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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY	)	Docket 50-289 SP
	)	
(Three Mile Island Nuclear Generating Station, Unit 1)	)	

AAMODT BRIEF OF EXCEPTIONS TAKEN TO AUGUST 27, 1981, JULY 27, 1982
PARTIAL INITIAL DECISIONS
(MANAGEMENT ISSUES/TRAINING/INTEGRITY)

September 30, 1982

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1. The studies following the accident at Three Mile Island, Unit 2 (TMI-2) identified the training of the operators as causal to the escalation of what could have been a relatively insignificant incident on March 28, 1979. A number of management deficiencies were identified. Related requirements, remedies and assurances were then considered essential before the same management was allowed to restart Three Mile Island, Unit 1 (TMI-1), idle for refueling at the time of the TMI-2 accident.

2. On August 9, 1979 the Commission ordered that TMI-1 be kept idle until eight "short term" items were resolved to the satisfaction of the Atomic Safety and Licensing Board through the conduct of a hearing. One of these requirements related to the training program for licensed operators:

> Augument the retraining of all Reactor Operators and Senior Reactor Operators assigned to the control room including training in the area of natural circulation and small break loss of coolant accidents including revised procedures and the TMI-2 accident. All operators will also receive training at the B&W simulator on the TMI-2 accident and the licensee will conduct a 100 percent reexamination of all operators in these areas. NRC will administer complete examinations to all licensed personnel in accordance with 10 CFR 55.20-23. CLI-79-8, Item 1(e).

3. The level of "augmentation" was defined by a report referenced on page 18 of the Commission Order. This report was a summary of a meeting between the NRC Staff and the Licensee on June 28, 1979 (Attachment 1). This report stated

the level of training and the number of operators to be trained to that level:

> <u>Retraining Program</u>
> The licensee committed to retraining approximately 40 reactor operators needed to cover the operating shifts. Furthermore, the licensee committed to have a degreed engineer present during plant operation to assist the shift supervisor. As part of the retraining programs, the operators will be taking college level technical courses in fluid flow, heat transfer and Thermodynamics. The staff indicated the qualification of the instructors for these courses chould be addressed. The licensee was also advised to contact the NRC Operating Licensing Branch regarding the content of the technical courses for the operators. A criterion for retraining operators should be developed and be made part of the restart report...

4. The NRC Staff through their inspections identified considerable weakness in the TMI training programs for unlicensed personnel. IR 50/289/80-21, November 1980; Staff Exhibit 4, Appendix B, page 9. The Staff stated that the resolution of these weaknesses in training should be judged in the restart hearing. Id.

5. The NRC Office of Nuclear Reactor Regulation issued a letter of March 28, 1980 setting out new requirements for reactor operator training and licensing for all licensees. This letter also set out the specific training areas that must be covered including 28 control manipulations that the operators were to practice. These requirements are known as the March 28 Denton letter.

6. The restart hearing was held in the vicinity of Three Mile Island (Harrisburg, twelve miles north), and members of the public were invited to bring matters, pertinent to the restart of TMI-1, to the attention of the Board. The Aamodts submitted a contention concerning the training of all TMI-1 personnel. This contention was accepted by the Board without the objection of any party. The Aamodts asked that an independent engineering firm verify the adequacy of Licensee's training:

> It is contended that TMI-1 should not open until the performance of licensee technicians and management can be demonstrated to be upgraded as certified by an independent engineering firm. This upgrading should include 100% test and retest, or discharge of those who cannot consistently and confidently master all necessary information for safe conduct of their job descriptions under all anticipated critical situations as well as routine situations.

7. Although the Commission did not address the question of management competency in terms of adequacy of training, the Commission ordered on March 6, 1980 that management competency -- the end result of adequate training, experience and personal capabilities -- be addressed in the hearing. The scope of the order was the entire command structure from corporate to plant level in regard to organization, competence and technical capabilities. CLI-80-3, Items 1-12.

