

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Licensee 11750702
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USNRC

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BEFORE THE COMMISSION

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

LICENSEE'S RESPONSE TO ORAL ARGUMENTS
ON NOVEMBER 9, 1982

In keeping with the Commission's Order dated November 15, 1982, Licensee submits the following comments on matters raised in the course of oral argument before the Commission on November 9, 1982.

Inadequate Core Cooling Instrumentation

Licensee has actively studied the many suggestions for possible additional instrumentation to detect inadequate core cooling to determine which would aid the operators and not introduce ambiguity or confusion. Studies by us and others, including NRC and ACRS, have shown that "inventory trending" instrumentation supplemented by well thought out procedures and guidance could well be of use, particularly in the later stages of some accidents. Consequently, even though criteria have continued to evolve and the Commission staff has not yet authorized

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use of any such instrumentation pending completion of further development of procedures and training, Licensee has committed to provide additional instrumentation of this type. Specifically, work on detailed design and procurement of instrumentation to detect voids in the upper portion of the hot leg of the reactor plant is continuing. In addition, evaluation and preliminary engineering for a wide-range hot leg instrument and one to measure inventory in the reactor vessel head is underway.

For restart, Licensee has installed at TMI-1, saturation monitors, improved readout and extended range of incore thermocouples and extended range instrumentation for reactor outlet temperatures. We have upgraded procedures and training for diagnosing and dealing effectively with conditions which could lead to inadequate core cooling. This includes procedures and operator training for the added instrumentation. Licensee believes they provide improved information and guidance for the operators to prevent inadequate core cooling.

We are conscious of the importance and complexity of this matter. The combination of instruments and training needs to provide clear and unambiguous guidance to the operator under any of the diverse operating and accident conditions. As additional studies identify other instruments which would be helpful, we will make appropriate adjustments to our plans.

Appeal Board Memorandum and Order
of November 5, 1982

On November 5, 1982, the Atomic Safety and Licensing Appeal Board reviewing the exceptions of the parties to the Licensing Board's decision on plant design and procedures issues, issued a Memorandum and Order setting forth its preliminary views and concerns regarding the posture of the record on the issue of so-called "feed and bleed" capability. Noting its concern with the adequacy of the record and with the implications of recent Semiscale tests for the viability of feed-and-bleed cooling, the Appeal Board announced its tentative view that the Licensing Board's reliance upon feed-and-bleed cooling, as a backup for emergency feedwater, may have been misplaced. The Appeal Board also stated its tentative view that the ability of the "boiler-condenser" mode of natural circulation to remove enough decay heat to prevent core damage has not been adequately demonstrated on the record.

Because the Appeal Board's Memorandum and Order was the subject of inquiry by Chairman Palladino, and of comment by UCS, at the oral argument in Harrisburg on November 9, 1982, Licensee presents here a brief view of its position on the issues raised. There is no effective substitute, however, for the complete written comments filed by Licensee and the Staff with the Appeal Board on November 22, 1982. We respectfully refer the Commission to those written comments.

The three issues raised by the Appeal Board, then, are emergency feedwater reliability, feed-and-bleed cooling,

and boiler-condenser cooling.

Feed-and-bleed cooling, a capability which does not exist in all PWRs, is not required except in the event of an extended loss of all main and emergency feedwater. Consequently, a critical threshold question, determinative of the reliance which need be placed on feed-and-bleed cooling, is the reliability of the emergency feedwater system at TMI-1. If the Appeal Board concludes that the TMI-1 emergency feedwater system is adequately reliable, as it is urged to do by Licensee and the Staff, then there would be no need to place reliance, as did the Licensing Board, on feed-and-bleed cooling as a backup.

The Licensing Board found that the TMI-1 EFW system will be safety-grade at restart for small-break loss-of-coolant accidents and for loss-of-main feedwater transients. Further, it is undisputed that the improvements already made to the EFW system at TMI-1 meet and exceed the Staff's recommended short-term requirements, as well as those imposed by this Commission as a condition of resumed operation at the other B&W plants shut down immediately following the TMI-2 accident.

