossible to determine the relevance of the contention to the bases for suspension.

\*Contention No. 2. ECNP contends that emergency response preparation and evacuation planning for the public, who are and will be affected by operation of TMI-1 and activities at TMI-2, are still, almost five years after the licensing of TMI-1, inadequate, untested, and wholly unworkable. The fundamental question is whether or not it is even possible to carry out evacuations under realistic accident conditions. Studies and proposals for evacuation of the public from the entire area in which radiation exposures might be detrimental to the public's health and safety (including genetic well-being) are one thing; being able to carry out such paper plans successfully and quickly enough to protect the public is quite another. Emergency response and evacuation plans for TMI-1 must be finalized and demonstrated to be workable for the outermost distance in which the public could experience radiation exposure in excess of 40 CFR 190 standards which will be in effect prior to the earliest possible date for reopening of TMI-1.

The evacuation plans approved in the licensing at TMI-1 and TMI-2 are based upon the assumption that the levels of radiation exposure acceptable to public officials, up to levels that the officials deem necessary to avoid through evacuation, are acceptable to those members of the public at risk. This assumption is unjustified and is unacceptable on the grounds of public health, even ignoring the psychological damage done to those involuntarily subjected to this new form of terrorism, as the TMI-2 accident so vividly demonstrated.

In addition, the assumptions and conclusions concerning emergency preparedness and evacuation plans made by the TMI-2 Licensing Board now are known to be without merit. These erroneous conclusions and assumptions apply equally well to TMI-1. The TMI-2 accident demonstrated that a radiological accident is not, and cannot be treated, like any other kind of disaster which may require evacuation.

Furthermore, since any efforts at future evacuations will require the assistance of emergency personnel who will be just as anxious to leave as the general public, there is no assurance whatsoever that enough of these requisite individuals will stay behind, separated from their families, to assist in evacuation maneuvers. Nor has there been sufficiently demonstrated preparation of receiving centers and refugee care facilities or of the availability at all times and for all needs of fuel supplies to provide adequate transportation to accomplish evacuation. Neither has it been shown by the Suspended Licensee or NRC Staff that taking cover, remaining indoors, using blocking agents to minimize the thyroid uptake of radioactive iodine on a one time or continuing basis, or any other proposed measures short of full evacuation beyond the zone of radioactive contamination in the eventuality of an externally or internally propagated event causing breach of containment will adequately protect the public health and safety as is required under the Atomic Energy Act of 1954, as amended. Therefore, the license to operate TMI-1 should remain suspended and in the absence of demonstrated proof of evacuation capability should be revoked permanently.

Licensee's Response. Licensee recognizes the right of ECNP to raise contentions relating to emergency planning. In accordance with the position set forth at Section B of Licensee's covering memorandum, it is requested that the Board require



ECNP to revise and resubmit this contention with specific objections to Licensee's emergency preparedness following ECNP's receipt of the updated Emergency Plan.

Contention No. 3. ECNP contends that the Suspended Licensee is incapable of safely operating a nuclear power reactor, as has been conclusively demonstrated by the TMI-2 Class 9 accident that began March 28, 1979, and is still in progress. The inability of this Suspended Licensee to provide the management necessary to operate a reactor is evidenced by the unconscionably lax attitude of the management of Metropolitan Edison, which led to the wholesale rush to get TMI-2 into commercial operation, in spite of repeated serious mechanical malfunctions. It is the same management which permitted the lax conditions in the TMI-2 control room that allowed TMI-2 to operate with both auxiliary feedwater pumps turned off, a serious violation of the Technical Specifications for TMI-2. It is this same lax management attitude which almost permitted TMI-1 to begin operation on March 27, 1979, with one of these same auxiliary feedwater pumps turned off.

This same management, which has since 1974 operated TMI-1 with numerous safety and safeguards violations, has failed to develop an adequately strong engineering capability or plant safeguards capability to assure safe operation of TMI-1. Therefore, restoration of the operating license for TMI-1 should be denied.

Licensee's Response. Licensee does not object to a contention questioning its management capability. However, of the various bases identified by ECNP for challenging Licensee's management capability, the claim that Licensee rushed to get TMI-2 into commercial operation is not appropriate for litigation in this proceeding. Commercial operation is a term of art relevant to the rate setting practices of public utility

commissions. The declaration by a utility that a plant is in commercial operation usually occurs months after the start of plant operation. NRC regulation of nuclear power plants proceeds wholly apart from whether a particular facility is declared to be in commercial operation. Rather, the ability of a plant operator to proceed to design electrical output is judged by NRC on the basis of preoperational testing and compliance with Staff specified plant startup conditions. In such circumstances, the decision to declare TMI-2 in commercial operation bears not the slightest on the health and safety concerns of the NRC. This therefore is the wrong forum within which to litigate the propriety of that decision.

