



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, D. C. 20555

December 11, 1980

Honorable John F. Ahearne  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: STATUS REPORT ON RESTART OF THE THREE MILE ISLAND NUCLEAR STATION,  
UNIT 1

Dear Dr. Ahearne:

During its 248th meeting, December 4-6, 1980, the Advisory Committee on Reactor Safeguards continued its review of the status of the proposed restart of the Three Mile Island Nuclear Station, Unit 1 (TMI-1) with representatives of the Metropolitan Edison Company (Licensee), General Public Utilities Nuclear Group, the Babcock and Wilcox Company (B&W), and members of the NRC Staff. This matter was also the subject of Subcommittee meetings in Middletown, PA, on January 31 - February 1, 1980, and in Washington, DC, on November 28 and 29, 1980.

One of the primary results of these reviews is an indication of the need for a statement of policy by the NRC on how and when the various components of the Action Plan, the NTOL list, and items in the NRC order of August 9, 1979, are to be applied in the evaluation of the TMI-1 restart.

There is also a need for the NRC Staff to prepare a concise summary of the issues that remain open on the TMI-1 review, a statement as to the status of each, the degree to which each is considered significant from the standpoint of health and safety, and an indication as to which items must be resolved prior to restart. For those items whose resolution can be delayed until after restart, there is a need for the specification of a date when their associated review and implementation must be completed. Because of the importance the Committee attaches to this subject, we requested at our meeting on December 4, 1980, that the NRC Staff complete and submit such a summary to the Committee.

In terms of the response of the Licensee, the ACRS was encouraged by their actions in several areas. These include: (a) the qualifications of management personnel who have been brought into the organization; (b) the thorough, in-depth training program they have established for their operators and plant support personnel; (c) the program they have developed for keeping up to date on operating experiences elsewhere within the nuclear power industry; (d) the degree to which human factors considerations have been used in modifying and upgrading the TMI-1 control room; and (e) the commitment of the Licensee to a restart testing program, which includes confirmation of natural circulation.

On the basis of its review, the Committee offers the following comments:

1. In accordance with our previous recommendations, we believe that the Licensee should conduct reliability assessments of the plant as modified. Such assessments should accelerate the acquisition of potentially significant safety information and would expedite the development of the basis for further changes, should they be necessary. They would also provide the Licensee with additional technical insight into the safety of the plant. In addition, we believe the Licensee should examine the plant from the standpoint of systems interactions that may degrade safety. Although both of these studies should be conducted on a timely basis, their completion should not be a condition for restart.
2. The Committee has previously recommended that a means be considered which would provide an unambiguous indication of water level in the reactor pressure vessel. Although we do not believe that installation of such a system should be a requirement for restart, we believe the Licensee should give additional consideration to this matter on a timely basis.
3. The Committee believes there is a need for instrumentation to monitor the position (i.e., opened or closed) of the pressurizer PORV and safety valves in an unambiguous manner. The sensitivity of the currently proposed method to monitor valve position remains an open issue between the Staff and the Licensee. This matter should be resolved in a manner acceptable to the Staff prior to restart.
4. The Licensee reported on the thermal/mechanical effect of high pressure injection on reactor pressure vessel integrity for a small break LOCA with no emergency feedwater flow. This concern, raised by the Bulletins and Orders Task Force, showed a possible conflict between the need for keeping the fuel cool during bleed-and-feed cooling versus keeping the vessel within 10 CFR 50, Appendix G limits. Although B&W personnel have performed calculations relative to this matter, their calculations were limited to the small break LOCA bleed-and-feed procedure. There may be certain accident combinations which result in much more severe chilling of the pressure vessel coincident with vessel repressurization. The Committee believes that the Licensee should review a broader spectrum of accident scenarios to assure better bounding of the range of possibilities. Although these studies should be completed on a timely basis, they need not be a condition for restart.
5. The Licensee has discussed the consequences of DC power failure at TMI-1 and has evaluated them in a manner similar to that outlined in NUREG-0305, "Technical Report On D.C. Power Supplies In Nuclear Power Plants." The Licensee is performing additional studies to identify possible events which might lead to the loss of both battery trains. We encourage completion of these studies on a timely basis.

We will schedule follow-up Subcommittee meetings as soon as practicable and will arrange for the Licensee and NRC Staff to meet with the full Committee when progress warrants.

Additional comments by Messrs. D. Moeller and D. Okrent are presented below.

Sincerely,



Milton S. Plesset  
Chairman

Additional Comments by Messrs. D. Moeller and D. Okrent

In its letter dated December 13, 1979 entitled, "Report on TMI-2 Lessons Learned Task Force Final Report," concerning the topic entitled "Design Features for Core-Damage and Core-Melt Accidents," the ACRS said, "The ACRS supports this recommendation. However, the Committee believes that the recommendation should be augmented to require concurrent design studies by each licensee of possible hydrogen control and filtered venting systems which have the potential for mitigation of accidents involving large scale core damage or core melting, including an estimate of the cost, the possible schedule and the potential for reduction in risk."

In its letter dated September 8, 1980 entitled "Additional ACRS Comments on Hydrogen Control and Improvement Of Containment Capability," the ACRS reiterated this recommendation, stating its belief that it, "should be adopted and given priority by the NRC."

We believe that this recommendation is especially applicable to a higher population density site such as TMI, and that the prior history of an accident at this site reinforces the desirability of examining design measures which have the potential for reducing significantly the quantity of radioactive material released for a range of postulated serious accidents leading to severe core damage or a molten core. We recommend that the restart of Three Mile Island Nuclear Station, Unit 1 be made contingent on a commitment by the Licensee to perform, within a reasonable period following restart, a study such as that recommended in the ACRS letter of December 13, 1979 referred to above.

References:

1. Metropolitan Edison Company, "Report in Response to NRC Staff Recommended Requirements for Restart of Three Mile Island Nuclear Station Unit 1," Volumes 1-3, and Amendments 1-22.
2. U.S. Nuclear Regulatory Commission, "TMI-1 Restart, Evaluation of Licensee's Compliance with the Short- and Long-Term Items of Section II of the NRC Order Dated August 9, 1979, Metropolitan Edison Company, et al., Three Mile Island Nuclear Station Unit 1, Docket 50-289," NUREG-0680, June 1980.

References Cont'd:

3. U.S. Nuclear Regulatory Commission, "TMI-Related Requirements for New Operating Licenses," NUREG-0694, June 1980.
4. U.S. Nuclear Regulatory Commission, "Clarification of TMI Action Plan Requirements," NUREG-0737, November 1980.
5. U.S. Nuclear Regulatory Commission, "NRC Action Plan Developed as a Result of the TMI-2 Accident" NUREG-0660, Volumes 1 and 2, May 1980 (Revised: August 1980).
6. Letter from Marvin Lewis, member of the public, to Richard Major, ACRS Staff, regarding the restart of the Three Mile Island Nuclear Station Unit 1, dated November 16, 1980.
7. Letter from B. Lehmann, GPU Service Corporation, to Richard Major, ACRS Staff, transmitting Testimony outlines - TMI-1 Restart Proceeding, dated October 29, 1980.
8. Letter from H. Dieckamp, President, General Public Utilities Corporation, to J. Ahearne, Chairman, U.S. Nuclear Regulatory Commission, regarding request that the Commission reconsider and modify its Orders of July 2, 1979 and August 9, 1979 dealing with the restart of Three Mile Island Unit No. 1, dated December 1, 1980.