

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION



In the Matter of)
)
METROPOLITAN EDISON COMPANY) Docket No. 50-239
) (Restart)
(Three Mile Island Nuclear)
Station, Unit No. 1))

LICENSEE COMMENTS ON
COMMISSIONER GILINSKY'S
TENTATIVE CONCLUSION

SHAW, PITTMAN, POTTS & TROWBRIDGE

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In a Memorandum for the Parties in the Three Mile Island Unit 1 Proceeding, dated June 22, 1983, Commissioner Victor Gilinsky announced his decision to make known his own tentative conclusions on the restart of TMI-1 and on Licensee's management. The tentative conclusions are set out in a twenty-five page document entitled "Commissioner Gilinsky's Separate Views: Three Mile Island Unit 1 Restart" (hereinafter "Separate View"), which bears the date February 24, 1983.

Commissioner Gilinsky's Separate View was not valid in February and it is not valid today. It is contrary to facts established on the adjudicatory record in the Restart Proceeding and otherwise available to the Commission. It is also contrary to the NRC's own adjudicators' findings and conclusions based on the record. The record evidence is

largely ignored in the Separate View or where cited, is usually incompletely referenced or otherwise misrepresented.

Commissioner Gilinsky's basic position is that three individuals in the highest levels of Licensee management must be removed before he would approve restart of TMI-1. His Separate View starts with the premise that "[t]heir policies made it more likely that the accident [in 1979 at TMI-2] would take place." The record evidence does not support this premise and no record or extra-record evidence is cited in support of this premise. In fact, the Separate View includes no discussion at all of this assertion. It proceeds from this unsupported premise to a conclusion that because these officials have "failed to respond suitably to return the company to health," they must, "barring some dramatic change in the problem areas," be removed before restart of TMI-1 can be approved. It completely ignores the facts that this same management has cooperated fully with all investigations, has responded aggressively to the lessons learned from this accident, has worked responsibly to clean up TMI-2, and has met its obligations to provide reliable electric service to 1.5 million customers.

The Separate View is said to be influenced by three asserted factors:

1. "[T]he Company management's response to its failure to provide accurate information to civil authorities during the accident;

2. "[I]ts response to a cheating scandal, involving operator examinations, which was discovered while the hearing was underway, and the fact of the widespread cheating itself; and,

3. "[T]he Company management's response to the NRC's post-Three Mile Island accident program for improving the hardware, procedures, and emergency preparedness at all nuclear power plants." Separate View at 1.

Licensee disagrees totally with the Separate View. It is disheartening, indeed, to have participated in what now is a four-year long adjudicatory proceeding which contains some 30,000 transcript pages of evidence and which has culminated in three partial initial decisions by a licensing board and three appellate decisions -- themselves amounting to more than 1000 pages of on-the-record determinations and all favorable to Licensee's restart of TMI-1 -- only to see one Commissioner's tentative conclusions reflect conceptions so contrary to the record and to the decisions based on that record by NRC's own chosen adjudicators. At the same time, it gives us another opportunity to review the matters raised by the Separate View -- and we welcome that.

Below we deal with each of the subjects covered in the Separate View. In doing so, we rely on record evidence in the proceeding or, where little or no record evidence exists, on extra-record materials considered and evaluated by independent fact-finding investigators of the TMI-2 accident. It is Licensee's plea that this case be tried and decided upon facts.

I. Withholding Of Information On March 28, 1979

The first influence cited by the Separate View is that Licensee's management "consciously withheld important information from the State and the NRC" during the first day of the accident in 1979. Separate View at 10. It is correct that Licensee has not acknowledged a conscious withholding of information by the officials at the site on the day of the accident. Licensee did not consciously withhold information. Licensee has never claimed, however, that communications either within the plant or offsite to other Company officials or to authorities including the Commonwealth and NRC were adequate. No one disputes that during the early hours of the accident, communications were confused and inadequate and that not all information known onsite was passed offsite. In discussing the lack of acknowledgement, the Separate View quotes Mr. Dieckamp during an exchange at a Commission meeting on October 14, 1981: "I personally cannot accept and do not accept any conclusions that anyone consciously withheld information." However, somehow overlooked is another part of the same exchange in which Mr. Dieckamp stated:

There has never been any question in our mind but what there was an inadequacy of communications. We have never argued that the communications were proper or adequate, or the like.

. . . .

The failing was that the communications did not reflect a proper, a full assessment of the information that was available at any time, and as a result did not convey to outside agencies, and I think perhaps did not even convey internally, a full understanding of exactly what was happening and the meaning of what was happening.

So I think our approach to this has been to look at what really were the sources of that inadequate assessment and understanding, and to try to do things to solve that problem.

Transcript of Presentation on TMI-1 Restart, October 14, 1981, at 74.

The acknowledged comprehension and communications inadequacies are not a basis for concluding, however, that information was deliberately, intentionally, willfully or consciously withheld.

There were three major investigations of the TMI-2 accident. All concluded that communications on the day of the accident were inadequate. None concluded that information was deliberately or intentionally or willfully or consciously withheld. The President's Commission on the Accident at Three Mile Island, a prestigious, totally independent commission of twelve members and sixty full-time staff, plus consultants, devoted six months to investigating the TMI-2 accident and related issues. During the course of their investigation, its staff conducted more than 150 depositions and numerous

interviews and reviewed hundreds of thousands of document pages. See Report of the President's Commission on the Accident at Three Mile Island, at 175-76. On the issue of information flow, the Commission found that while there were serious problems with the sources of information and how it was conveyed:

We do not find that there was a systematic attempt at a "cover-up" by the sources of information.

Id. at 18.

The second major investigation of the accident was conducted by the Special Inquiry Group ("SIG"), directed by prestigious independent individuals who were selected by the NRC Commissioners themselves to perform an independent, full inquiry of the accident. Following an effort that included more than 270 depositions and review of volumes of documents, this group concluded:

In sum, we concluded that the evidence failed to establish that Met Ed management or other personnel willfully withheld information from the NRC. There is no question that plant information conveyed from the control room to offsite organizations throughout the day was incomplete, in some instances delayed, and often colored by individual interpretations of plant status. Indeed, information conveyed by Met Ed, NRC, and B&W employees in the control room to their own managements and offsite organizations was in many cases incomplete and even inaccurate.

However, based on the evidence, we could not conclude that the causes of this breakdown in information flow went beyond

confusion, poor communications, and a failure by those in the control room, including NRC and B&W employees, to comprehend or interpret the available information, a failing shared to some extent by offsite organizations as well.

. . . .

Moreover, NRC and B&W employees in the control room also did not recognize or communicate critical information. And their offsite organizations did no better, and perhaps worse, than the utility's offsite engineers at GPU in New Jersey in demanding reporting of important information and in recognizing the significance of the information that they did receive. The fact that NRC and B&W did no better than Met Ed/GPU in reporting critical information up the management chain and acting upon it tends to support our conclusion that there is no evidence to show willful withholding of information by Met Ed from NRC.

SIG Report, Vol. I, at 159-60 (emphasis added).

Following receipt of the Special Inquiry Group's Report, the Commissioners, largely at the insistence of Commissioner Gilinsky and then-Commissioner Bradford, and in order to respond to questions raised by the Chairman of the Interior and Insular Affairs Committee, directed additional review of this question by the Special Inquiry Group. The additional review corroborated the Group's earlier findings. They concluded:

Basically, the facts concerning the failure on the part of the control room crew to communicate important information off-site leave the investigator with only two possible conclusions: either there was intentional withholding of information, or those in the control room were not competent to assess what information was important or to act upon it. Our Report

unequivocally concluded that the facts supported the latter conclusion: "The failure to recognize and act on significant data in our view demonstrates a lack of technical competency by site employees to diagnose and cope with an accident." (Report, Vol. I, p. 160). Indeed, a substantial portion of our Report deals with measures to correct that situation, which we stated probably obtains at many other reactor plants run by other companies. Of course, the two possible conclusions are not mutually exclusive. But the record, taken as a whole, simply does not permit the unbiased observer to reach the former conclusion based on actual evidence.

Second, in light of the above conclusion, we believe it would be unfortunate to divert attention from what our Report concluded are the principal regulatory ramifications of this issue: that existing instrumentation display systems do not provide timely, usable information to cope with an accident; that present regulatory standards do not guarantee that competent supervisors will be on-site to analyze available information in the event of an accident; and that we cannot depend on people -- either licensee personnel or NRC personnel -- to communicate all of the potentially critical information from the control room to outside diagnosticians in the middle of an ongoing reactor casualty.

In each of these areas, our Report made specific, major recommendations for change. We believe that it is to the implementation of those recommendations that the Commission's time, attention and manpower ought to be devoted now.

SIG Memorandum to Chairman Ahearne, dated March 4, 1980, at 5-6 (emphasis added).

Licensee has taken a number of specific actions which respond directly to these concerns identified by the Special

Inquiry Group. An extensive human factors review of the TMI-1 control room has been conducted and the results of that review have been used to develop instrument display systems which do provide timely, usable information during an accident. See, e.g., Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 N.R.C. 1211 ("Design PID") at 1318-28 (1981). Licensee has been a leader in the industry in providing shift technical advisors and on-shift staffing of two senior reactor operators and two reactor operators to ensure that competent supervisory and technical resources are instantaneously available to analyze and react to accident information.^{1/} To aid in communication of critical information to offsite officials, Licensee installed state-of-the-art communication equipment and designated specific individuals to function as "communicators" to assure the transfer of this information. Tr. 13,776-79 (Giangi).

The third major investigation was undertaken by the Subcommittee on Nuclear Regulation for the Senate Committee on Environment and Public Works. This investigation had as one of

^{1/} Indeed, while Licensee committed to a shift technical advisor in 1979, and committed to an on-shift staffing of two senior reactor operators and two reactor operators in 1981, the Commission only recently adopted rules requiring such licensed operator staffing of operating plants by January, 1984. See 48 Fed. Reg. 31,611 (July 11, 1983). Certainly, this is an area where the objective evidence demonstrates Licensee initiatives well beyond NRC requirements or industry practice.

its focuses the first day of the accident. Using its own staff bolstered by outside investigators and experts, the Subcommittee conducted a year-long review, and concluded as to information flow on the first day of the accident:

I.D.1.a. The responses of the utility, the NRC and the State to the accident were inadequate.

I.D.1.b. Utility personnel, for the underlying reasons discussed in I.A.2 above, proved unable to diagnose the accident correctly in time to prevent a serious situation. They took incorrect actions, aggravating what began as a minor problem. The utility did not communicate effectively within its organization or with the State and the NRC, particularly with regard to the possible need for evacuation or other protective action.

