UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

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

UNION OF CONCERNED
SCIENTISTS SUPPLEMENTAL PETITION
TO INTERVENE CONTAINING DRAFT CONTENTIONS

The Union of Concerned Scientists (UCS) contends that neither the short nor long term measures recommended by the Director of Nuclear Reactor Regulation are sufficient to provide reasonable assurance that the Three Mile Island Unit 1 ("TMI-1") facility can be operated without endangering the health and safety of the public and that each of the following contentions must be satisfactorily resolved prior to resumption of operation.

1. The accident at Three Mile Island Unit 2 demonstrated that reliance on natural circulation to remove decay heat is inadequate. However, neither the short nor long term measures would provide a reliable method for forced cooling of the reactor in the event of a small loss-of-coolant accident ("LOCA"). This is a threat to health and safety and a violation of both General Design Criterion ("GDC") 34 and GDC 35 of 10 CFR Part 50, Appendix A.

2. Using existing equipment at TMI-1, there are only 3 ways of providing forced cooling of the reactor: 1) the

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reactor coolant pumps; 2) the residual heat removal system; and 3) the emergency core cooling system in a "bleed and feed" mode. None of these methods meet the NRC's regulations applicable to systems important to safety and are not sufficiently reliable to protect public health and safety.

For example:

a) The reactor coolant pumps do not have an on-site power supply (GDC 17), their controls do not meet IEEE 279 (10 CFR 50.55a(h)) and they are not seismically and environmentally qualified (GDC 4).

b) The residual heat removal system is incapable of being utilized at the pressure levels in the primary system.

c) The emergency core cooling system cannot be operated in the bleed and feed mode for the necessary period of time because of inadequate storage capacity and inadequate radiation shielding of the liquid radwaste systems.

3. The staff recognizes that pressurizer heaters and associated controls are necessary to maintain natural circulation at hot stand-by conditions. Therefore, this equipment should be classified as "components important to safety" and required to meet all applicable safety-grade design criteria, including but not limited to diversity (GDC 22), seismic and environmental qualification (GDC 4), automatic initiation

(GDC 20), separation and independence (GDC 3 and 22), quality assurance (GDC 1), adequate, reliable on-site power supplies (GDC 17) and the single failure criterion. The staff's proposal to connect these heaters to the present on-site emergency power supplies does not provide an equivalent or acceptable level of protection.

4. Rather than classifying the pressurizer heaters as safety-grade, the staff has proposed simply to add the pressurizer heaters to the on-site emergency power supplies. It has not been demonstrated that this will not degrade the capacity, capability and reliability of these power supplies in violation of GDC 17. Such a demonstration is required to assure protection of public health and safety.

5. Proper operation of power operated relief valves, associated block valves and the instruments and controls for these valves is essential to mitigate the consequences of accidents caused by loss of off-site power. In addition, their failure can cause or aggravate a LOCA. Therefore, these valves must be classified as components important to safety and required to meet all applicable safety-grade design criteria.

6. Reactor coolant system relief and safety valves form part of the reactor coolant system pressure boundary. Appropriate qualification testing has not been done to verify the capability of these valves to function under the required conditions. In the absence of such testing and verification, compliance with GDC 1, 14, 15 and 30

cannot be found and public health and safety is endangered.

7. NRC regulations require instrumentation to monitor variables as appropriate to ensure adequate safety (GDC 13) and that the instrumentation shall directly measure the desired variable (IEEE 279, §4.8, as incorporated in 10 CFR 50.55a(h)). TMI-1 has no capability to directly measure the water level in the fuel assemblies. The absence of such instrumentation delayed recognition of a low water level condition in the reactor for a long period of time. Nothing proposed by the staff would require a direct measure of water level or provide an equivalent level of protection. The absence of such instrumentation poses a threat to public health and safety.

8. The accident at TMI-2 demonstrated that the emergency core cooling systems at the plants do not comply with 10 CFR 50.46. For example, the peak cladding temperature exceeded 2200 fahrenheit (50.46(b)(1)), and more than 1% of the cladding reacted with water or steam to produce hydrogen (50.46(b)(3)). The measures proposed by the staff address primarily the very specific case of a stuck-open power operated relief valve. However, any other small LOCA could lead to the same consequences. No analyses has been done to show that there is adequate protection against a spectrum of small break locations. Therefore, there is no bases for finding compliance with 10 CFR 50.46 and GDC 35. None of the corrective actions

to date have addressed the demonstrated inadequacy of protection against small LOCA's.

9. The accident at TMI-2 was substantially aggravated by the fact that the plant was operated with a safety system inoperable, to wit: two auxiliary feedwater system valves were closed which should have been open. The principle reason why this condition existed was that TMI does not have an adequate system to inform the operator that a safety system has been deliberately disabled. To adequately protect the health and safety of the public, a system meeting the Regulatory Position of Reg. Guide 1.47 or providing equivalent protection is required.

10. The design of the safety systems at TMI is such that the operator can prevent the completion of a safety function which is initiated automatically; to wit: the operator can (and did) shut off the emergency core cooling system prematurely. This violates §4.16 of IEEE 279 as incorporated in 10 CFR 50.55(a)(h) and should not be permitted for TMI. The design must be modified so that no operator action can prevent the completion of a safety function once initiated.