Contention No. 4. ECNP contends that reopening of TMI-1 must be prohibited until the Suspended Licensee and NRC Staff have fully evaluated the range of possible consequences of an accident such as the TMI-2 accident if:

- (a) the reactor operators had been less skillful than they were in handling the accident (i.e., what if they had been more prone to panic, and had made even more serious errors);
- (b) the accident had taken place in a reactor with a full inventory of fission products;
- (c) the accident had required an evacuation of the site, due to on-site contamination, at a reactor with spent fuel being stored on-site, either normally or in a compacted configuration;
- (d) there had been a core meltdown on, say, March 30, 1979;

and until the Suspended Licensee has provided reasonable assurance that the short-term and long-term alterations of equipment and practices required by the Commission can and will prevent the recurrence of the same or comparable or more serious sequences of events at TMI-1. NUREG-0600, which catalogues the non-compliances of this Suspended Licensee, forms a basis for evaluating the Licensee's and the Staff's ability to analyze and hence to prevent such accidents, or worse, from taking place in the future at TMI-1. The burdens of proof that all such sequences of events and their consequences have been analyzed lie with the proponents of reopening TMI-1 and the burdens of full review fall upon the NRC Staff, not upon the Petitioners/Interveners (10 CFR 2.732).

Licensee's Response. Licensee objects to this contention. The first part of the contention asserts that Licensee must evaluate the consequences of an accident like that at TMI-2 but with further hypothetical assumptions ranging from increased operator error to a core meltdown. Such assumptions are wholly speculative, without any basis in fact, and represent an ambiguous and undefined set of impacts; nor do those assumptions bear any relationship to the accident at TMI-2 or to the bases for suspension of the TMI-1 license. Moreover, it is unclear to Licensee what purposes would be served by analyzing such hypothetical assumptions. Such an analysis has never been a part of the Commission's safety reviews, and nothing which has been learned from the accident at TMI-2 suggests that it would be appropriate to analyze the assumptions put forth by ECNP.

The second part of this contention asserts that Licensee must provide reasonable assurance that the short- and long-term modifications proposed by the NRC Staff will prevent the recurrence of accidents "the same or comparable or more serious sequences of events" as those which occurred at TMI-2. The contention overstates the scope of this proceeding which is concerned only with whether the short- and long-term actions recommended by the Staff are necessary and sufficient to resolve the concerns expressed by the Commission in its August 9 Order. The contention identifies no proposed modification which ECNP believes should be undertaken but is not being implemented, and it identifies no lesson learned which ECNP believes should be analyzed but is being ignored. In short, there is no real contention here. Rather, ECNP presents its legal view that under 10 C.F.R. § 2.732 Licensee bears the ultimate burden of proof with respect to the adequacy of the short- and long-term lessons learned recommendations.

Contention No. 5. ECNP contends that the cumulative impact of radiation exposure already received from the TMI site during the pre-March 28, 1979, operations of Units 1 and 2, plus the exposures of undetermined and now undeterminable magnitude received during the weeks and months of the TMI-2 accident, plus future doses, from either normal or unanticipated

emissions from a reopened TMI-1 or additional planned or unplanned releases of radioactive gases, water, or solid materials from TMI-2, will constitute an undue risk to the health and safety of our members and the entire population of the Susquehanna Valley and Southeastern Pennsylvania.

According to sworn testimony by Mr. Thomas M. Gerusky, Director of the Bureau of Radiation Protection of the Commonwealth of Pennsylvania, before the U. S. Congressional Committee on Science and Technology, Subcommittee on Natural Resources and the Environment on June 2, 1979, about fifteen (15) curies of Iodine-131 were released to the environment in the first month after the TMI-2 accident. In the Final Supplement to the Final Environmental Statement for TMI-2, it was estimated that about 0.01 curies of this isotope would be released during a year of normal operation. The fifteen curies, then, represents a release of 1500 times that expected for one year of normal operation, and 50 times more than the plant was expected to emit in its entire 30 year operating lifetime. As a result, any additional releases, due to even the normal operation of TMI-1, if normal operation is ever possible, would be far beyond those which the residents of this area were promised.