The utility's communications were poor, leading Congressman Morris K. Udall to raise questions as to "Why on March 28 . . . [government] officials and the public were denied important information" about plant conditions. The NRC is still investigating this matter. The evidence reviewed by the Special Investigation does not confirm any intentional concealment of information by the utility on the first day of the accident.

I.D.1.c. The NRC was unprepared for an accident of the duration and severity of that at TMI. It was unable, during the first day, to contribute effectively to either the diagnosis of the accident or to developing strategies for achieving stability at the plant. It, too, was handicapped by highly deficient internal and external communications. Finally, at no point during the first day did the NRC give serious consideration to recommending protective action.

I.D.1.d. The State did not actively solicit the information it needed to make independent judgments about plant conditions. Rather, it simply relied on incomplete and often inaccurate information supplied by the utility. As a result, the State, which has primary responsibility for ordering protective action, did not appreciate the serious need to consider such action.

I.D.1.e. A review of all the responses discloses three basic deficiencies:

- Pre-accident emergency response planning was inadequate.

- Transmittal of information was badly mishandled.

- Failure to perceive the need for serious consideration of protective action was a major oversight.

. . . .

I.D.2.e. As noted, the failure of the utility to transmit accurate information on plant conditions during the first day, particularly regarding the hydrogen burn, has led to questions about whether the NRC, the State, and the public were denied important information by the utility.

The weight of the evidence does not support intentional concealment of information by the utility on the first day of the accident. There are conflicting statements as to whether the director of the utility's emergency command team was made aware of major evidence of uncovering of, and severe damage to, the core. On balance, however, the evidence indicates that neither he nor other utility personnel deliberately withheld this information. In fact, the actions of these personnel during the first day of the accident indicate that, for all the underlying reasons discussed in I.A.2 and I.D.2.b above, they did not know or fully understand the

information available to them. They were unprepared for, and unable to respond effectively to, the emergency.

Subcommittee on Nuclear Regulation, "Nuclear Accident and Recovery at Three Mile Island," at 13-15 (emphasis added; footnotes omitted).

There have been other investigations and inquiries of the TMI-2 accident in addition to the three principal investigations.

Governor Thornburgh of Pennsylvania established a Commission on Three Mile Island. The 134-page report of that Commission is silent on information flow on the day of the accident.

The NRC Staff explored information flow on the day of the accident in two different reports. In their initial investigation of the accident, reported in NUREG-0600, the Staff discusses the poor communications both within the plant and with offsite authorities, but provides no hint that information was being withheld. See, e.g., NUREG-0600 at §§ 3.3.2 (communications to B&W), 3.3.3 (communications to offsite Licensee technical personnel), and 3.4 (Licensee/NRC interface).

The NRC Staff was again directed to review the information flow question after the Special Inquiry Group's supplemental report in March, 1980. Following a ten-month effort on this subject, the Staff reported in NUREG-0760, "Investigation Into Information Flow During the Accident at Three Mile Island":

This investigation found that, although pertinent information was not intentionally withheld on March 28, 1979, information was not adequately transmitted to the Nuclear Regulatory Commission or [Pennsylvania's] Bureau of Radiological Protection (BRP). The investigators concluded that two primary factors examined during this investigation caused the failure of station personnel to adequately inform the necessary organizations. The predominant factor was the absence of an effective onsite system to accumulate, evaluate and disseminate information. The second factor was the lack of comprehension by plant personnel of the behavior of the plant systems.

NUREG-0760 at 10.

The Staff went on to conclude:

1. There was significant information that did not adequately flow either on the site or to the necessary offsite groups on the day of the accident.
2. On the day of the accident, an effective system did not exist to ensure adequate information flow; i.e., to provide significant information for dissemination and evaluation within the onsite organization or offsite within the Met Ed and GPU organizations as well as the NRC, Commonwealth of Pennsylvania, and other agencies.
3. Those individuals on site failed to understand the extent and significance of the problems confronting them on the day of the accident; this contributed to the inadequate flow of information.
4. Met Ed was not fully forthcoming on March 28, 1979 in that they did not appraise the Commonwealth of Pennsylvania of either the uncertainty concerning the adequacy of core cooling or the potential for degradation of plant conditions.

5. Information was not intentionally withheld from the State on the day of the accident.
6. Information was not intentionally withheld from the NRC on the day of the accident.
7. The NRC did not have an effective system to ensure that information was properly accumulated, evaluated, and disseminated.
8. Reporting requirements, both to NRC and to the State, were not sufficiently specific on March 28, 1979.

NUREG-0760 at 10-11 (emphasis added). The apparent contrast between conclusions 4 on the one hand and 5 and 6 on the other, engendered considerable interest (see Transcript of Commission Meeting, Oral Presentations on TMI-1 Restart, October 14, 1981, at 117-21) and prompted a Commission meeting with the Director of NRC's Division of Inspection and Enforcement to explore this contrast. While there exists as a result an extended but confused record on the distinctions between "intentionally," "knowingly" and "deliberately" (Commission Meeting, Discussion of Information Flow During TMI Accident, December 21, 1981) the NRC Staff inspection team's own explanation of their findings provides the best insight:

In this section, aspects of the lack of full communications with the State have been discussed. These aspects involved a failure of Met Ed to be fully forthcoming in that information was not volunteered concerning the potential for degradation of plant conditions or concerning the uncertainty of the method being used to cool the core. The investigators conclude that the

responsible Met Ed personnel did not perceive the situation to be as bad as it really was. However, it is concluded that their concern was sufficient to have made the receipt of this information important to the State. Finally, the investigators conclude that failure to pass on the information was not willful withholding, but rather it resulted from a lack of perception of the severity of the accident coupled with a perception that, unless PAG guidelines were approached, it was not necessary to discuss plant operational uncertainties with the State. In the time frame of the accident, the investigators believe that it would not have been uncommon for other utilities to have been similarly influenced by offsite releases so far below PAG levels.

NUREG-0760 at 45.

One report -- that of the Majority Staff of the House Committee on Interior and Insular Affairs -- based largely on materials compiled in the course of other inquiries, concluded:

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.

"Reporting of Information Concerning the Accident at Three Mile Island," prepared by the Majority Staff of the Committee on

Interior and Insular Affairs (March 1981) ("Majority Staff Report"), at 121.

Of the various reports on the accident, only one, NUREG-0760, was entered into evidence in the record of the Restart Proceeding. This followed correspondence directly from the Chairman of the Committee on Interior and Insular Affairs to the Licensing Board Chairman, as well as to the Chairman of the Commission. The Licensing Board heard directly from the team leader of this Staff investigation and as well in its decision reflected awareness and knowledge of the other reports on this subject. While the Board found that "the failure to inform the Commonwealth of the uncertainty of or potential for degradation of plant conditions appears to us to be inconsistent with conclusion 5 [in NUREG-0760] that information was not intentionally withheld from the Commonwealth on the day of the accident," the Board also recognized that a possible explanation for these seemingly inconsistent statements was the lack of appreciation by the Company officials of the significance of information which led to their holding back information, i.e., not relaying information they considered to be unimportant. Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1), LBP-81-32, 14 N.R.C. 381 ("Management PID") at 540-53 (¶¶ 468-93) (1981).

On the question of information flow, the Separate View cites as the most significant information which was not passed

on to authorities that day, incore thermocouple readings taken between 8:00 and 9:00 o'clock in the morning. Three reports on the accident deal extensively with this subject, all of which the Licensing Board referred to in its decision. Management PID at 546 (¶ 481).

The NRC's own Special Inquiry Group Report dealt specifically with incore thermocouple temperature readings and their disclosure. This subject was addressed in both the overview section of the report (SIG, Vol. I, at 159-160) and in the report's backup detailed discussion (SIG, Vol. II, Part 3, at 898-902). The conclusion of the SIG was:

Although it seems obvious that reporting of accurate information about the early morning [thermocouple] readings would have given significant corroborative evidence about the seriousness of the accident, no evidence indicates that failure to report those readings was willful or was part of any attempt to hide the condition of the reactor or the seriousness of the accident.

SIG, Vol. II, Part 3, at 902.

Following questions from the Chairman of the Interior and Insular Affairs Committee, the Commission requested the Special Inquiry Group to do additional investigation of this subject. In response, the Group provided substantial input to the Commissioners. In a memorandum dated March 4, 1980, the Director of the Special Inquiry Group dealt at length (pp. 1-42, 63-74) with incore thermocouples, their readings on the day of the accident, individuals' knowledge and appreciation of

those readings, and their reportability. The additional work corroborated their earlier conclusions.

In NUREG-0760, the NRC Staff covered the same areas, specifically addressing the availability and believability of core temperature data. See NUREG-0760 at 18-20. Their conclusion was that the range of temperature data presented to Station Manager Gary Miller (from more than 2000°F to a low of 100°F) was characterized by Miller as unreliable; however, the readings provided him with a gross indication corroborating that the core was hot and this was why the computer read off-scale. At the time he was informed of the incore thermocouple readings, he already knew that the core was hot (based on expanded hot leg temperature indications). Thus, Miller has testified that he received data from the incore thermocouples which he regarded generally as another indicator that the core was hot, but that he disregarded the specific temperatures as being unreliable, went on to other matters and did not return to think more about the reported incore thermocouple readings. See, e.g., SIG Memorandum of March 4, 1980, at 1-8; NUREG-0760, App. A at 44-30 to 44-32.

The Majority Staff Report of the House Committee on Interior and Insular Affairs is the third report which specifically discusses the incore thermocouple data and its understanding. Majority Staff Report at 22-33. That report provides no conclusion on this subject, although it can be read as supporting the ultimate conclusion reached by that same Majority Staff.

Thus, the opinion that the important incore thermocouple data was appreciated by plant personnel and consciously withheld is not supported by the adjudicatory record, ignores the Commission's own Special Inquiry Group conclusions, ignores its own Staff's conclusions, and gets support only from the Majority Staff of the Interior and Insular Affairs Committee Report.

In summary, faced with an array of investigations and reports, the Separate View opts for that of the Majority Staff of the Committee on Interior and Insular Affairs, stating remarkably that "it has become clear that GPU officials withheld information about the severity of the accident from the Commonwealth of Pennsylvania and the NRC early on the day of the accident, when public protection was most critical." Separate View at 2 (emphasis added). Even more remarkable is the lesson learned and the panacea which is recommended, namely the removal of three top officials from Licensee's management. But not one of those officials is even mentioned as involved in the information flow inquiries.

II. Operator Cheating On Examinations

The Separate View cites as the second influence the fact that cheating occurred and what is regarded as management's improper response to the cheating. There is no doubt that the disclosure that cheating had occurred by some operators on both

Company-administered and NRC-administered exams was a black eye for Licensee. The Separate View characterization of this facet of the proceeding, however, inappropriately portrays management complicity in, tolerance of, and response to, cheating by its personnel.