8. In July 1981, after the hearing had adjourned and before the Board issued their first decision, a cheating incident involving two senior reactor operators was reported. August 27 PID #43. The Board subsequently reopened the record of the hearing to determine whether cheating was extensive and whether management was involved. July 27 PID #2032. Although the Board issued their decision on management issues before evidence on the cheating incident was taken, the Board's decision of August 27, 1981,was pendant on the outcome of the investigations of cheating. August 27 PID #45. The Board issued their final decision on management issues on July 27, 1982.

9. The Board's decisions were to advise the Commission whether the Commission's Orders had been met by Licensee. A part of the August 9 Order was that the Board decide whether the Commission's Orders were sufficient to resolve all safety issues. CLI-79-8, page 12. The Aamodt Contention, the NRR regulations and the issues raised by the cheating incident went beyond the specific items of the Commission's Orders. The Board had the responsibility to resolve these matters.

10. The Board received evidence on all issues between October 15, 1980 and December 10, 1981. The Main Hearing was conducted by the Board from October 15, 1980 until July 9, 1981. The Reopened Proceeding to hear evidence related to the cheating incident was conducted by a Special Master, Judge Gary L. Milhollin, from November 10 until December 10, 1981.

11. The Aamodts participated in both the Main Hearing and the Reopened Proceeding as a full party, cross-examining witnesses, presenting two witnesse Proceeding as a full party, cross-examining witnesses, presenting five witnesses and filing findings, listed as References, page ii. After the Board's August 27 PID issued, the Aamodts filed exception with the Appeal Board on October 24, 1981. The Aamodts strongly disagreed with the Board's findings and conclusions.

Aamodts urged the Commissi to not make the Board's August 27 PID effective until before the Reopened Proceeding had been concluded. Aamodt Comments,

Following the Special Master's Report (April 2 , 1982) of the Reopened Proceeding, the Board issued their second management decision, July 27 (1982) PID. The Aamodts disagreed with the Board's decision that all issues were resolved based on the imposition of a number of conditions to favor restart of TMI-1. The Aamodts filed exceptions to the Board's July 27 PID on September 1, 1982.

12. The brief of the Aamodt exceptions to the Board's management decisions considers the evidence developed in the two hearings in relationship to the orders, contentions, regulations and issues described in paragraphs 2-8 above. under the general topics of Training, the Operations Staff, Management Integrity and Competency, and the Role of the NRC Staff.

TRAINING

13. We took exception (84) to the Board's conclusion at 584(c), August 27 PID, which is based in general on the Board's findings in paragraphs 163-276. These findings are summarized in paragraph 276:

(1) that the Licensee's training program is comprehensive and acceptable;

(2) that the Licensee's audits and the NRC licensing process (including the Category T testing) can be depended upon to measure adequacy of training;

(3) that Licensee has generally complied with the Commission's Orders of March 6 and August 9;

(4) that operators' training in the new procedures would be the subject of a later decision, issued December 14, 1981;

(5) that Licensee has substantially augmented its training department, heading it with professional educators;

(6) that the consultants who reviewed Licensee's training program were highly qualified and independent;

(7) that the operators have been exposed to training;

(8) that the training was in areas which the operators should master;

(9) that the record on training is extensive.

14. The Board's conclusion #584(c) was considered to have resolved the Commission Order Item 1(e) stated in paragraph 2 above. To come to this conclusion, the Board depended heavily on the testimony of Licensee's consultants. August 27 PID #225-241. At the time of the first decision, the Board considered these consultants to be "independent", presumably of Licensee's interests. In their second managment decision, the Board called them "Licensee's consultants". July 27 PID #2321. We take exception to the Board's first characterization. Aamodt Exceptions August 27 PID #39. Licensee presented these consultants as their witnesses and prepared their pre-filed testimony. Gardner, Christensen, Kelly, all ff. Tr. 12,409. It was generally on this testimony that the Board depended rather than the testimony elicited through cross-examination of these witnesses. This was despite the fact that the pre-filed testimony had been destroyed or weakened through cross-examination. For instance, the Board cited Dr. Christensen's prefiled testimony at #235, that Licensee's simulator program made a substantial contribution to the TMI training program, and ignored Dr. Christensen's response