With respect to feed-and-bleed cooling, the record includes the B&W analysis, performed with its NRC approved evaluation model, of a loss of all feedwater (with and without a LOCA). The analysis assumed that the PORV does not open and that the pressurizer safety valves open for decay heat removal. The analysis shows that establishment of emergency feedwater or initiation of high pressure injection within twenty minutes

assures adequate core cooling. This evaluation is essentially a confirmation or demonstration that feed-and-bleed cooling is a viable mode of core cooling at TMI-1, if it is ever needed.

As the Licensee and Staff comments to the Appeal Board demonstrate, the two Semiscale tests do not undermine the Licensing Board's conclusions on the viability of feed-and-bleed cooling at TMI-1, and they do not invite a reopening of the record.

Test S-SR-2, which used low-head High Pressure Injection ("HPI") pumps which will not deliver water (the "feed" function) to the primary system until the system pressure is below approximately 1600 psi, is not applicable to TMI-1, which has high-head HPI pumps capable of providing flow at pressures above the safety valve setpoints (2500 psi).

Test S-SR-1, performed with high-head HPI pumps, developed operational problems with uncontrolled coolant leakage from the system which, in the words of EG&G, "precluded the use of results from test S-SR-1 for direct interpretation as to the viability of feed and bleed cooling."

Importantly, however, the Semiscale tests confirmed the Staff's predictive computer models and uncovered no thermal-hydraulic phenomena which would prevent viable feed-and-bleed operation.

Neither is there a basis for the Appeal Board's tentative view that the boiler-condenser mode is not a viable method of removing decay heat. This cooling mode has been shown to work in U-tube configurations, the basic phenomena are well understood

and appear to have occurred with the B&W design during the TMI-2 accident, and the mode has been predicted by NRC approved B&W evaluation models.

In addition, Licensee and the Staff question the utility of one of the measures tentatively suggested by the Appeal Board -- installation of the hot leg high point vents for use in venting steam voids to re-establish liquid natural circulation. The design and purpose for this vent system, consistent with the Commission's own rule governing hydrogen control, is to vent non-condensable gases during an inadequate core cooling situation.

Concluding the comments on plant design issues, Licensee observes that there were "unique" concerns about TMI-1 which led the Commission to suspend the operating license summarily. The Licensing Board found, after an extensive inquiry, that the plant design and procedures, as modified since the TMI-2 accident, are adequate to provide reasonable assurance that the public health and safety will not be endangered at least in the short term. The design of TMI-1 is similar to other plants of B&W design, and to many other pressurized water reactors; only TMI-1 has undergone the scrutiny provided by this proceeding. The plant design does not present "unique" concerns, and thus the Licensing Board's decision on plant design and procedures, like the remainder of its decision, should be made immediately effective at this time.

VV Incident

The incident in 1979 involving Mr. VV and Mr. O has received considerable attention. The details surrounding the incident have been the subject of several pleadings already before the Commission. We believe this incident must be considered in the context of the many, many other benchmarks available to the Commission. Also, management's response to this incident should be understood.

The incident took place in July, 1979. Mr. VV, at the time the Supervisor of Operations at TMI-2, engaged another licensed operator who worked for him to assist him in responding to questions which constituted a makeup examination in required licensed operator training. The examinations were turned in to the training department partly in Mr. VV's and partly in Mr. O's handwriting.

The training department observed the handwriting differences and immediately alerted management. Mr. Gary Miller, TMI Station Manager, regarded the incident as important enough for him personally to investigate and follow, even though it occurred during a period when Licensee management personnel individually and collectively were engulfed in responding to the accident. Mr. Miller thereafter spoke with training personnel as well as individually with Mr. VV and Mr. O. Mr. Miller concluded that Mr. O was an unwitting accomplice, and that Mr. VV had acted with intolerably poor judgment and utter disregard for the importance of training standards. Mr. Miller concluded, however, that

Mr. VV had not attempted to deceive the training department, was completely above board with Mr. Miller and understood Mr. Miller's rebuke for his actions. Mr. VV was relieved of all licensed operator duties and placed in a full-time training program to meet his deficiencies in accordance with Licensee's procedures.