The Separate View discusses at some length the hearing process for this aspect of the proceeding, wherein a Special Master was appointed to take the evidence and issue a recommended decision, and the same Licensing Board who presided over the entire Restart Proceeding took the Special Master's product and the parties' comments on it and issued an initial decision. The Special Master's views generally were much harsher on Licensee management than were the Licensing Board's; the Separate View, insofar as it relies on either, generally opts for the Special Master's views as support. It does so because, it is noted, the Special Master was the one who observed the witnesses during this aspect of the hearing and this fact presumably outweighs the Licensing Board's broader perspective. This view ignores the Commission's regulatory framework and distorts the Licensing Board's treatment of the Special Master's report.^{2/}

^{2/} The issue of the weight to be given the Special Master's Report has been addressed in documents filed with the Commission, and during the November 9, 1982 public meeting with the Commission in Harrisburg. In summary, a special master is appointed at the discretion of the Chairman of the Licensing Board upon the consent of the parties. His reports are advis-

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The Separate View asserts that because the Special Master saw and heard the witnesses, his findings are "more coherent and plausible." In fact, where the demeanor of the witness played a part in the Special Master's findings, the Licensing Board afforded special weight to the Special Master's direct observations. However, as the Board stated, witness credibility depends most often on the substantive content of the witness' testimony, the witness' qualifications, perceived self-interest biases, opportunity to be informed, and other objective criteria. Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit 1), LBP-82-56, 16 N.R.C. 281 ("Cheating PID"), 289 (1982). The key differences between the Special Master's Report and the Board's decision are differences in conclusions based on the Board's consideration of objective evidence ignored or misunderstood by the Special Master, and different inferences drawn by the Special Master and the Board from objective evidence, such as documents and witnesses' statements. See Licensee's Reply Comments on Immediate Effectiveness, September 1, 1982, at 6-14.

The Separate View's description of the extent of cheating misrepresents the Licensing Board's decision and additionally

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ory reports to the Board. The Chairman of the Licensing Board retains final authority with respect to the issues heard by a special master. 10 C.F.R. § 2.722.

reflects a lack of perspective of the adjudicatory record on the extent of cheating. The willingness to involve management in the cheating is outright misrepresentation of the record and both the Special Master's and the Licensing Board's opinions.

In this regard, the Separate View's summary statements on management complicity are: (1) "The hearings on the operator examination incidents revealed a Company which was astonishingly tolerant of cheating by its employees, most particularly by senior members of its operating staff" (Separate View at 2); and (2) "It appears that cheating . . . was tolerated at surprisingly high levels of the management" (Separate View at 14).

In striking contrast, the Special Master, on whom the Separate View relies most heavily, reached the following conclusions:

There was no evidence that the Licensee's upper management encouraged, condoned, participated in, or knew of the cheating by O and W when it occurred. Nor is there any such evidence respecting cheating by any of the other individuals named in this report.

Special Master's Report at ¶ 338 (emphasis added).

And the Licensing Board concluded there was:

no evidence that Licensee's management encouraged or condoned cheating on the relevant NRC or company-administered examinations.

Cheating PID at 292 (¶ 2047).

An incident in 1979 involving several individuals -- none of whom any longer play any role in the restart of TMI-1 -- is highlighted in the Separate View as the "most serious instance of cheating." Neither of the individuals directly involved -- Messrs. O and VV -- is employed by GPU or any of its subsidiaries. The manager who investigated the incident and judged that it did not constitute cheating, and his superior, are no longer employed by GPU Nuclear. Commissioner Gilinsky nevertheless sees two potential links between this incident and Licensee's present organization: (1) Mr. Arnold's assessment of whether cheating occurred and his possible involvement in the subsequent improper certification of one of the individuals involved, VV; and (2) the view that VV's attitude of utmost contempt for training and operator licensing as demonstrated by this incident "was apparently widely shared by other persons in authority at GPU."

The 1979 incident involving O and VV, including Mr. Arnold's involvement, was explored in detail during the reopened hearing on cheating. The factual background and the Licensing Board's judgments on individuals are set out in its decision. Cheating PID at 344-55 (¶¶ 2272-2320). In sum, in early July 1979, Mr. VV, who at the time was TMI-2 Supervisor of Operations, in order to meet a deadline for the completion of licensed operator requalification requirements, had an operator, Mr. O, answer some of a number of written questions which

had been provided to Mr. VV by the training department. The obvious handwriting dissimilarity was identified by training personnel and brought to the Station Manager's attention. Station Manager Gary Miller himself took charge of investigating the circumstances and determined that Mr. VV had exercised incredibly poor judgment but had not intended to deceive training and had not cheated. Miller subsequently certified Mr. VV to NRC, which certification was the subject of an NRC investigation which has resulted in a proposed \$100,000 civil penalty.

The Separate View states: "what is most disturbing about this incident is GPU's continuing inability, or refusal, to recognize wrongdoing." Separate View at 16. That is not a fair characterization of Licensee's reaction to the 1979 incident, as the Licensing Board observed. Nor is it a fair characterization of Mr. Arnold's role in the incident. Mr. Arnold, who at the time was overseeing the Company's total response to the accident, played no role in investigating the incident. However, based on Mr. VV's past performance and the facts as he understood them from the investigation, Mr. Arnold made the decision to remove Mr. VV from all supervisory duties. Mr. VV subsequently was employed in consulting or interfacing roles where his acknowledged technical knowledge of the plant could be drawn on, but never thereafter as a supervisor or manager or a licensed operator until he resigned and departed

the Company in 1983. The Licensing Board specifically endorsed the appropriateness of Mr. Arnold's actions. Cheating PID at 347-48 (¶¶ 2283-86).

In sum, we view Mr. Arnold's reassignment of VV to be an appropriate reallocation of company personnel resources. He prudently matched VV's abilities to the right job for him, or at least he corrected a mismatch. We do not find that VV's reassignment was an inadequate remedy to the problem.

Id. at 347-48 (¶ 2286).

On the matter of the certification to NRC in 1979, it is totally uncontroverted fact that Mr. Arnold played no role in VV's certification in 1979 and only learned of it during the cheating proceeding two years later. It was Arnold who, in the context of the cheating investigations, remembered the 1979 matter involving O and VV and brought it to the attention of the NRC. The Licensing Board specifically noted that Mr. Arnold's actions were "representative of the Licensee's efforts to make a full disclosure on all matters of possible relevance to the cheating incidents." Cheating PID at 293 (¶ 2050) (emphasis added).

The second possible nexus, that VV's contempt for training and NRC licensing "was apparently widely shared by other persons in authority at GPU," bears little on the present organization. In support, the Separate View relies exclusively on one incident involving VV and five others involved in management or as supervisors in licensed operator training in 1979.

None of these six individuals is presently in a position of authority in GPU Nuclear; none is involved in licensed operator training; five of these six are no longer with GPU Nuclear in any capacity.

The Separate View's portrayal of Licensee's response to the cheating that was uncovered likewise mischaracterizes and distorts the record facts. It impugns Licensee's attempts to uncover and investigate the cheating despite the Licensing Board's view that it was adequate, and criticizes Licensee's actions against those found to have been involved in cheating.

Licensee took positive and immediate action in response to the first disclosure that cheating had occurred. The two operators initially determined to have cheated were terminated promptly. Licensee then initiated on its own a review of exams and quizzes by an independent educator, Mr. Trunk, for similarities or parallelisms and charged attorney John Wilson with following up on any suspicious leads. Licensee vice-presidents also individually questioned every individual involved in any of these exams or quizzes. The Licensing Board critically evaluated Licensee's response to the cheating revelations. The Board's summary conclusions in their entirety were:

2052. Licensee responded to the cheating revelations by investigating the circumstances surrounding the cheating on the NRC examinations, investigating its own company-administered examinations, disciplining errant employees, meeting with and

explaining to employees the company's policy on training and testing integrity, upgrading its procedure for certifying license candidates to the NRC and by participating in this proceeding. The Licensee also has made major changes in its company training and testing program, a response which we discuss separately below.

2053. In its investigation of the cheating incident the Licensee concentrated on possible cheating on its own initial qualification and requalification examinations. We have evaluated this investigation as to whether it was well conceived, whether it was pursued with sufficient resources and good intentions, whether it was properly executed, and whether it was successful. In general we believe the Licensee conducted an adequate investigation.

2054. Licensee employed two technical consultants from Pennsylvania State University, Harrisburg Campus, to analyze for suspicious parallelisms the answers given on its company-administered examinations. Licensee assigned a company attorney, Mr. John Wilson, and his associate to investigate the parallelisms identified by the technical consultants. The investigation also involved the very active participation of GPU Nuclear President Robert Arnold, GPU Nuclear Vice President for TMI-1 Henry Hukill, and GPU Nuclear Vice President Richard Wilson. The participation of these high-ranking officials imparted prestige and force to the inquiry, and we assume that it demonstrated to the operating staff of TMI-1 the fact that management regarded the matter to be important. We found no evidence that Licensee stinted on the resources expended in the investigation. In general we concluded that the investigation was well designed and had sufficient resources allocated to it. However, we faulted the Licensee for not having a single official or clearinghouse responsible for overseeing the thoroughness of the inquiry.

2055. We are also critical of the execution of the company investigation, particularly the inquiry by the attorney, John Wilson. He was naively convinced that G and H did not cheat, he was insufficiently formal in his interviewing of the candidates, he did not employ technical assistance in assessing the explanations given by suspected cheaters. Apparently because of insufficient direction, some investigatory leads were not pursued. We also criticize the Licensee for deferring to and relying upon the NRC to investigate some of the leads, because we believe that the Licensee had its own responsibility to explore every promising lead. However, we recognize that time was limited. After the hearing began a sequestration order was in effect, and no further investigation of company personnel was feasible. Moreover, we recognize that not all possible leads could be pursued nor their significance promptly appreciated. Our criticism has had the benefit of looking back over a very large evidentiary record where weaknesses have been highlighted by the parties and the Special Master.

2056. Our major criticism of the execution of Licensee's plan of investigation was that higher-ranking company officials uncritically accepted the results of the investigation by the attorneys. We believe that a competent technical reviewer would not have been convinced by G and H that they did not cooperate on the company-administered examinations. However, we cannot find that Licensee's investigation was unsuccessful. After a thorough scrutiny by the parties at the proceeding, Judge Milhollin, and after our own review, only a few additional suspicious parallelisms were identified beyond those disclosed by the Licensee's Penn State technical consultants.