Similar considerations apply to the emissions of the radioactive noble gases released during the TMI-2 accident and those expected to be released in the coming months. In addition, many of the residents of the vicinity, already victimized by Metropolitan Edison in the TMI-2 accident, now face the continuing threat of releases of radioactively contaminated water into the Susquehanna River. These residents may now be placed in the position of having to drink, wash in, cook with, and being unable to prevent their children from consuming water containing radioactive contamination from TMI-2. These residents of the Susquehanna Valley (including members of ECNP) will thus be exposed to radiation for which they receive no commensurate benefit, radiation that was not expected to be released.

Licensee's Response. The first part of the contention alleges that radioactive releases from a reopened Unit 1, either during normal operation or from an accident, in conjunction with the pre-March 28, 1978 releases from both Units 1 and 2 and the releases from the accident at TMI-2,



will constitute an undue risk to the public health and safety. This contention is objectionable for two reasons.

First, the claim is totally unrelated to the bases for suspension. But for mention of radioactive releases from TMI-2 following the accident, this contention merely states that normal or accidental releases of radioactivity from the restart of Unit 1 will endanger the public health and safety. Nothing in the Commission's orders of July 2 or August 9 evidences any indication of a desire to litigate such a generic claim in this proceeding. Nor can ECNP cure this defect simply by noting that there were radioactive releases associated with the accident at TMI-2. When the Commission issued its suspension order it was aware of those releases, but the order neither identifies those releases as a bases for suspension nor indicates that the cumulative impacts associated with those releases formed a basis for the suspension.

Second, the claim constitutes an impermissible attack on the Commission's Regulations. 10 C.F.R. Part 50, Appendix I, sets forth the relevant numerical guides for limiting the release

of radioactivity. Those numerical guides specify particular dose values that are not to be exceeded by operation of each light-water-cooled nuclear power plant. E.g., 10 C.F.R. Part 50, Appendix I, §§ II.A, II.B.1 & II.C. Thus, so long as the radioactive releases from TMI-1 are limited in accordance with the Part 50, Appendix I, guides, there is no basis for considering the cumulative impacts associated with releases from other nuclear units. Therefore, this part of the contention should be rejected. See 10 C.F.R. § 2.758(a); Potomac Electric Power Co. (Douglas Point Nuclear Generating Station, Units 1 & 2), ALAB-218, 8 A.E.C. 79, 89 (1974); Union Electric Co. (Callaway Plant, Units 1 & 2), ALAB-347, 4 N.R.C. 216, 218 & n.5 (1976).

The second part of this contention contains argumentation which apparently is intended to provide some basis for the contention. Thus, it is claimed that, with respect to releases of radioactive iodine and noble gases, the releases during the TMI-2 accident were beyond those anticipated during the life of the plant and, as a result, any additional releases from TMI-1 "would be far beyond those which the residents of this

area were promised." Similarly, it is alleged that the clean-up of Unit 2 will result in the discharge of radioactive water to the Susquehanna River. These concerns simply do not provide any basis for considering the so-called cumulative impacts of radioactive releases. The public health and safety is protected so long as releases from a restarted Unit 1 comply with 10 C.F.R.

Parts 20 and 50, Appendix I.

Contention No. 6. Many residents of central Pennsylvania were thoroughly and completely terrorized by the March 28, 1979, accident at TMI-2. This terror has turned the lives of many otherwise happy people into a living nightmare, because they know the accident at TMI-2 is not over, and that unannounced releases of radioactive materials continue. In addition, Metropolitan Edison now proposes to rush TMI-1 into operation. This rash and cruel act will have the effect of increasing the level of fear, terror, and bitter resentment among many residents of that beleaguered area. Already threats of violence have been made concerning the proposed operation of TMI-1.

Metropolitan Edison has created a climate where people know that they are no longer safe in their own homes, they are afraid to grow food in their own gardens, and many will soon have reason to distrust the very water they drink. They have learned the utter contempt that Metropolitan Edison holds for their feelings and their health and safety.

One certain result of the reopening of TMI-1 will be a substantial increase in the tension in the area surrounding TMI-1. The outward manifestation of this tension may well appear as increased suicide rates, divorce rates, incidences of child beating, a general lowering of the general mental health of the populace, quite probably, acts of civil disobedience against TMI-1 and possible acts of violence, even sabotage against TMI-1. A good example of the psychological impact of the TMI-2 accident upon the residents of central Pennsylvania is afforded by the appended editorial.

