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January 26, 1981

The Honorable John Ahearne
Chairman, Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Chairman:

I am enclosing herein a revised statement of conclusions to be substituted for the conclusions contained in the draft staff report transmitted under cover of my letter of January 5, 1981.

Sincerely,

MORRIS K. UDALL
Chairman

Enclosure

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VI. Conclusion

The record indicates that in reporting to State and Federal officials on March 28, 1979, TMI managers did not communicate information in their possession that they understood to be related to the severity of the situation. The lack of such information prevented State and Federal officials from accurately assessing the condition of the plant. In addition, the record indicates that TMI managers presented State and Federal officials misleading statements (i.e. statements that were inaccurate and incomplete) that conveyed the impression the accident was substantially less severe and the situation more under control than what the managers themselves believed and what was in fact the case.

Revised 1/23/81
12/1/80

INTRODUCTION

At 9:00 a.m. on March 28, 1979, information available in the TMI-2 control room indicated that the reactor had been severely damaged and that the plant was in a condition not covered by its emergency procedures. Control room personnel were aware that a portion of the reactor's cooling water had been lost via a pressure relief valve that had been stuck open for more than two hours. As a result of the lost water, the main coolant pumps could no longer function as the system became steam bound. Temperature sensing devices indicated that a portion of the reactor core was being cooled by steam rather than water and some of the temperatures were of such a magnitude as to suggest the production of substantial quantities of gaseous hydrogen as a product of a chemical reaction between steam and the zirconium tubes which held the uranium fuel pellets. Very high radiation levels in the containment building indicated escape of radioactive gases from a significant portion of the fuel rods.

The NRC's Special Inquiry Group (SIG) report stated that uncertainties at 9:00 a.m. on March 28 as to how and whether the reactor could be brought to a stable cooling configuration raised the possibility of further degradation leading to melting of the core and a large radiological release.* The SIG stated that the situation was sufficiently serious to warrant a recommendation to State officials that there be a precautionary evacuation of the first few miles around

*SIG, Vol. II, Part 3, p. 983

III. Availability and Comprehension of Information

A. Awareness of Open PORV as Cause of Low Pressure in Cooling System.

At approximately 6:22 a.m., TMI Shift Supervisor Brian Mehler (who had arrived at the plant about 5:45 a.m.) shut the block valve located upstream from the leaking Power Operated Relief Valve (PORV). Following closure of the PORV, the primary cooling system pressure increased and the reactor building pressure decreased, indicating that heretofore the system had experienced for more than two hours a loss of coolant accident via the PORV which had not closed as it should have following the drop in pressure after the initial pressure increase at about 4:00 a.m. Some control room supervisors were aware that the malfunction of the PORV (sometimes referred to as the electromatic valve) explained the low system pressure and high reactor building pressure, believing therefore that the source of the problem had been found. TMI-1 Supervisor Ken Bryan recalled (GPU, Bryan, 4/26/79, p. 7) that Supervisor Mike Ross had called him from the Unit 2 Control Room saying, "Hey dummy, you know that electromatic's leaking by? ... We just isolated it." Ross told NRC investigators on April 28, 1979 that prior to closure of the block valve, the operators were not aware the PORV was closed: "I'm under the assumption that they felt (the PORV) was closed, because sometime in that time gap we went ahead and isolated it, and the reactor coolant pressure started to drop. So we felt that the electromatic (i.e. the PORV) had in fact been passing." (I&E, Ross, 4/25/79, p. 12).

In a subsequent discussion with NRC investigators, Ross engaged in the following dialogue concerning the leaking PORV, the closure of the block valve, and the inference as to what

TMI managers failed to clearly inform the NRC and State of Pennsylva of the event and its significance as soon as they themselves understood what had happened.

The following discussion supports the conclusion that on March 28, the TMI Station Manager and some of his subordinates were more likely than not aware of the detonation and its potential significance. The discussion that follows is based on excerpts and inferences from the record of the TMI investigations conducted by the President's Commission, the NRC, and the Senate Special Investigation.

Hydrogen Combustion (Recognition that a pressure pulse had occurred.

TMI supervisors, who have said they did not believe the pressure pulse to have been real, have given any of three explanations in support of their statement as to why they had not recognized that the pressure pulse and associated actuatio safeguards systems had in fact been an indication of a real increase in containment building pressure.