2057. Licensee also responded to cheating by taking appropriate personnel action. It requested and received the resignations of O and W; placed a letter of

reprimand in Mr. Shipman's personnel file; removed VV from supervisory and licensed duties in an action that has functionally demoted him. Licensee took the position at the hearing that G and H did not cheat and, while we question the logic of that stand, we do not question its sincerity. Therefore Licensee has taken no action adverse to G and H, a matter which we address below under our discussion of remedies. In instances where the Board itself finds the evidence inconclusive as to a particular employee, such as in the case of U, we cannot fault Licensee's management for not taking personnel action. In general we have concluded that where Licensee has seen the need and the justification for personnel action, it has taken it. However, as we have noted elsewhere in this decision, the record is silent as to whether the Licensee has taken or should take any personnel action as a result of the improper certification of VV's requalification to the NRC in August 1979.

2058. Either Mr. Arnold or Mr. Hukill, sometimes both, have met with all members of the TMI-1 operating staff, all together, by shift, and individually, in a discussion of cheating, and by written directions management has attempted to explain why, over the resistance of the operators, objective written assurance of operator competence is essential. Widespread resentment toward the need for reexaminations of TMI operators prevailed. The Board has no way of knowing whether this resentment continues. If Licensee continues to monitor the situation, we can think of no further helpful efforts, except as we note below, to bring this aspect of the proceeding to a fair and prompt conclusion.

2059. Licensee had in its possession sufficient evidence that O and W, and in our view, VV, should not have been recertified for licensing and concedes that it can be legitimately criticized for not having a formal process and a written procedure for operator qualification

certification. The Board finds that the Licensee was negligent in its operator license certification procedures. Licensee has now committed itself to establish such a procedure, including a written statement from the training department, which we believe will foreclose the certification of technically incompetent candidates, and those known to be ethically unqualified, for operator licenses. This conclusion depends, of course, upon our confidence that the present management of TMI-1 would carefully follow its formal certification procedures.

2060. It is also the Board's view that the Licensee has cooperated fully in the reopened proceeding. While we disagree with the Licensee in several areas, in general Licensee has recognized and candidly conceded the weakness of some of its programs, particularly in training. It readily produced its employees for examination by the parties, and we could discern no reluctance to come forward with all relevant information. In fact, the episode involving the requalification certification of VV arguably need not have been revealed by Licensee in this proceeding because it only indirectly related to its subject matter. We have discounted the allegation that company management attempted to interfere with the NRC investigation by seeking to be present during employee interviews. We found, rather, that management had a legitimate purpose in trying to be present; the company's legitimate purpose and the NRC's purposes conflicted, but the matter was appropriately resolved.

Cheating PID at 293-95 (¶¶ 2052-2060) (emphasis added).

The Separate View criticizes Licensee for its role in NRC's investigations of cheating, i.e., its offer to company employees to have company officials present during I&E interviews of employees. Separate View at 12-13. This

criticism ignores the facts: (1) that this practice had been consistently employed with NRC's concurrence in every prior investigation since the accident (Tr. 25,449-50 (Ward)); (2) that it occurred only if the employee wanted a representative with him (Arnold, ff. Tr. 23,590, at 5; Ward, ff. Tr. 25,274, at 18); (3) that it occurred only during the first of several cheating-related investigations (Ward, ff. Tr. 25,274, at 18); (4) that when NRC's position changed and in subsequent investigations it barred management's accompanying employees to interviews, Licensee readily acceded (Tr. 25,430-31 (Ward); Tr. 23,657 (Arnold)); (5) that none of the investigators, who themselves had raised the question, felt that Licensee's purpose was to hinder or interfere with the investigations (Ward, ff. Tr. 25,274, at 18-19); (6) that the managers who actually accompanied the employees believed it was supportive of their employees, would enhance each individual employee's cooperation and confidence, and would allow management to track first-hand the scope of the problem it faced (Hukill, ff. Tr. 23,913, at 6-7; Tr. 23,996-98 (Hukill)); (7) that the managers never interjected themselves into the interview discussions and the investigators concluded the information obtained in any event was sufficient to conduct a thorough and complete investigation (Ward, ff. Tr. 25,274, at 19; Tr. 25,424-25 (Ward)); and finally, (8) that the investigators believed Licensee management fully cooperated throughout the rest of the

investigations (Tr. 25,431, 25,470 (Ward)). This criticism further ignores the Licensing Board's discounting of "the allegation that company management attempted to interfere with the NRC investigation by seeking to be present during employee interviews." Cheating PID at 295 (¶ 2060). The Licensing Board "found, rather, that management had a legitimate purpose in trying to be present; the company's legitimate purpose and the NRC's purposes conflicted, but the matter was appropriately resolved." Id.

As to Licensee's own investigative methods and system, they were not perfect and, in retrospect, several leads have been determined to have warranted further investigation than was done at the time. Few investigations ever conducted have not been susceptible to criticism after-the-fact. But as the Licensing Board pointed out, in the final analysis:

One cannot measure the success of an investigation unless the expected results are known. We do not know if Licensee's investigation turned up all possible instances of cheating on company administered exams, but we cannot infer that it was an unsuccessful inquiry. After intense scrutiny of the weekly examination papers and after thorough questioning under liberal cross-examination by intervenors and the Commonwealth, and after Judge Milhollin's own very careful inquiries, little was discovered in the way of concrete evidence of cheating beyond that disclosed by Licensee's inquiries. Measuring Licensee's investigation by its results may not be sufficiently reliable to pronounce it successful, but neither can Licensee be failed on that basis.

Cheating PID at 343-44 (¶ 2271) (emphasis added).

As to Licensee's response to those who were found to have cheated, the Separate View wrongly states, "[w]hen it came to disciplining those involved, GPU dealt severely only with the employees who were caught dead to rights and who admitted their guilt." (Separate View at 17.)

Obviously, Licensee did not discipline individuals who were not found to have cheated. With respect to those found to have cheated or engaged in other improper conduct, Licensee responded according to the severity of the misconduct:

- O and W were immediately terminated for cheating on NRC exams.

- G and H, who were found to have cheated on Company-administered qualifying exams, were suspended two weeks without pay. This was precisely the recommendation of the Licensing Board. Cheating PID at 307-09 (¶¶ 2116-21). Mr. G has since left Licensee's employ. Licensee has further committed not to use Mr. H as a licensed operator.

- Mr. Shipman, who volunteered that he gave a spontaneous answer to someone who asked him a question in the hall during April, 1981 exam, has been subject to serious questioning and discussion with his superiors, and was given a letter of reprimand. He also is subject to continued close scrutiny by TMI-1 management. Cheating PID at 313-15 (¶¶ 2140-45). The Licensing Board found Licensee's sanctions appropriate. Id. at 294-95, 315 (¶¶ 2057, 2145 and 2147).

Licensee's response in individual cases has been suited to the individual and to the nature of the wrong he committed as well as confirmation that a wrong occurred. Licensee has in the case of each of the individuals about whom disciplinary decisions had to be made, considered not just the instant infraction, but years of additional observation and exposure. Where that additional extended experience reflected positively, Licensee took that experience into account. Arnold, ff. Tr. 23,590, at 10; Hukill, ff. Tr. 23,913, at 14-15. We believe that is good management, not an indication of "inability, or refusal, to recognize wrongdoing." Nor does a deliberate, considered approach, which may on occasion result in less severe sanctions, necessarily send the wrong signals to other employees as the Separate View infers when it states: "I cannot believe that GPU's actions have gone unnoticed by its employees or that they have had no effect." Separate View at 17-18. To the contrary, precipitous action without regard to all the facts and circumstances and background in each individual disciplinary case can be detrimental to a company management's ability to build and maintain a stable organization of loyal employees who provide continuity and experience in the company's business and are confident that their performance, including their willingness to disclose adverse information, will be handled fairly. Fashioning of appropriate disciplinary measures tailored to each circumstance is sensible management.

Both the Special Master and Licensing Board recognized the need for flexibility in discipline. See, e.g., SMR Report at ¶¶ 304, 313; Cheating PID at 308-09 (¶ 2120).

The one person who GPU did not sanction who was found by the Licensing Board to have "probably" cheated by helping Mr. W on a makeup "Category T" (qualification) quiz was Mr. GG, a shift foreman. Lack of a sanction coincides with the Board's decision that a sanction against Mr. GG would not be appropriate. Cheating PID at 312-13 (¶¶ 2133-36).

In sum, with respect to the cheating disclosed at TMI-1, management acted responsibly. Management reacted promptly to the first indications of cheating. It initiated its own investigations to uncover other instances of potential cheating, in addition to NRC's investigations. Information was provided to the NRC for its investigations and management encouraged all employees to cooperate with NRC. Instances of cheating were not ignored, but rather were the subject of appropriate disciplinary action. Additionally, management has overseen the development and implementation of strict administrative procedures to guard against any further attempts to cheat on company-administered tests. This is a company that has six-shift rotation of its operators to promote training, that provides for more than 200 hours annually of operator classroom training for each licensed operator, that has a training department complement of some fifty persons at TMI,

and that volunteered all its licensed operators to undergo complete relicensing by NRC. This is a company which indeed takes training seriously and has the accomplishments to aptly demonstrate it in comparison to any licensee in the country. Commissioner Gilinsky's portrayal of management as tolerant of cheating and as contemptuous of training and NRC licensing of operators is unjustified.

III. LICENSEE'S RESPONSE TO NRC'S POST-ACCIDENT REQUIREMENTS

The Separate View includes an expression of opinion and conclusions on Licensee's response to the NRC's post-accident requirements. This portion of the Separate View includes general comments on hardware issues, followed by a more specific discussion of water level instrumentation, high point vents, maintenance and emergency preparedness. We address each of these subjects below.

Hardware Issues

The general statements on hardware issues include an overly simplistic description of the agency's identification of the post-accident requirements and ignore the record of accomplishment achieved by Licensee at TMI-1. Based in part upon these misunderstandings, there is attributed to Licensee a reluctance in its implementation of the requirements.

First, it is implied that the NRC's post-accident requirements were well defined in a single plan issued after the accident, such that a diligent licensee could have proceeded with dispatch toward implementation. In fact, however, the identification of post-accident requirements was an evolutionary process, with changing priorities and schedules set by the NRC, frequent revisions to the criteria established to meet individual requirements, and the addition of new requirements. It was not until the publication of NUREG-0737, "Clarification of TMI Action Plan Requirements" (November 1980), that the Commission expressed its own endorsement of the Staff's TMI Action Plan (NUREG-0660), as clarified in NUREG-0737. Previously, all licensees were faced with a number of often conflicting directions from the agency in the form of bulletins, orders, and generic letters. Changes continued to be made after NUREG-0737 was issued, but in a more coordinated fashion. Even now, a number of NUREG-0737 items are open pending further NRC review. In the presence of these developing criteria, the fact that TMI-1 was not operating afforded little if any advantage relative to operating plants. We believe that the implementation of changes at TMI-1 is not inconsistent with that of other similarly affected plants.