ECNP contends that, for the residents within a 90-mile radius of TMI, psychological stress and damage to mental health, which is a vital part of the whole health of a human being, will inevitably be increased by the reopening of TMI-1 or by any future operation of a nuclear power reactor at Three Mile Island, and that such mental stress and damage to health constitutes an unacceptable threat to the health, safety, and lives of those so affected.

Licensee's Response. Licensee objects to this contention. ECNP here attempts to raise a contention with respect to "psychological stress and damage to mental health." For the reasons set forth in Licensee's accompanying brief on this issue (see Licensee's Brief Opposing Admission of Psychological Distress Contentions), such a contention is not cognizable under either the Atomic Energy Act of 1954 or the National Environmental Policy Act of 1969.<sup>2</sup>

Contention No. 7. ECNP contends that the license to operate TMI-1 must remain in suspension because the safety evaluations for pressurized water reactors under which the TMI-1 reactor was originally licensed to operate have been shown by the TMI-2 accident commencing March 28, 1979, to have been inadequate to assess the potential range of events and consequences of those events and hence are invalid.

As required by 10 CFR 50.46, each PWR shall be equipped with an Emergency Core Cooling System (ECCS) which shall be designed so that its performance shall be to respond to postulated accidents in such a way as to limit the fuel temperature as specified in 10 CFR 50.46. This specification would not permit the fuel to melt. These postulated accidents

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2 Despite the Commission's August 9, 1979 Order and the September 21 and October 16, 1979 orders of this Licensing Board, ECNP has submitted no brief in support of its psychological distress contention.

include the double-ended rupture of the largest pipe in the reactor coolant system. All PWR power plants are licensed subject to this regulation. The procedures used to demonstrate this performance are not valid.

The Three Mile Island Unit II plant is licensed to operate subject to this requirement. On 28 March 1979 an accident occurred at this plant. The accident was initiated by an event less severe than the double-ended rupture of the largest pipe in the reactor coolant system. The consequence of this accident was that at least some of the fuel melted. This consequence was clearly in excess of the performance required under 10 CFR 50.46. Thus, the analyses used to predict such performance are invalid. Thus, it has now been established in fact by the evidence of 28 March 1979 at Three Mile Island Unit II, that the basis for granting these licenses was invalid, and they should be immediately suspended, or revoked. In addition to the hazard of gaseous and liquid releases that will compound the unmeasured doses already received, some of these same people will also be threatened by further radiation exposure and contamination of agricultural land by radioactive particulates in the form of cesium- and strontium-contaminated dust that may be expected to accompany clean-up operations at the damaged TMI-2. Thus, any additional dose received from operations, including ultimate decommissioning of TMI-1, will be additive and constitute an undue burden of risk beyond that already experienced but not fully or properly assessed. The cost-benefit analysis must be recalculated to take account of these issues and reissuance of the operating license withheld until the full and complete cost-benefit analysis has been finished.

Licensee's Response. Licensee objects to this contention because it fails to set forth the necessary basis. The thrust of ECNP's contention is that the analyses used to demonstrate compliance with the requirements of 10 C.F.R. § 50.46 are invalid. The basis for this allegation is identified as the accident at TMI-2. Apparently ECNP views an operator decision to throttle back the High Pressure Injection system as evidence that Emergency Core Cooling System



("ECCS") analyses no longer comply with 10 C.F.R.

§ 50.46

Such reasoning is clearly misplaced. In relevant part, 10 C.F.R. § 50.46(a) provides as follows (emphasis added):

[E]ach boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical Zircaloy cladding shall be provided with an emergency core cooling system (ECCS) which shall be designed such that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section. ECCS cooling performance shall be calculated in accordance with an acceptable evaluation model, and shall be calculated for a number of postulated loss-of-coolant accidents of different sizes, locations, and other properties sufficient to provide assurance that the entire spectrum of postulated loss-of-coolant accidents is covered. Appendix K, ECCS Evaluation Models, sets forth certain required and acceptable features of evaluation models.

It is thus clear that 10 C.F.R. § 50.46 addresses design requirements and not operational characteristics. Moreover, compliance with 10 C.F.R. § 50.46 is established on the basis of calculated cooling performance, using acceptable evaluation models and an appropriate spectrum of postulated loss-of-coolant accidents. Nothing learned from the accident at TMI-2, nor anything identified in the ECNP petition, has even the slightest relationship to any alleged errors in the calculations used to show compliance of

the TMI-1 ECCS with the criteria listed in 10 C.F.R. § 50.46(b). The contention should therefore be rejected.