As a result of management review of the incident and other aspects of Mr. VV's performance, Mr. VV was never returned to his duties as Supervisor of Operations. After he completed his training program and made up his deficiencies, Mr. VV was assigned to non-supervisory duties as a technical liaison where Licensee could utilize his acknowledged technical expertise. Although his license was continued to retain the capability to utilize him as a hedge against the very real possibility of licensed operator attrition in the months following the accident, in fact he was never thereafter used as a licensed operator. The decision to remove him from his supervisory position and place him in non-supervisory positions was Mr. Robert Arnold's.

It was Mr. Arnold who promptly alerted NRC investigators to the prior incident involving VV and O when NRC in 1981 initiated an investigation of Mr. O's involvement in cheating in the April 1981 NRC examination.

One aspect of the 1979 incident is still the subject of further NRC investigation -- the propriety of a certification to NRC in August, 1979, that Mr. VV had completed a full-time

training program to meet Licensee's procedures governing annual requalification requirements. The certification provided by Mr. Miller on Licensee's behalf was silent on O's involvement in VV's exam. Both Mr. Miller and Licensee have stated that failure to report the incident was wrong. Whether or not Mr. VV's actions were deceitful (as others have characterized them) or merely reflected gross disrespect for the training program (as judged by Mr. Miller), NRC should have been apprised of the incident so as to make its own determination of any impact on Mr. VV's continued licensability.

In the context of the present decision whether to lift the suspension on TMI-1's operation, the Commission should note that none of the management personnel who can be faulted for roles in the 1979 incident will be involved in the restart and operation of TMI-1. Mr. VV is employed in non-supervisory and non-licensed duties at TMI-2; he has not held any NRC license since late 1981. Mr. Miller and his boss at the time, Mr. Herbein, are no longer employed in Licensee's nuclear activities. Of the management personnel involved, Mr. Arnold remains. And it was Mr. Arnold who decided that Mr. VV should be relieved of his supervisory duties; Mr. Arnold was unaware of and played no role in the 1979 certification of Mr. VV; and it was Mr. Arnold who advised NRC of the 1979 incident which he remembered also involved Mr. O. In short, there is no reason based on the 1979 VV-O incident to now halt restart of TMI-1 by presently constituted management of GPU Nuclear. Licensee fully expects that its

ongoing investigation as well as the NRC's own investigation of the 1979 incident will bear this out.

Commonwealth Concerns

The Commonwealth of Pennsylvania's opposition to immediate effectiveness of the Licensing Board decision is very limited and specific. First, it should be noted that although they participated more fully than any intervenor throughout the proceeding, they do not question Licensee's management or the adequacy of technical modifications to TMI-1. Their concerns devolve to whether three individuals should be used as NRC-licensed operators, whether specific criteria for operator instructors should be in place prior to restart, and whether the dosimetry available to volunteer offsite emergency workers is sufficient.

As to the three individuals (actually only two, since the third has recently left Licensee's employ), Licensee has agreed to voluntarily remove them from licensed duties, if, and when, any proceeding against their licenses is initiated. As to the instructor criteria, Licensee in order to meet the Commonwealth's concerns has agreed to develop the criteria sought by the Commonwealth and provide to NRC prior to restart an evaluation of its licensed operator instructors against the criteria. Finally, the dosimetry presently available to volunteer offsite emergency workers is sufficient in Licensee's view, the NRC Staff's view and in the view of the Licensing Board and Appeal

Board. Nevertheless, Licensee continues to discuss with Commonwealth officials provision of additional dosimetry in the form of TLD's.

Emergency Operations Facility

Several Commissioners expressed interest during oral argument in the compatibility of Licensee's EOF and backup EOF with the guidelines of NUREG-0696 relating to off-site emergency facilities. Compliance with the location and habitability criteria of NUREG-0696 was not an issue in the restart hearing or the subject of findings by the Licensing Board. The Licensing Board was informed, however, of the issuance of NUREG-0696 and the Staff's plans for working out with TMI-1, along with other operating reactor licensees, the detailed requirements for off-site emergency facilities. The Commission has since directed the Staff to proceed individually with operating licensees in working out such requirements and schedules.