The fact that both short- and long-term modifications were required to address the lessons learned from the TMI-2 accident was recognized at the outset by the Lessons Learned Task Force

and by the Commission in the orders issued to B&W licensees and in the TMI-1 Order and Notice of Hearing.^{3/} One key reason for this approach was that not enough was known to define immediately all of the appropriate long-term requirements. As the NRC Staff testified before the Licensing Board in March, 1981:

Many of the items in the Action Plan provide significant and well understood safety improvement, as well as being practical to accomplish in a relatively short period of time. Other items in the Action Plan are not as narrowly defined, specific, or urgent in nature. Many of these items require detailed and complex engineering analyses by vendors, licensees and/or the NRC prior to identifying if any additional changes or modifications to plant systems or components are necessary. Certain hardware modifications will require the procurement of components or systems that are still under technological development. Other items require rulemaking on the part of the NRC and still others require research or studies to identify what remedial measures, if any, should be taken over the next several years to provide more comprehensive or more desirable solutions to interim improvements.

D. Ross, ff. Tr. 15,555, at 5-6. Other reasons for this phased approach were the NRC's growing confidence that it had identified the most important and urgent actions requiring prompt implementation in the short term,^{4/} and the need to prioritize

^{3/} It should also be remembered that the hearing process itself was to have been the forum in which the short-term and long-term requirements for TMI-1 were established. Yet, even though the Commission has not yet acted upon the Licensing Board's decision on hardware issues, the Separate View is critical of the pace of Licensee's compliance with the "requirements."

^{4/} See NUREG-0660 at 8-9.

(Continued Next Page)

the allocation of finite NRC and industry resources.^{5/}

(Continued)

This in turn leads to a judgment that most of the remaining changes need not be implemented as urgently as those already required. That is, the prompt application of the most important lessons learned over the past year has afforded NRC the opportunity to continue to pursue further changes at a more deliberate pace over the next several years. Such changes may be necessary for long-term improvement in safety or for maintenance of improvements already gained in the short term. Some people have suggested an additional reason to be more deliberate in our development of future changes; that is, the need to avoid counterproductive actions because of finite resources or, worse yet, changes that are unsafe because they were inadequately studied.

Id. at 9.

^{5/} The Commission itself observed the need for a balance between safety significance and practicality:

As discussed above, many actions were taken to improve safety immediately or soon after the accident. These actions were generally considered to be interim improvements. In scheduling the remaining improvements, the availability of both NRC and industry resources was considered, as well as the safety significance of the actions. Thus, the Action Plan approved by the Commission presents a sequence of actions that will result in a gradually increasing improvement in safety as individual actions are completed and the initial immediate actions are replaced or supplemented by longer term improvements.

Revised Statement of Policy on Further Commission Guidance for Power Reactor Operating Licensees, 46 Fed. Reg. 7540 (1981).

Licensee has gained no advantage by the unfortunate circumstance created by the obviously unanticipated (by the Licensee or the Commission) length of the proceeding, which resulted in several refueling outages at operating plants passing by while TMI-1 remained shut down. While TMI-1 has not been similar to other plants in this respect, upon return to service TMI-1 will be comparable with the modification status of other similar operating plants. The bases for changing schedules in the past at TMI-1 have been, as for other plants, the uncertainty associated with the NRC requirements, and the extensive analytical, engineering and procurement difficulties associated with the large number of requirements.

One criticism in the general comments on hardware issues is the asserted lack of eagerness on the part of Licensee to remedy the hardware shortcomings which contributed to the TMI-2 accident. This observation ignores the fact that in a letter to the NRC of June 27, 1979 -- prior to the imposition of any NRC post-accident requirements on this licensee through the Action Plan -- Licensee proposed changes to be made to TMI-1 in recognition of the lessons learned from the accident. All twenty-nine of the restart items identified in that letter, many of which subsequently appeared in the NRC's Action Plan, have been completed.

The Separate View generally brands Licensee as slow to make Action Plan modifications -- in contrast with other

similar operating plants. While a detailed point-by-point comparison of TMI with other Operating License plants is difficult to make based on NRC published summary status reports of operating plants' compliance with TMI requirements (such as SECY-83-30 cited in the Separate View), it is worth noting that in 1981 the Licensing Board found (in a decision affirmed by the Appeal Board) that even at that time (two years after the accident) Licensee had made reasonable progress toward the completion of long-term hardware modifications. Design PID at 1423 (¶ 1223). This was the test established by the Commission, in its Order and Notice of Hearing, for resumption of operations at TMI-1.

It is also fair to observe that because of those hearings TMI-1 received uniquely prompt and thorough attention from the Staff in assessing compliance with the Action Plan. For example, in May, 1981, the Staff testified before the Licensing Board that it had not made a great deal of progress in evaluating the responses of other operating reactors, while it had reviewed TMI-1 for compliance with all NUREG-0737 items due for implementation prior to October, 1981. Tr. 21,433-34 (Jacobs). In other words, TMI-1 was often the first plant examined and frequently set the standards for acceptable implementation by which other plants were subsequently judged.

In any case, the facts show that TMI-1 has a solid record of accomplishment in implementing the Action Plan. Attached is

a point-by-point assessment of the status of TMI-1 against NUREG-0737. See Appendix A. Of 105 total items applicable to TMI-1, 95 have been or will be completed by September, 1983. All the ten remaining items are long-term items not required for Restart. Eight of them are partially complete, one is underway as a joint government-industry research program and implementation of one depends on NRC response to a Company submittal.

Licensee is working actively on all eight of the items within their control. As explained more fully in Appendix A, these efforts are scheduled to support completion as follows:

- One (III.A.1.2) -- Fourth Quarter 1983
- Two (I.C.1.3; II.B.1) -- First Quarter 1984
- One (I.D.1) -- Third Quarter 1984
- Four (I.D.2.3; II.B.22; II.E.1.1; II.F.2)
-- Fourth Quarter 1984

Actual completion of several of the items will be controlled by delivery of materials and availability of a shut down plant for some portions of the work.

The one item which requires NRC response will be worked on an expedited basis as soon as the requirements are defined.

So-called Water Level Instrumentation

One of the lessons learned from the TMI-2 accident is that pressurizer level is an ambiguous indicator of reactor coolant

system inventory. The NRC's Lessons Learned Task Force recommended the development of an "unambiguous, easy-to-interpret indication of inadequate core cooling." NUREG-0578 (July 1979) at A-11. Again, the Separate View implies that the solution was obvious from the beginning. The facts show otherwise and vindicate the careful and deliberate approach pursued by Licensee in the interest of avoiding the introduction of further ambiguity in the form of wrong instrumentation.

The Task Force at the outset was explicit in avoiding a specific recommendation, even though it urged that reactor vessel water level instrumentation be studied:

A number of ideas have been discussed for the second stage by the NRC Division of Reactor Safety Research, the ACRS, and the reactor vendors. Some of the possibilities include pressure differential cells, conductivity probes, heated thermocouples, ultrasonic sounding, as well as gamma and neutron void detectors. However, we conclude that detailed engineering evaluation is required before design requirements for a direct level measurement system can be specified.

NUREG-0578 at A-12.

As the Licensing Board later observed:

Licensee did not ignore the long-term recommendations of Section 2.1.3.b of NUREG-0578. Licensee's Restart Report includes B&W's Evaluation of Instrumentation To Detect Inadequate Core Cooling, Prepared for 177 Owners Group, August 15, 1980. The following methods of detecting inadequate core cooling were examined in this evaluation: (1) existing core

thermocouples; (2) additional axial core thermocouples; (3) ultrasonic reactor vessel level indication; (4) neutron or gamma beam reactor vessel level indication; and (5) differential pressure transmitters for reactor vessel level indication. The B&W evaluation concluded that none of the proposed methods of detection would meet all of the Staff's criteria. The report also concluded that each proposed reactor vessel level measurement system concept fails to provide any additional aid to the operator for detection of inadequate core cooling. Licensee Ex. 1, Supp. 1, Part 2, Answer to Q 95; Tr. 10,648 (Jones). In addition, the record includes the testimony of Licensee's witnesses on the shortcomings they perceive in the systems evaluated by B&W and under consideration by Westinghouse and Combustion Engineering. See Tr. 10,709-10 (Jones); Tr. 10,724-25 (Jones); Tr. 10,759-67 (Keaten, Jones).

Licensee has been following the efforts of other elements of the industry, including the Electric Power Research Institute, to investigate potential reactor water level instrumentation systems. Tr. 10,707-09 (Keaten). Licensee has also expressed its intent to continue to pursue possible methods of measuring level in the reactor vessel if they prove to be reasonable. Tr. 10,919 (Keaten). In addition to working with the other B&W owners on this matter, Licensee has agreed to cooperate with and assist a professor at Pennsylvania State University in developing a proposal to pursue, first on a research reactor, a concept for measuring water level on the basis of using existing neutron detectors. Licensee has also sought a proposal from a professor at U.C.L.A. to perform an independent evaluation of the ongoing work to develop reactor water level instrumentation. Tr. 16,521-23 (Keaten).

Design PID at 1242-43 (¶¶ 667-68). Further, the Licensing Board found good faith at the root of Licensee's unwillingness,

in late 1980 and early 1981, to commit to an undefined vessel level measurement system:

We would not expect Licensee to commit to this proposed design change without resistance when it has a bona fide belief that it would be useless and counterproductive to safety. We do not find Licensee concern about the practicality of such instrumentation to be unreasonable, given its own B&W analysis.

Id. at 1244 (¶ 670).

Although measurement and use of water level is a simple concept, the development and implementation of water level measurement systems is complex. In particular, it was important to select an instrument which would be easy for an operator to interpret and would provide an unambiguous indication. This required that the behavior of water level and the response of instruments which might be installed to monitor it be understood not only for the TMI-2 scenario, but also for other events which could cause actual or indicated reductions in inventory. Furthermore, the unique geometry of B&W plants allows determination of water level at points outside the reactor vessel, so that the measurement systems developed for Combustion Engineering and Westinghouse to determine reactor vessel level would not be directly applicable to TMI-1.

Subsequent to the Licensing Board hearings and after the benefit of further evaluation, Licensee submitted to the Staff in November, 1981, a description of a Hot Leg Level

Instrumentation System, along with a schedule for design, procurement, installation and testing. Procurement was initiated. In January, 1982, the Staff rejected the proposal because it did not satisfy all of the Staff's then-current criteria.

Throughout the balance of 1982, the Staff reviewed its own proposals for inadequate core cooling instrumentation with industry, the ACRS, the Commission, and the CRGR. As a result, the Staff concluded in SECY-82-407 (October 7, 1982) that unambiguous level indication is probably impossible to achieve, and established new criteria for a void indication/inventory tracking system. In December, 1982, they ordered B&W plants to submit designs and schedules for installation. Licensee then submitted its design in March, 1983, and the Staff approved the conceptual design in June, 1983. All material will be ordered by September, 1983. Work is proceeding and will continue for completion at the earliest date consistent with plant conditions and material availability.