The last part of contention no. 7 includes statements relating to radioactive releases associated with the clean-up of Unit 2 and the cumulative impacts of such releases. These claims have been addressed in Licensee's response to contention no. 5 above.

Contention No. 8. ECNP contends that the operating license for TMI-1 must permanently be revoked regardless of the number or kind of measures which the Staff and Suspended licensee may undertake, because operation of either TMI-1 or TMI-2 would subject the people of central and southeastern Pennsylvania to double jeopardy and would constitute cruel and unusual punishment.

Licensee's Response. Licensee objects to this contention in that it is merely a statement of the relief which ECNP desires at the close of the proceeding and not a declaration of issues which ECNP believes should be litigated in the proceeding. ECNP's references to double jeopardy and cruel and unusual punishment are clearly misplaced. Further, the issue of permanent license revocation is not within the scope of the August 9 Order.

Contention No. 9. ECNP contends that unbelievably lax regulatory, inspection, and enforcement climate created, maintained, and defended by the NRC itself must bear a considerable amount of the responsibility for this accident and that the NRC is not competent to regulate the operation of TMI-1. The NRC practice of "regulation by audit" and

regulation by inattention, rather than regulation by real inspection and real concern for safety, has created an atmosphere where utilities with lax management attitudes toward safety related concerns and consistent violations of the Commission's rules receive minimal, if any attention from the NRC. If the major enforcement action against the suspended Licensee to come out of the TMI-2 accident is to simply allow the restart of TMI-1, then the regulatory stance of the NRC will be crystal clear to all other operators of nuclear power plants: no violation of the NRC rules or even applicable statutes, no matter how flagrant, will bring about any substantial enforcement action (as permitted under Sec. 186 of the Atomic Energy Act of 1954, as amended) from the NRC. On the other hand, if the NRC were to permanently revoke the operating license for TMI-1 of the currently suspended Licensee, the message to the nuclear industry would be clear: serious safety violations bring serious consequences to the perpetrator.

Licensee's Response. Licensee objects to this contention. ECNP claims that the NRC is not competent to regulate the operation of TMI-1. Such an allegation is clearly beyond the scope of this proceeding and therefore should not be admitted as a contention. See Alabama Power Co. (Joseph M. Farley Nuclear Plant, Units 1 & 2), ALAB-182, 7 A.E.C. 210, 216 (1974); Gulf States Utilities Co. (River Bend Station, Units 1 & 2), ALAB-444, 6 N.R.C. 760, 774 (1977). Moreover, this concern was not identified by the Commission as a bases for suspension, nor has ECNP provided any basis for its allegation that the NRC regulates by inattention rather than by actual inspection. The last part of the contention consists of argumentation supporting ECNP's view that the TMI-1 license should be revoked.

Contention No. 10. ECNP contends that public confidence in the ability of the NRC to not only regulate the nuclear industry but also the willingness of the NRC to deal firmly with licensees which demonstrate a continuing disregard for and willful neglect of the Commission rules and the applicable statutes hinges the disciplinary action taken by the NRC with regard to this suspended licensee. Should the NRC continue its extraordinarily permissive regulatory stance toward the suspended licensee in view of the role of the habitual rule violations by the licensee in contributing to this accident, the signal would be clear to the public: any violation of rules and any threat to the public by any licensee will be immediately forgiven by the NRC. As a result, the members of the public will have good reason to live in fear of nuclear power plants, and this fear will contribute enormously to general panic, should any evacuation be called for.

Licensee's Response. This contention, which repeats some of the concerns voiced by ECNP in its previous two contentions, is mere argument and does not identify an issue which ECNP believes should be litigated in this proceeding. Licensee therefore objects to this contention.

Filing of October 5, 1979

Contention No. 1. Pursuant to the April 11, 1978, Order of the Commissioners which voided the 74.5 curies per year value of emissions of radon-222 in Table S-3 (10 CFR 51.20(e)) and opened all reactor licenses to litigation on radon and its health effects, the ECNP Petitioners contend that TMI-1 should not be allowed to operate until Table S-3 contains a value of radon-222 emissions consistent with NRDC v. USNRC, 547 F.2d 633, 639, at n.12 (which requires that the Commission evaluate the full period of toxicity of residual by-products of the nuclear fuel cycle). Since radon-222 emissions from abandoned mines, mill tailings, and depleted uranium have the potential for being far larger a source of radioactivity to the environment than all other sources of radioactivity combined (all per annual fuel requirement), this suspended Operating License should not be reinstated; the Operating License was granted in the first place by ignoring these prodigious emissions of radon-222, in violation of the National Environmental Policy Act of 1969. Furthermore, ignoring the

radon emissions is inconsistent with the Commission's legal obligation to protect the health and safety of the public.