Q Well, the reason I asked the question of course was the fact that two people, yourself and another person, testified that you weren't there on that day, weren't in that office on that day. Those two testimonies were taken to discount that the order was given on the 28th. I just want to clarify that it is now today your recollection you were in the shift supervisor's office on that day, and I have done that.

A Yes.

(Chwastyk, I&E, 9/4/80 p. 45-46).

On September 4, 1980 Chwastyk engaged in the following dialogue with NRC investigators wherein he seeks to explain how Mehler might have gotten from him the impression that the instruction concerning equipment in the containment had not been given on March 28. Chwastyk tells the investigators that it was in fact his recollection that the instruction to not start equipment was given on March 28.

BY MR. HOEFLING:

Q Joe, let me go back to something we have already talked about. This is the instruction not to start electrical equipment that we talked about earlier. What you basically said was that the instruction was given on March 28th by Miller not to start any electrical equipment in the containment.

Now, we have talked to Brian Mahler on this same subject, about the instruction and when it was given. This is how that spun out. On October 11th, '79 Brian testified on this subject and he said basically what you have said that he recalled the instruction having been given by Miller on the 28th. After

said he found it hard to believe that anyone could have missed it or the ensuing discussions of it. (Supra, p. 130.) TMI-2 operator, Ed Frederick said that Gary Miller was particularly interested in the pressure spike on the chart recorder. (Id., p. 123.) Ross said that he was aware of the pressure pulse and that he was standing near Miller when the pressure pulse occurred. (Supra, p. 130.) Chwastyk said that soon after the pressure pulse occurred, he realized that it had been real, that it was indicative of core damage, that he explained his conclusions to Gary Miller, and that on the basis of these he recommended that they no longer cycle the PORV because the explosion had appeared coincident with opening of this valve. (Id., p. 137-147.) Chwastyk recalls that he was concerned that the containment integrity might have been breeched by the pressure pulse; he recalls directing that a radiation survey be made outside the containment to determine whether cracks had developed in the concrete containment building. (Supra, p. 148-150.) Chwastyk also told I&E investigators that to the best of his recollection that someone (he assumed Miller) had given a directive on March 28 that equipment in the containment building not be turned on and the record indicates that the basis for this direc was concern that turning on equipment would cause a spark that ignite hydrogen feared to be in the building. (Supra, p. 166-17 Mehler recalls having believed that the chart

recorder had indicated that there had been a real pressure pulse in the containment building rather than an electrical noise signal. Prior to October 30, 1979 Mehler recalled the instruction not to start equipment in the containment building. (Id., p. 158.) While Mehler said on October 30, 1979 and subsequently that he was unsure as to whether this instruction had been issued on March 28, the testimony on balance indicates that Miller gave the instruction (or it was given in his presence) to Mehler and Chwastyk in the Shift Supervis office late in the day on March 28. (Id., p. 158, 164, 172.) Theodore Illjes, a TMI operator stated that on March 28 the pressure pulse and a possible hydrogen explosion were discussed. (Id., p. 182.) Miller admits having heard a noise at the time the pressure pulse occurred, but he has denied having been aware on March 28 of a pressure pulse having been recorded, of the containment sprays having initiated, or of an Engineered Safeguards systems actuation.

In sum, of those senior personnel present in the control room on March 28, most recollect the pressure pulse and actuation of containment sprays; Illjes said that on March 28 there was speculation about hydrogen; Mehler and Chwastyk believed on March 28 that the reactor building pressure chart had shown a real increase in pressure; Chwastyk

believes he told Miller that the pressure pulse was caused by a hydrogen explosion; Mehler and Chwastyk recall that someone (the evidence indicates Miller) instructed that equipment in the containment building not be started, the record indicating this being out of concern that a spark would cause an explosion of hydrogen; and Miller states that he heard a noise but was unaware of the pressure pulse and the possibility of hydrogen ignition being the source of the pressure pulse until two days latter, on March 30 (Id., p. 97.)

On balance, consideration of statements made to TMI investigators of the situation at the time the ignition occurred and in the following hours leads to the conclusion that it is likely that Miller's recollection of not having been aware of the pressure pulse and its significance is erroneous.