Mr. Gilinsky in his Separate View ignores the fact that only four months prior to his memorandum, the NRC substantially altered its own concept of the required additional instrumentation to detect inadequate core cooling. He overlooks the fact that, in its zeal, the Staff initially set forth criteria which have proved impractical to achieve, and were not technically sufficient, as the ACRS has observed. See ACRS

letter, June 9, 1981, "Instrumentation for Detection of Inadequate Core Cooling"; ACRS letters on Palo Verde (Bender Comments) (December 15, 1981) and St. Lucie-2 (Lewis and Plesset Comments) (November 21, 1981); see also ALAB-729, 17 N.R.C. ____, slip op. at 169 n.350 (May 27, 1983).

The Separate View cites the number of plants with "some hardware installed." But, to Licensee's knowledge, NRC has not yet approved plant emergency procedures for the use of level indication or inventory tracking systems in the event of an actual emergency at any operating nuclear power plant.

Licensee has not been recalcitrant, but deliberate and careful to ensure that the instruments installed will be able to accomplish their intended functions. In this regard, Licensee considers that its actions, together with those of others, have contributed to development of improved understanding and definition of requirements for the added instrumentation while helping avoid premature installation of less effective and potentially misleading instrumentation. The effect of this effort, we believe, has been a net improvement in safety.

RCS High Point Vents

The Separate View advances as the second of only two examples of Licensee's recalcitrance, the purported failure to install reactor coolant system high point vents. In fact,

those vents have been installed, are in the testing process, and will be available for restart. The design of the system has been reviewed and approved by the NRC Staff as being in full compliance with its requirements.

These facts should come as no surprise to anyone who is familiar with the record in the TMI-1 proceeding, and are reported in the Appeal Board's decision on design issues dated May 27, 1983.^{6/} ALAB-729, slip op. at 42-44.

Maintenance

Most noticeable in the Separate View's treatment of maintenance is the lack of discussion of, or even reference to, the record on maintenance at TMI-1, a subject litigated in detail in the TMI-1 Restart Proceeding. See Management PID at 419-424, 479-501 (¶¶ 87-99, 103, 277-348). This fact is particularly disconcerting in view of the opening remark that, "The record is replete with references to maintenance items which were deferred, postponed or somehow never completed." Separate View at 22 (emphasis added).

^{6/} The Separate View refers to an earlier Appeal Board expression of tentative views on the usefulness of these vents. After taking evidence, the Appeal Board found that these vents are not needed (or useful) for decay heat removal for main feedwater transients or small break loss of coolant accidents. ALAB-729, slip op. at 42-44. They will, however, provide a means of venting noncondensable gases from high points in the primary system, as contemplated by the Commission's hydrogen control regulations. See 10 C.F.R. § 50.44(c)(3)(iii).

This unsupported charge contrasts sharply with the Licensing Board's satisfaction with the new TMI-1 maintenance organization, and its rejection of a series of maintenance-related contentions proffered by one of the intervenors to the restart proceeding, TMIA. Among the conclusions reached by the Board with regard to safety-related maintenance are the following statements:

- (1) The organization and practices of the TMI-1 Maintenance Department have changed considerably since March, 1979. In general, the scope of the responsibility of key individuals has been narrowed to provide for a more intense focus on the various aspects of the maintenance within one nuclear power plant unit. Management PID at 419 (¶ 87).
- (2) With the separation of the units, the Manager of Plant Maintenance at each unit has responsibility for maintenance for his unit only. Id. (¶ 87).
- (3) Consistent with Licensee's policy of increasing and concentrating the technical resources and management strength applied to its nuclear activities, Licensee has established a Maintenance and Construction Division of GPU Nuclear Corporation, headed by a Vice President. Id. (¶ 88).
- (4) Considering Licensee's off-site technical support divisions, the TMI-1 maintenance program is appropriately organized and staffed to provide reasonable assurance that TMI-1 can be operated safely. Id. at 424 (¶ 106).
- (5) Contrary to TMIA Contention 5, Licensee has not deferred safety-related maintenance and repair either beyond the point established by its own procedures or otherwise improperly. Id. at 501 (¶ 348).

- (6) Contrary to TMIA Contention 5, Licensee has not disregarded the importance of safety-related maintenance in safely operating a nuclear plant by proposing a drastic cut in maintenance budget or by extensively using overtime in performing safety-related maintenance. Id. (¶ 348).
- (7) Although we have noted some defects in Licensee's record keeping practices, the extensive changes in Licensee's safety-related record keeping program and in its QA/QC programs related to maintenance has resulted and should continue to result in substantial improvements. Id. (¶ 348). Licensee's course of conduct, considering the improvements noted, does not, as alleged by TMIA Contention 5, demonstrate that Licensee is not technically qualified to operate TMI-1 without endangering the health and safety of the public. Id.

There is every reason for the Commission to endorse the confidence expressed by the Licensing Board in Licensee's system for ensuring the proper and timely disposition of safety-related maintenance. As of June, 1983, there were no Priority 1 maintenance items in the TMI-1 work backlog.^{7/} As

^{7/} Priority 1 maintenance items are defined as follows:

Can only be classified by superintendents, department heads or shift supervisors; will cause a plant shutdown; reduce generation; has a time clock of very short duration; is an immediate industrial or nuclear safety hazard; compromises nuclear safety or security, reactor control or power conversion cycle control system in so far as to present a clear threat of initiation of a trip or severe transient; imposes or threatens increased personnel radiation exposure; constitutes one element of a multi-event failure which would result in initiation of a trip or transient.

(Continued Next Page)

described in detail in the August 27, 1981 PID, and not cited in the Separate View, this effort has been accomplished by, in general, narrowing the scope of responsibility of key individuals to provide for a more intense focus on the various aspects of the maintenance within one nuclear power plant unit; establishing a Maintenance and Construction Division of GPU Nuclear Corporation to provide direction and support to site maintenance activities; dividing TMI-1 maintenance personnel into corrective and preventive maintenance groups to ensure resources are dedicated to each type of work; ensuring that planning and scheduling personnel, engineering personnel and radiological controls personnel are dedicated to assisting maintenance in carrying out its responsibilities; providing training to maintenance personnel; improved computer capabilities for maintenance tracking, trending, data search, equipment history, scheduling and tracking for job parts and requisitions; and, improving awareness of industry-wide problems through a number of industry-sponsored programs. See Management PID at 419-24, 482-84, 490-92, 525-26. In summary, the current maintenance organization at TMI-1 is professionally staffed, sized, organized, trained and equipped to maintain the plant condition in an acceptable material state.

(Continued)

Management PID at 482-83 (¶ 287).

Not only does the Separate View ignore the record on maintenance at TMI-1 in its discussion of maintenance, but it displays a lack of information about the facts to which it does summarily refer, namely, (1) cause of the steam generator tube cracks at TMI-1 this past year (a subject which is not part of the TMI-1 Restart Proceeding record); and (2) alleged maintenance problems at Oyster Creek (a GPU Nuclear Corp. facility, operation of which also is not a subject of the Restart Proceeding).

The Separate View summarily concludes that the cracking of the steam generator tubes is a current reflection of improper maintenance by Licensee. No factual basis for this position is provided. Failure analyses performed by Licensee and others indicate that the steam generator tube cracks resulted from a metastable sulphur form. Industry attention to sulphur as an undesirable contaminant in the reactor coolant system did not occur prior to the TMI-1 steam generator corrosion experience. Current state-of-the-art documentation on water chemistry and steam generator operating guidelines (EPRI Steam Generator Owners Group, PWR Secondary Water Chemistry Guidelines) has yet to identify sulfur as a specific contaminant to be monitored and limited.

The characterization of the Oyster Creek Station as bearing "every indication of having been neglected for many years" is likewise not factually correct. The Oyster Creek

Station went into service in 1969 and, since that time, has had an above average record of performance, as evidenced by an average capacity factor of 64% through 1982. As to the availability of appropriate resources for maintenance of Oyster Creek, in the management phase of the Restart Proceeding, the Licensing Board specifically found that "GPU's management, even in times of financial stress, has recognized the unique demands of its nuclear obligations, and has shifted available resources to meet those obligations. Moreover, GPU's financial commitment to its nuclear plants is high relative to the industry norm." Management PID at 518 (¶ 400).

Currently, Oyster Creek is in a major outage for refueling, plant modifications and overall upgrading. Some of this work is required by regulatory guidance; much is being done voluntarily by GPU Nuclear to upgrade and enhance expected future performance and operability of the plant. Oyster Creek's successful fourteen year operation belies a charge that it has been "neglected."

In summary, in a one-page indictment of GPU Nuclear's maintenance practices, the Separate View not only -- remarkably -- ignores the extensive record on this issue developed during the TMI-1 Restart Proceeding, but also jumps to conclusions with regard to two tangential subjects which reflect a lack of information, without providing any factual supporting basis for the conclusions. In so doing, no recognition is given to GPU

Nuclear's reorganization of maintenance activities at TMI-1, or to the numerous improvements in the maintenance program instituted since the TMI-2 accident, all of which were carefully examined and endorsed by the Licensing Board.

Emergency Preparedness

In the area of emergency preparedness, the Separate View variously accuses Licensee of trying "to scrape by" and do "the minimum" in complying with the Commission's new emergency planning regulations. See Separate View at 4 and 23. This charge is both unfair and unfounded. The sole basis provided for the charge is two differences between Licensee's emergency plan and the guidance provided to Licensee by the NRC. The Separate View describes the Commission guidance on these two items as "instructions" and "requirements." This contrasts sharply with the description provided to Licensee in forwarding NUREG-0696, Functional Criteria for Emergency Response Facilities. Specifically, Mr. Eisenhut's March 5, 1981 letter (Staff Ex. 8; Generic Letter No. 17) states:

The Commission has approved NUREG-0696 and noted that this document provides general guidance only, is an acceptable way to meet the NRC rules and regulations, and that compliance with NUREG-0696 is not a requirement. (Emphasis added.)

Additionally, the Abstract to NUREG-0696 itself states (similar to all NUREGs):8/

8/ See also Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 1), ALAB-698, 16 N.R.C. 1290, 1304 (1982)

(Continued Next Page)

This document is being issued to establish criteria that the NRC staff intends to use in evaluating whether an applicant/licensee meets the requirements of 10 CFR 50, Appendix E, Article IV.E.8 and Appendix A, GDC 19. It is not a substitute for the regulations, and compliance is not a requirement. However, the use of criteria different from those set forth herein will be accepted only if the substitute criteria provide a basis for determining that the above-cited regulatory requirements have been met.