Licensee's Response. Licensee objects to this contention because it raises issues clearly not identified by the Commission as the basis for suspension and therefore seeks to litigate matters not properly within the scope of this proceeding. Moreover, the Commission previously has considered the matter of suspending the TMI licenses in response to the decision in Natural Resources Defense Council v. NRC, 547 F.2d 633 (D.C. Cir. 1976), rev'd sub nom. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978), and at that time decided license suspension was inappropriate. Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-76-18, 4 N.R.C. 470 (1976).

Contention No. 2. The Operating License of TMI-1 should not be reinstated -- if at all -- until Table S-3 (10 CFR 51.20(e)) is full and complete, which it now is not. For example, one large source of environmental contamination in the fuel cycle comes from technetium-99, which has until recently also been ignored by the Staff. In addition, the Staff has seriously and irresponsibly underestimated the hazards to human beings resulting from the ingestion of technetium-99.

Licensee's Response. Licensee objects to this contention for the reasons just stated above.

Contention No. 3. The Staff of the Commission, in its publication Regulatory Guide 1.109, sets forth conversion factors for calculating exposures to humans as a result of ingestion of, inhalation of, or immersion in a cloud of radioisotopes. For a number of radioisotopes of biological importance, these conversion factors have been underestimated



by factors ranging from 10 to over 1000. The Operating License for TMI-1 should not be reinstated until the true and full environmental effects for the entire fuel cycle have been properly, fully, and accurately determined, without omission or subterfuge.

Licensee's Response. This contention, like the last two contentions, seeks to litigate a matter wholly unconnected with the bases for suspension identified by the Commission in its July 2 and August 9 Orders. The contention should therefore be rejected.

Contention No. 4. The Operating License for TMI-1 should remain in suspension until the full range of accidents, including risk (sequences and consequences of events) of Class 9 accidents, has been fully analyzed for the TMI site, with due consideration to the applicable populations, previous accident experience, local weather conditions, and local geography. ECNP contends that there can be no justification for further jeopardizing the lives, the mental, physical, and genetic health, and the properties and economic security of all individuals within the lethal zone of TMI.

Licensee's Response. Licensee objects to this contention. ECNP contends that the TMI-1 license should remain suspended until the full range of accidents, including "Class 9 accidents," have been analyzed for the TMI site. Since ECNP identifies no accident scenario other than Class 9 accidents which it believes to have been ignored, Licensee reads this contention as a claim that all Class 9 accidents must be considered for TMI-1.

The basis of Licensee's objection to such a contention is that ECNP's reference to Class 9

accidents is totally obscure and does not provide a basis on which Licensee can either respond to the contention or determine its relevance to the bases for suspension. The only mention of Class 9 accidents in the Commission's regulations appears in a proposed Annex to 10 C.F.R. Part 50, Appendix D. See 36 Fed. Reg. 22857 (December 1, 1971). With respect to such accidents, it is there stated:

The occurrences in Class 9 involve sequences of postulated successive failures more severe than those postulated for the design basis for protective systems and engineered safety features.

See also Offshore Power Systems (Floating Nuclear Power Plants), CLI-79-9, 10 N.R.C. \_\_\_\_ (Docket No. STN-50-437, September 14, 1975), slip op. at 2-4. Thus, Class 9 represents the residual class of all accidents not identified in Classes 1 through 8 and more severe than those postulated for the design basis of the plant. See Offshore Power Systems (Floating Nuclear Power Plants), ALAB-489, 8 N.R.C. 194, 209-10 (1978) ("the phrase 'Class 9 accident' is a term of art.").

Obviously, postulated accidents with very severe consequences -- as for example, a meltdown of the core followed by a gross breach of the containment -- fall into Class 9. See Carolina Environmental Study

Group v. United States, 519 F.2d 796, 798-99 (D.C. Cir. 1975). However, if the NRC Staff is correct that the accident at TMI-2 is a Class 9 accident (see Public Service Electric & Gas Co. (Salem Nuclear Generating Station, Unit 1), Docket No. 50-272 (September 10, 1979)), then Class 9 also includes accidents with consequences not as severe as certain Class 8 accidents or as calculated for the design basis of the plant.<sup>3</sup> In this respect it is apparent that consequences more severe than certain Class 9 accidents already have been considered in the licensing of TMI-1.