On an interim basis Licensee has established the EOF in Licensee's training center, along with certain other off-site emergency response facilities. The training center was selected because it best fulfills the requirements and desired features of an EOF. On a longer term basis Licensee is actively exploring a number of alternatives for the location of the EOF, with particular attention to the possibility of relocating the EOF further from the plant site so as to decrease or eliminate the chances of ever having to evacuate the EOF. Such a relocation

would minimize the importance of the back-up EOF and be more consistent with the guidance which would not require provision of a back-up EOF.

Based upon the present proximity of the EOF, Licensee has also committed to provide a back-up EOF prior to restart. Licensee's current plan is to establish the back-up EOF at the Metropolitan Edison Company's headquarters in Reading, Pennsylvania, about 40 miles from the TMI site. Licensee recognizes this proposal does not literally comply with NRC Staff guidance on the siting of back-up EOF's. However, there are significant considerations that led to the tentative selection of Reading for a back-up EOF. Reading is the hub of GPU's extensive microwave communications system and the location of Licensee's centralized computer equipment. It has excellent access to the interstate highway system and an airport in close proximity to the GPU/Met Ed facilities. All of these features facilitate rapid manning and effective management of a prolonged emergency. Licensee has yet to formally present the Reading site to the NRC Staff, but intends to begin discussions on the matter with the NRC Staff in the near future.

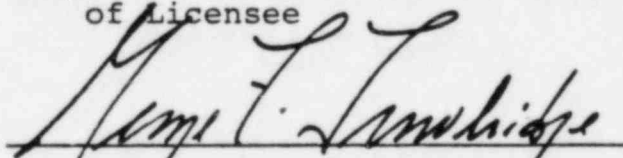
On the issue of staffing of the EOF, Licensee's primary objective is quite simple. During the first few hours of an emergency, prior to full mobilization of all of Licensee's resources, the option should be retained to have the decision-maker for recommendations on protective action remain in the plant. As indicated during the oral argument, however, pending resolution of the matter by the Commission, Licensee will comply

with the requirement imposed by the Licensing Board that this function be performed by the Emergency Support Director at the EOF within one hour.

Conclusion

These comments culminate more than three years of intense activities in response to the Commission's Orders of July and August, 1979, suspending the TMI-1 operating license. The Commission's concerns in 1979, which were then so severe as to occasion the immediate lifting of a license without prior hearing, have now been subject to extensive evidentiary proceedings. The tribunal which conducted those extensive proceedings, examined the management directly and considered first hand an enormous amount of evidence has recommended lifting the suspension. The Commission should follow that advice. The Licensing Board found that the concerns which prompted the Commission to suspend the TMI-1 license had been satisfactorily resolved, and it found no other reasons why operation of TMI-1 would be inconsistent with the public health and safety. In Licensee's view the basis is well established for placing TMI-1 on an equal footing with other licensed reactors.

Respectfully submitted on behalf
of Licensee


George F. Trowbridge, P.C.

Dated: November 30, 1982

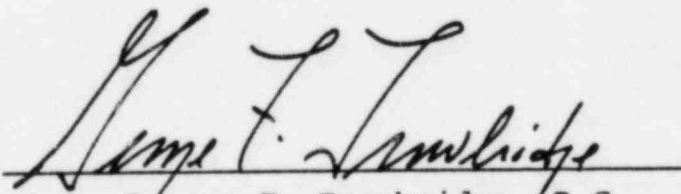
UNITED STATES OF AMERICA
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CERTIFICATE OF SERVICE

I hereby certify that copies of "Licensee's Response to Oral Arguments On November 9, 1982," were served upon those persons on the attached Service List by deposit in the United States mail, postage prepaid, or as indicated by asterisk by personal service, this 30th day of November, 1982.


George F. Trowbridge, P.C.

Dated: November 30, 1982

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

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

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