Ignored by the Separate View is the obvious fact that these differences were of so little significance to the NRC Staff, the Licensing Board, and the Appeal Board that not one of these entities even identified the differences as worthy of special inquiry. Also ignored are the substantial resources, in terms of manpower, facilities, equipment, and money, that Licensee has expended to significantly upgrade the quality of both onsite and offsite emergency response capabilities.

We address below the specific emergency planning concerns raised in the Separate View. The initial section summarizes Licensee's emergency planning program with special emphasis on the achievements at TMI. The next two sections specifically address the Technical Support Center ("TSC") and the location of the backup Emergency Operations Facility ("EOF").

(Continued)

("The precise means of implementing the Commission's emergency planning regulations requires a high degree of judgment. The mere fact that the licensee's approach is somewhat different from the staff guidance does not . . . render it impermissible or necessarily inconsistent with the need to provide adequate protection to the public.").

1. The GPU Nuclear Emergency Planning Program

At TMI Licensee has aggressively pursued all aspects of emergency planning and has developed a program that not only satisfies the regulatory requirements established by the NRC in 10 C.F.R. § 50.47 and Appendix E, but moreover generally exceeds the guidance in NUREG-0654 and Supplement 1 to NUREG-0737. A perception that Licensee has done otherwise could only result from a lack of awareness of what Licensee has accomplished.

Immediately after the accident, Licensee began to assemble a substantial staff of professionals dedicated to the development and implementation of a radiological emergency response plan and implementing procedures. As early as September, 1979, Licensee met with the NRC Staff to discuss new NRC guidance on emergency planning. See Rogan, et al., ff. Tr. 13,756, at 6 (Tsaggaris). Even before that meeting, a post-TMI-2 plan already had been developed. See Tr. 13,802 (Tsaggaris). Within two months Licensee published an initial revision to that plan. See Rogan, et al., ff. Tr. 13,756 at 7 (Tsaggaris). The NRC Staff found that Revision 1 of the plan complied with all of the Commission's short- and long-term emergency planning action items, except for running a test exercise which was scheduled for a later date. Id. at 7 (Giangi).

Following publication of NUREG-0654 in January 1980, Licensee revised the plan again and, with the approval of the NRC Staff, implemented the new plan prior to the implementation date of NRC's new emergency planning rules. Id. at 7-8 (Giangi). By April 1, 1981 -- the date on which NRC's final rule on emergency planning was to be implemented -- Licensee already had established a corporate emergency preparedness office, had substantially increased the staff, and had published a third revision to its plan. Id. at 8-9 (Giangi).

On June 2, 1981, Licensee ran its first fully-graded exercise. The NRC observers found that "Licensee demonstrated an ability to carry out its own approved procedures, to coordinate its response with that of offsite agencies, and to respond to the emergency simulated by the exercise scenario. No shortcomings or deficiencies which would degrade the sufficiency or effectiveness of the Licensee's emergency response in any of the functional areas were observed." Donaldson and Chesnut, ff. Tr. 22,235, at 5. As additional experience has been gained in the use of the emergency plan, procedures and facilities, modifications and improvements for emergency preparedness have continued.

Both the NRC Staff (NUREG-0746 and Supplement 1; NRC Staff Exhibits 6 and 23) and the Commission's Licensing Board (see Design PID at 1455-1707) intensively scrutinized the TMI emergency preparedness program, concluding, respectively, that the

TMI "Unit 1 Emergency Plan provides an adequate planning basis for an acceptable state of Licensee's emergency preparedness" and that "the state of onsite and offsite emergency planning provides reasonable assurance that appropriate protective measures can and will be taken in the event of a radiological emergency at TMI-1 in accordance with the Commission's emergency planning recommendations." The program recently has been reviewed and approved by the Atomic Safety and Licensing Appeal Board. See Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 1), ALAB-697 and 698, 16 N.R.C. 1265, 1290 (1982).

To help ensure that a high degree of readiness is maintained, Licensee has retained direct control for emergency planning within its own organization. At the time of the hearings in 1981, a staff of 9 was assigned to the TMI Emergency Preparedness Department (see Rogan, et al., ff. Tr. 13,756, at 14); currently a staff of 16 is dedicated to maintaining the emergency preparedness programs at both TMI and Oyster Creek, including a Corporate Manager and an Emergency Preparedness Manager and staff for each site.

Other precedent-setting actions include the establishment of an on-shift organization which exceeds NRC guidelines (Tr. 15,434; 22,291-92 (Chesnut)); full commitment to a three team concept for initial (i.e., sixty minute) response to an onsite emergency with all team members equipped with electronic pagers

and committed to a seven-day on-call duty status (Tr. 15,436-39 (Chesnut); Rogan, et al., ff. Tr. 13,756, at 30-31, 90); installation of state-of-the-art communications and data systems (Rogan, et al., ff. Tr. 13,756, at 59-66); and an increased capability to dispatch offsite radiological and environmental monitoring teams (Tr. 15,435-36 (Chesnut); see also ALAB-698, 16 N.R.C. at 1305-06. The guidance of the NRC Staff is exceeded in all of these areas.

Equally important to the improvements made in onsite emergency planning are the significant improvements made in the offsite plans of the five surrounding counties and the Commonwealth of Pennsylvania. Licensee has significantly assisted the process in a variety of ways, including making available to offsite agencies the experienced personnel of Emergency Management Services, Inc. This assistance was made available early in the process and continues to this date as part of an ongoing involvement by Licensee in programs that ensure readiness of offsite emergency response capabilities. See, e.g., Knopf, et al., ff. Tr. 21,816 and attachments.

Plainly, the development of the Licensee's emergency preparedness program has been not that of a company grudgingly reacting to regulatory requirements, but that of a company promptly moving ahead with its own initiatives in addition to responding fully to the evolving NRC requirements.

2. Technical Support Center

The particular concern about the Technical Support Center ("TSC") reflects a view that Licensee plans to make "minimal use" of the TSC (Separate View at 23). It is correct that Licensee plans to station fewer of its senior onsite management and perform more limited functions in the TSC than suggested by NRC Staff guidance. This plan, however, is based on a concept of operations carefully developed by Licensee and reviewed by the Licensing Board and NRC Staff, and is not based on any inadequacy in the TSC or by an attempt to "scrape by."

The development of the Licensee's concept of operations for responding to a plant emergency resulted from the experience of March-April, 1979, careful consideration of NRC guidance, and experience in numerous drills and exercises. That concept calls for the Emergency Director to be located in the control room and to manage the emergency response from that location where he has direct access to significant information about plant operations and potential radioactive releases and maximum internal and external communications capability. To assist him in executing those responsibilities, he is provided a small support staff, also located in, or adjacent to, the control room. This arrangement minimizes the communication necessary to integrate data gathering, assessment and control functions, especially during the first one to two hours. Licensee's concept of operations was specifically evaluated by

the NRC Staff as to whether it stationed too many people in the control room and was found to be satisfactory. See Tr. 15,472-73 (Chesnut).

Licensee's concept of operations also takes advantage of the extensive in-house technical resources located in Parsippany, New Jersey. The Parsippany Technical Functions Center has been established at the GPU Nuclear engineering offices and equipped with substantial communications, data links, and computer capabilities. From this location, the corporate engineering staff, numbering some 400 personnel, provides engineering support and assistance to the plant during an emergency. See, e.g., Rogan, et al., ff. Tr. 13,756, at 23.

Under this concept of operations, the TSC is the location where the plant engineering staff operates in support of the Emergency Director and the plant operating staff (see id. at 55) and provides capabilities equivalent to those specified in NRC guidance documents. Nevertheless, Licensee currently has underway a program to further upgrade and enlarge the TSC facility. This program is reflected in Licensee's response to Generic Letter No. 82-33, dated December 17, 1982, which forwarded Supplement 1 to NUREG-0737 to all licensees providing additional clarification regarding emergency response facilities and requesting a proposed schedule for meeting the requirements. See April 15, 1983 letter from H.D. Hukill to D.G. Eisenhut (5211-83-118). The upgraded TSC is now scheduled

to be completed in the fourth quarter, 1983. It still normally will serve the primary role envisioned under Licensee's concept of operations but also will be equipped to serve as the operating center for the Emergency Director, his staff and the plant operating personnel in the event of a situation requiring evacuation of the Control Room.

Clearly, the issue should be whether Licensee can respond effectively to an emergency under the present concept of operations and with the present emergency response facilities, and not the result of simple comparisons with NRC guidance. Licensee's concept of operations has withstood scrutiny by the Company, the NRC Staff and the ASLB. The record (see Tr. 15,472-77 (Grimes and Chesnut) and Inspection Report 50-289/82-12, Paragraph F1) indicates that the concept is effective. In developing this concept of operations, Licensee's objective has been to position the Emergency Director where he has the best information available so he can most effectively manage the response to an emergency. The record established in this proceeding leaves no doubt that Licensee's emergency plan achieves that objective and adequately assures the public health and safety.

3. Backup Emergency Operations Facility

The Separate View identifies as its only other area of concern with respect to Licensee's emergency planning efforts the proposed location of a backup Emergency Operations Facility ("EOF"). Separate View at 23. With respect to this issue, Licensee took actions which it not only reasonably believed were consistent with NRC Staff guidance, but were in excess of that suggested by the Staff. Upon learning at the November 9, 1982 Public Meeting in Harrisburg that the Commission and its Staff were not in agreement (see Tr. 166-69), Licensee moved promptly to comply with the letter of the Commission guidance. A new facility which fully meets all NRC guidance is scheduled to be operational by November, 1983. Certainly Licensee should not be faulted for its initial actions which it believed exceeded the Staff guidance as set forth in NUREG-0696 and was consistent with the approach taken by other licensees.

In summary, the development of the emergency preparedness program has been a dynamic process. The program has been found to be acceptable by the NRC Staff on numerous occasions and has met or exceeded, in many cases, the basic requirements and guidance issued by the Commission and the NRC Staff. Licensee has dedicated a large professional staff to the development and maintenance of this program and senior management interest and support has been evident. As a result of observations of the TMI full-scale emergency exercises in 1981 (Inspection Report

50-289/81-15) and 1982 (Inspection Report 50-289/82-12), the NRC Staff concluded respectively that "the Licensee's response met the objectives set forth in the Emergency Plan and in the NRC's current requirements and guidance" and that "within the scope and limitations of the scenario, the Licensee's actions were found to be adequate to protect the health and safety of the public and that such actions were consistent with their Emergency Plan and Emergency Plan Implementing Procedures."

In two recent evaluations of the state of emergency preparedness at TMI, NRC Inspection Report 50-289/81-20 found that "the Licensee appeared to be capable of responding to, managing and mitigating an accident and that an adequate state of emergency preparedness exists at TMI Unit 1," and the Systematic Assessment of Licensee Performance ("SALP") dated December 3, 1982, concluded that "Licensee management attention and involvement in [the emergency planning] area were aggressive and oriented toward nuclear safety. Licensee resources were ample and effectively used such that a high level of performance with respect to safety was achieved." The NRC assigned an overall rating Category 1, the highest category for such evaluations.