Contention No. 5. ECNP contends that the suspension of the Operating License for TMI-1 should remain in effect until a full and unbiased investigation has been completed to answer the question: Was perjury committed by witnesses for the Applicant, the NRC Staff, or the Commonwealth of Pennsylvania during the evidentiary proceedings which led to the licensing of either TMI-1 or TMI-2? ECNP believes that perjury was committed by witnesses for the above mentioned parties. A refusal by the Commission to investigate this matter would further undermine public confidence in the Commission's objectivity and would also represent a violation of the Commission's legal obligation to protect the health and safety of the public above all else.

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3 For example, the loss-of-coolant accidents considered in the Final Environmental Statement Related to Operation of Three Mile Island Nuclear Station, Units 1 and 2 (December 1972) assume whole body doses at the site boundary of 80 mrem (for a small break) and 600 mrem (for a large break). See FES at Table 20, p. VI-6. By comparison, the highest offsite dose from the accident at TMI-2 has been set at 83 mrem. See Ad Hoc Population Dose Assessment Group, Population Dose and Health Impact of the Accident at the Three Mile Island Nuclear Station at 44 (May 10, 1979).

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Licensee's Response. Licensee objects to this contention because it is totally unrelated to the bases for suspension identified by the Commission and is therefore beyond the scope of this proceeding.

Contention No. 6. ECNP contends that the emissions from the normal operation of TMI-1 have had an observable and adverse effect on the reproductive success of farm animals and domestic pets (notably cats) in certain areas around the facility. These problems with fauna have been substantially worsened by the accident at TMI-2 which has also been followed by observable damage to local flora, including, but not limited to, the deaths of local apple, pear, and pine trees. No further operation of this facility should be permitted, as it may lead to the economic decline of the local agricultural community.

Licensee's Response. Licensee objects to this contention which alleges that emissions from TMI-1 prior to March 28, 1979, have had an adverse effect on the local flora and fauna, which effect has been worsened by the accident at TMI-2. This claim is unrelated to the bases for suspension of TMI-1's operating authorization. Further, it is similar to contention no. 5 of ECNP's October 22 filing wherein it was asserted that radioactive releases from TMI-1 operation, in conjunction with the releases during the accident at TMI-2, would result in undue risk to human health and safety. For the reasons that Licensee objected to that contention, Licensee objects to this contention dealing with flora and fauna.

\*Contention No. 7. The recent Class 9 accident at TMI-2 vividly demonstrated the inability of all parties involved -- Met. Ed. management and station operators, state and local Civil Defense personnel, and NRC personnel at any and all levels -- to comprehend the nature of the TMI-2 accident as it unfolded, to communicate the necessary information to one another, the public, and the President in an honest, accurate, and timely manner, and to decide in a timely manner what course to take to protect the health and safety of the public. ECNP further contends that timely evacuation of large populations to areas which would not be threatened by changing weather conditions is a physical impossibility. Furthermore, ECNP believes that any representation by those parties that evacuation, in the event of a Class 9 accident -- as TMI-2 was -- is a possible or practical preventative measure lies somewhere among self-delusion, falsehood, and willful deception. In addition, we note that the only way to assure the safety of the residents of the area around TMI from future accidents at either reactor is to remove permanently the TMI nuclear facilities themselves. It is these facilities, in conjunction with the slipshod management, operation, and regulation of them, which pose the threat to this area and its residents.

Licensee's Response. This contention, like contention no. 2 of ECNP's October 22 filing, challenges the adequacy of Licensee's emergency planning. It is requested that ECNP also be directed to revise this contention following receipt of the updated Emergency Plan, and that a single consolidated contention on emergency planning be resubmitted by ECNP.

Contention No. 8. ECNP contends that any representation by any Met. Ed. official averring that emergency preparedness or emergency procedures have been adequately augmented since the TMI-2 accident must be viewed with extreme skepticism. Similar assurances of the adequacy of emergency preparedness and emergency procedures were testified to under oath at the TMI-2 Operating License hearings in 1977 and were found to be wholly without merit in March and April, 1979, when the accident took place. Further assurances under oath at this time in this TMI-1 proceeding that problems have been solved must be viewed in conjunction with past assurances also made under oath that



problems could not exist. In addition, the credibility of the officials of Met. Ed. has been destroyed by the public statements of these officials throughout the course of the TMI-2 accident which is still in progress. Therefore, the testimony under oath of the Suspended Licensee in this proceeding cannot be accepted as credible by the Licensing Board in reaching its decision concerning the possibility of reopening TMI-1 or the permanent revocation of the Operating License for TMI-1.