11. The design of the hydrogen control systems at TMI was based upon the assumption that the amount of fuel cladding that could react chemically to produce hydrogen would, under all circumstances, be limited to less than 5%. The

accident demonstrated both that this assumption is not justified and that it is not conservative to assume anything less than the worst case. Therefore, the hydrogen control systems should be designed on the assumption that 100% of the cladding reacts to produce hydrogen.

12. The accident demonstrated that the severity of the environment in which equipment important to safety must operate was underestimated and that equipment previously deemed to be environmentally qualified failed. Examples were the pressurizer level indicator and radiation monitors. The environmental qualification of safety-related equipment at TMI is deficient in three respects: 1) the parameters of the relevant accident environment have not been identified 2) the length of time the equipment must operate in the environment has been underestimated and 3) the methods used to qualify the equipment are not adequate to give reasonable assurance that the equipment will remain operable. TMI-1 should not be permitted to resume operation until all safety-related equipment has been demonstrated to be qualified to operate in the most severe environment possible as required by GDC 4. The criteria for determining qualification should be those set forth in Regulatory Guide 1.89 or equivalent.

13. The design of TMI does not provide protection against so-called "Class 9" accidents. There is no basis

for concluding that such accidents are not credible. Indeed, the staff has conceded that the accident at Unit 2 falls within that classification. Therefore, there is not reasonable assurance that TMI-1 can be operated without endangering the health and safety of the public.

14. The accident demonstrated that there are systems and components presently classified as non-safety-related which can have an adverse effect on the integrity of the core because they can directly or indirectly affect temperature, pressure, flow and/or reactivity. All such systems and components which can either cause or aggravate an accident or can be called upon to mitigate an accident must be identified and classified as component, important to safety and required to meet all safety-grade design criteria.

15. The measures identified by the staff in NUREG-0578 and the Commission's Order of August 9, 1979 include many which will not be implemented until after the plant has resumed operation and some which will not even be identified until some unspecified time in the future. No justification has been provided for concluding that the plant can safely operate in the period while these corrective actions are being identified and prior to their implementation. The public health and safety demands that all safety problems identified by the accident

be corrected prior to resumption of operation at TMI-1.

16. The accident at TMI-2 showed the fallacy of emergency planning based on less than worst case assumptions. The public health and safety requires that there be in place a feasible plan to evacuate the public in the event of a core melt with breach of containment. This plan should be required prior to resumption of operation of TMI-1.

17. The accident at TMI-2 was caused or aggravated by factors which are the subject of Regulatory Guides not used in the design of TMI and factors which are under study as unresolved safety problems applicable to TMI. For example, interaction between non-safety and safety systems created demands on the safety systems that exceeded the latter's design basis. In addition, the absence of an automatic indication system as required by Regulatory Guide 1.47 contributed to operation of the plant with the auxiliary feedwater system completely disabled. It cannot be concluded that the health and safety of the public is adequately protected unless and until it has been shown that there are specific design features in TMI-1 to resolve each applicable unresolved safety problem identified in NUREG-0410 and to demonstrate compliance with each applicable Regulatory Guide.

18. The design of TMI-1 does not comply with the Commission's regulations concerning fire protection, includ-

ing GDC 3. The NRC staff has concluded that safety system modifications to implement an alternate shutdown system are required for TMI-1. The modifications are required because of a few specific plant locations where the staff does not have reasonable assurance that a postulated fire will not damage both redundant diversions of shutdown systems. Therefore, unless these modifications are implemented and found to comply with all applicable Commission regulations, operation of TMI-1 will endanger public health and safety.

19. Neither Metropolitan Edison nor the NRC staff has presented an accurate assessment of the risks posed by operation of Three Mile Island Unit 1, contrary to the requirements of 10 CFR 51.20(a) and 51.20(d). The decision to issue the operating license did not consider the consequences of so-called Class 9 accidents, particularly core meltdown with breach of containment. These accidents were <u>deemed</u> to have a low probability of occurrence. The Reactor Safety Study, WASH-1400, was an attempt to demonstrate that the <u>actual</u> risk from Class 9 accidents is very low. However, the Commission has stated that it "does not regard as reliable the Reactor Safety Study's numerical estimate of the overall risk of reactor accident." [NRC Statement on Risk Assessment and the Reactor Safety Study Report (WASH-1400) in Light of the Risk Assessment Review Group Report, January 18, 1979.] The withdrawal of NRC's endorsement of the

Reactor Safety Study and its findings leaves no technical bases for concluding that the actual risk is low enough to justify operation of Three Mile Island Unit 1.

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NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of METROPOLITAN EDISON COMPANY, <u>et</u> <u>al</u>., (Three Mile Island Nuclear Station, Unit No. 1	)	Docket No. 50-289

CERTIFICATE OF SERVICE

I hereby certify that a copy of the "Union of Concerned Scientists Supplemental Petition to Intervene Containing Draft Contentions" and "People Against Nuclear Energy Draft Contentions" were mailed first-class postage pre-paid this 5th day of October, 1979 to the following:

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