Accordingly, it is clear that Licensee and its management have responded to the Commission's upgraded emergency planning requirements in a forceful and responsible manner. Licensee is justifiably proud of the substantial improvements made in the

last four years in both onsite and offsite emergency planning around TMI.

IV. CONCLUSION

For four years now TMI-1 has been shut down while similarly configured plants have been allowed to operate. During that period, there have been numerous, detailed investigations of the TMI-2 accident and an extended adjudicatory hearing on whether TMI-1 should restart. The hearing record alone amounts to more than 30,000 transcript pages and must be central to the Commission's determination on restart. There have been three licensing board opinions and three appeal board decisions all favorable to restart. There is a mass of evidence available to the Commission upon which to make its decision. That decision must be made on facts and on the weight of the evidence before the Commission.

It is this Licensee who had the accident at TMI-2. It is also this Licensee who since that accident has entirely restructured and augmented its nuclear personnel into a single, integrated organization of 2500 employees, of whom some 900 are applied to TMI-1. That organization is led by a combination of experienced and expert personnel and includes at all levels a mix of long-time employees and new employees which the Company has attracted over the last four years.

There is in place at TMI-1 an organization of experienced and knowledgeable personnel equipped with procedures and supported by resources judged sufficient, based on the adjudicatory record evidence, to operate TMI-1. There are six shifts of trained and licensed operators, supported by trained Shift Technical Advisors, available to operate the plant. Their training and the training of other plant personnel will continue under the auspices of a training department at TMI staffed by some 50 full-time personnel. The plant equipment in place reflects modifications and additions made in response to all lessons learned from the TMI-2 accident. In an emergency, Licensee personnel are trained to respond in accordance with an entirely new emergency plan and its implementing procedures which have been proven through observed and graded tests.

Licensee did not attain its present posture of readiness by reluctant submission to demands by NRC or others. It has applied conscientiously the learnings of the accident and unstinting resources to this effort. It is an organization more painfully aware of past deficiencies than any other member of the nuclear power community -- firmly committed to the excellence of its nuclear program and to the safe and efficient operation and maintenance of TMI-1, with all the elements of responsibility and public trust that assignment entails. We urge the Commission to judge Licensee on its present merit based first, on the facts available to the Commission from the

adjudicatory record before it and second, on the host of other sources of valid information available to the Commission.

Respectfully submitted,

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DATED: August 4, 1983

APPENDIX A

TMI-1 STATUS OF NUREG-0737 ACTION ITEMS

<u>Clarification Item</u>	<u>Shortened¹/ Title</u>	<u>Status/Comment</u>
I.A.1.1	Shift technical advisor	
	1. On duty	Complete
	2. Tech specs	Complete
	3. Training	Complete
	4. Long-term Program	Complete
I.A.1.2	Shift Supervisor responsibilities	Complete
I.A.1.3	Shift manning	
	1. Limit overtime	Complete
	2. Minimum shift crew	Complete
I.A.2.1	Immediate upgrading of RO & SRO training and qualifications	
	1. SRO experience	Complete
	2. SRO be RO 1 year	Complete
	3. On shift training	Complete
	4. Modify training	Complete
	5. Facility certification	Complete
I.A.2.3	Administration of training programs	Complete
I.A.3.1.	Revise scope & cri- teria for licensing exams	
	1. Increase scope	Complete
	2. Increase passing grade	Complete
	3. Simulator exam	Complete

¹/ Based on Enclosure 1 (Post-TMI Requirements for Operating Reactors) to NUREG-0737.

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
I.C.1	Short-term accident & procedures review	
	1. SB LOCA	Complete
	2. Inadequate core cooling	Complete
	3. Transients and Accidents	Major technical work implemented by Restart. Work on revised pro- cedures scheduled to support completion by first quarter 1984 based on current guidelines.
I.C.2	Shift & relief turn- over procedures	Complete
I.C.3	Shift-supervisor responsibility	Complete
I.C.4	Control-room access	Complete
I.C.5	Feedback of operating experience	Complete
I.C.6	Verify correct per- formance of operating activities	Complete
I.D.1	Control-room design reviews	Identified mods complete. Work scheduled to support completion of final report by 12/83 and supplemental review and report based on ATOG procedures third quarter 1984.

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
I.D.2	Plant-safety-parameter display console	
	1. Description	Complete
	2. Installed	Complete
	3. Fully implemented	Initial elements SPDS installed. Work scheduled to support full implemen- tation for all installed instruments by fourth quarter 1984 and identi- fication of any additional instruments and schedule for implementation in fourth quarter 1983.
II.B.1	Reactor-coolant-system vents	
	1. Design vents	Complete
	2. Install vents	LOOP & PZR vents in- stalled. Work on head vent scheduled to support completion first quarter 1984.
	3. Procedures	LOOP and PZR procedures in place. Head vent procedures first quarter 1984.
II.B.2	Plant Shielding	
	1. Review designs	Complete
	2. Plant modifica- tions	Complete except for remote operators for decay heat pumps. Work scheduled to support completion fourth quarter 1984.
	3. Equipment qualification	Complete.
II.B.3	Post-accident sampling	
	1. Interim system	Complete; responding to NRC post implementa- tion review questions just received.
	2. Plant modifica- tions	Complete

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
II.B.4	Training for mitigating core damage	
	1. Develop program	Complete
	2. Implement program	Complete
II.D.1	Relief & safety-valve test requirements	
	1. Submit program	Complete
	2. RV & SV testing	Complete
	3. Block valve testing	Complete
II.D.3	Valve position indication	
	1. Install	Complete
	2. Tech specs	Complete
II.E.1.1	Auxiliary feedwater system evaluation	
	1. Short term	Complete
	2. Long term	Long term mod partially complete. Work on remainder scheduled to support completion fourth quarter 1984.
II.E.1.2	Auxiliary feedwater system initiation & flow	
	1. Safety-grade initiation	Complete
	2. Safety-grade flow indication	Complete by restart.
II.E.3.1	Emergency power for pressurizer heaters	
	1. Upgrade power supply	Complete
	2. Tech specs	Complete
II.E.4.1	Dedicated hydrogen penetrations	
	1. Design	Complete
	2. Install	Complete

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
II.E.4.2	Containment isolation dependability	
	1.-4. Implement Diverse Isolation	Complete
	5. Containment pressure setpoint	Complete
	6. Containment purge valves	Complete
	7. Radiation signal on purge valves	Complete
	8. Tech specs	Complete
II.F.1	Accident-monitoring	
	1. Noble gas monitor	Complete by restart.
	2. Iodine/particulate sampling	Complete
	3. Containment high-range monitor	Complete
	4. Containment pressure	Complete
	5. Containment water level	Complete
	6. Containment hydrogen	Complete
II.F.2	Instrumentation for detection of inadequate core cooling	
	1. Subcool meter	Complete
	2. Tech specs	Complete
	3. Install level instruments	Saturation monitors and core thermocouples complete. Work on reactor coolant inventory trending instruments scheduled to support completion fourth quarter 1984.
II.G.1	Power supplies for pressurizer relief valves, block valves, & level indicators	
	1. Upgrade to emergency sources	Complete
	2. Tech specs	Complete

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
II.K.1	IE Bulletins	Complete
II.K.2	Orders on B&W plants	
	8. AFW	Complete
	9. ICS	Complete
	10. SG trip	Complete
	11. Operator training	Complete
	13. Thermal-mech. report	Complete
	14. Lift frequency of PORVs/SVs	Complete
	15. Effects of slug flow on OTSGs	Complete
	16. RCP seal damage	Complete
	17. RCS voiding	Complete
	19. Benchmark analysis	Complete
	20. SB LOCA system response	Complete
II.K.3	Final recommendations, B&O task force	
	1. Auto PORV isolation	Complete pending NRC confirmation
	2. PORV failure report	Complete
	3. SV/RV failure report	Complete
	5. Auto trip of RCPs	Complete
	7. PORV opening eval.	Complete
	9. PID controller	N/A
	10. Anticipatory trip	N/A
	11. Use of PORV	Complete
	12. Anticipatory trip turbine	N/A
	13. HPCI & RCIC	N/A
	14. ISO condenser	N/A
	15. Isol. of HPCI & RCIC	N/A
	16. RV failures	N/A
	17. ECCS outages	Complete
	18. ADS actuation	N/A
	19. Recirc. Pump Interlock	N/A
	20. Loss of SVC water	N/A
	21. Restart of CSS & LPCI	N/A
	22. RCIC suction	N/A

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
	24. Space cooling HPCI/RCIC	N/A
	25. Power on pump seals	N/A
	27. Common ref level	N/A
	28. ADS accumulation level	N/A
	29. ISO condenser performance	N/A
	30. SB LOCA methods	Complete
	31. §50.46 compliance	Model submitted under II.K.3.30; industry- government R&D effort underway.
	40. RCP seal damage	Complete
	43. Slug flow effects	Complete
	44. Single failure transients	N/A
	45. Manual depres- surization	N/A
	46. Michelson concerns	N/A
	57. Manual act of ADS	N/A
III.A.1.1	Emergency preparedness, short term	Complete
III.A.1.2	Upgrade emergency sup- port facilities	
	1. Interim TSC, OSC, EOF	Complete
	2. Design	Complete
	3. Modifications	Operable facilities com- plete. New EOF and up- graded TSC in the fourth quarter 1983.
III.A.2	Emergency preparedness	
	1. Upgrade plans	Complete
	2. Meteorological data	Complete
III.D.1.1	Primary coolant out- side containment	
	1. Leak reduction	Complete
	2. Tech specs	Complete

<u>Clarification Item</u>	<u>Shortened Title</u>	<u>Status/Comment</u>
III.D.3.3	Inplant radiation monitoring	
	1. Means to determine presence of radioiodine	Complete
	2. Radioiodine measurement mods	Complete
III.D.3.4	Control-room habitability	
	1. Review	Complete; will respond to NRC questions when received.
	2. Modifications	Submittal complete; awaiting NRC response.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



BEFORE THE COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of "Licensee Comments on Commissioner Gilinsky's Tentative Conclusion," dated August 4, 1983, were served on those persons on the attached Service List by deposit in the United States mail, postage prepaid, or where indicated by an asterisk (*) by hand delivery, this 4th day of August, 1983.

Ernest L. Blake, Jr.

Ernest L. Blake, Jr., P.C.

Dated: August 4, 1983

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of)

METROPOLITAN EDISON COMPANY)

(Three Mile Island Nuclear)
Station, Unit No. 1))

Docket No. 50-289
(Restart)

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