Licensee's Response. This claim is not a contention but rather constitutes argument. Licensee therefore objects to this contention.

Contention No. 9. ECNP contends that TMI-1 cannot be operated with reasonable assurance that the health and safety of the public can be adequately protected because of the possibility of further radiological contamination of the TMI plant site during the clean-up and decommissioning of the damaged TMI-2 reactor. The very presence of the damaged reactor and the experimental nature of all decontamination and repair operations at the damaged TMI-2 preclude reasonable assurance of safe operation of TMI-1. Unforeseen problems, difficulties, and accidents at TMI-2 at unpredictable times in the future may require emergency use of the TMI-1 facility to prevent release of radioactive materials into the offsite environment. The present uncertainty concerning the safe operability of the experimental Epicor II decontamination system, plus the pending overflow of intermediate and high-level radioactive waste water, and the potential for increased leakage of reactor coolant or other contaminated water in quantities requiring utilization of TMI-1 for storage purposes exemplify the issue raised in this contention.

Licensee's Response. No objection.

Contention No. 10. ECNP contends that TMI-1 is presently as vulnerable to the crash of a larger-than-design-basis aircraft as was TMI-2 prior to the accident. In the TMI-2 evidentiary proceeding the potential crash of a larger-than-design-basis aircraft into TMI-2 was conceded by all parties to lead to offsite consequences greater than those allowed under 10 CFR 100. Even though TMI-2 is disabled and inoperable at the present time, the Unit and TMI-1 may be even more susceptible to any aircraft crash now than was the case before the accident. This increased susceptibility is due to the successive loss of protective barriers between the fission and activation products and the outside environment as a result of the TMI-2 accident.

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We note too that a system called Epicor II has been designed and built in order to decontaminate the approximately one million gallons of highly contaminated water at TMI-2. We are unable to determine whether or not this system is protected against any aircraft crash, because ECNP, although represented by the same Intervenor as in the TMI-2 proceeding, has not yet been served any information whatsoever concerning Epicor II, despite the relevance of such information to the still unresolved aircraft crash issues in the ongoing TMI-2 Operating License proceeding.

Licensee's Response. ECNP raises two distinct claims in this contention. First, ECNP asserts that TMI-1 is as vulnerable to the crash of a larger-than-design-basis aircraft as was TMI-2 prior to the accident. Such a claim is wholly unrelated to the bases for suspension and therefore is beyond the scope of this proceeding.

ECNP's second claim is that TMI-2 is more susceptible to an aircraft crash following the accident than before due to the loss of some of the protective barriers between the fission and activation products and the outside environment and due to the construction of EPICOR II. Those are matters inappropriate for consideration in a hearing concerned solely with the restart of TMI-1.

Contention No. 11. ECNP contends that concrete of the TMI-1 containment building is of uncertain quality and has not been appropriately tested to ascertain the capability of the TMI-1 containment to withstand either externally or internally propagated events (e.g., aircraft crash, hydrogen explosion, or static design basis pressure). Construction irregularities contribute to the uncertainty that the TMI-1 containment is capable of withstanding a Class 9 accident sequence equal to or greater than the Class 9 accident that occurred at the adjacent

TMI-2 reactor. For these reasons, the TMI-1 reactor should not be permitted to operate.

Licensee's Response. Licensee objects to this contention because the structural capability of the TMI-1 containment concrete is unrelated to the bases for suspension identified by the Commission in its July 2 and August 9 Orders and therefore is beyond the scope of this proceeding.

Contention No. 12. In consequence of the demonstrated deficiencies of design, construction, management, operation, maintenance, monitoring, emergency response, evacuation capability, licensing, inspection, and other regulation by all parties associated with the Three Mile Island Nuclear Station, Units 1 and 2, ECNP contends that the licenses to operate either nuclear reactor should be permanently revoked, in order to protect the health, safety, psychological, economic, and political well-being of the people of Central Pennsylvania. The Suspended Licensee, Met. Ed., has demonstrated conclusively that it has no concern for the safety or the health or the very lives of members of the public.

Licensee's Response. Licensee objects to this contention in that it merely restates ECNP's belief as to the scope of relief and does not identify any matters which ECNP desires to litigate in this proceeding.

Dated: October 31, 1979.

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