on the stand, that he was unable to say whether the simulator training adequately prepared the operators for emergencies (Tr.12,471 (Christensen). The Board depended on Dr. Gardner's prefiled testimony to provide an impression that the OARP prepared the operators to safely operate the plant (#241), while Dr. Gardner testified that he was not capable of deciding whether the content of the program was appropriate. Tr. 12,628 (Gardner). Dr. Gardner looked at a limited aspect of the program -- the technical adequacy of the training and testing methods; Dr. Gardner had no expertise in nuclear engineering. Tr. 12,503; Gardner ff. Tr. 12,409. We took exception to the Board's interpretation of the consultants at #30-34, 40-41, 45, 47, 48, 52, 53, 55, 56, Aamodt Exceptions to August 27 PID.

15. The Board also placed the review of the OARP in a different context than intended by its authors. Licensee's witnesses and three other consultants participated in a review of the OARP, which was presented and accepted as evidence in the hearing (Licensee Exhibit 27). August 27 PID #201. The Board's implication of the depth of these experts' participation is grossly exaggerated. Each expert spent a very limited time observing a single aspect of the OARP. Licensee Exhibit 27, pages 8, 9. Dr. Christensen spent a single day at the B&W simulator. Tr. 12,472 (Christensen). Dr. Gardner spent about two days observing instructors and films of instructors. Licensee Exhibit 27, page 54.

16. Each of the experts approached their authorship of a chapter or two in the Review as an opportunity to apply the principles of their expertise to nuclear power plant training. Drs. Gardner and Christensen were simply trying to apply the principles of effective teaching and effective human engineering, respectively, to the nuclear training situation. Licensee Exhibit 27, Chapters 8, 9, 10. However, the Board overlooked the content of the report which was critical of the OARP, despite our attempt to bring these matters to the Board's attention. Aamodt Findings, May 15, 1981, # 104-105, 101, 81, 75, 61-72. For instance, the Board overlooked the inappropriate training schedule of a 40 hour week of classes, the inadequate audio-visual aids and the severely

critized simulator program. Licensee Exhibit 27, pages 60,26, 107. Where the Board did notice, for instance the criticisms of the quality of instruction the Board did not appear to appreciate the seriousness of the reviewers. See August 27 PID #262. The Board relied on the Summary placed at the beginning of the Review Report. August 27 PID #203. We took exception the Board's August 27 findings at #30-34, Aamodt Exceptions.

17. A particular significant oversite of the Board was there failure to seriously examine the evidence concerning the qualifications of the TMI instructors. The Commission intended that the Board do so:

> ...The staff indicated the qualification of the instructors for these courses (fluid flow, heat transfer and Thermodynamics) should be addressed... CLI-79-8, page 18 (Report of June 28 Meeting, page 1).

18.. The Board makes two findings concerning instructors. August 27 PID #262. One is incorrect: The number of instructors of licensed operators was nine, not 45. These instructors do not have baccalaureate degrees
45. Tr. 12,176 (Long). The other finding is presumptive: The Board implied that a newly-instituted annual week-long course in training techniques could or had addressed the identified deficiencies in instruction.

19. The Board failed to address the qualifications of the instructors. The Board failed to address the Commission's specific concern aboutthe qualifications of the instructors who taught fluid flow, heat transfer and Thermodynamics. All The evidence was that the regular TMI instructors who taught those subjects did not have baccalaureate degrees. Tr. 12,176 (Long). Since the Commission referred to "college level" as the standard for augmentation of those courses, it would appear that instructors without baccalaureate educations would be unable to taach at that level. We, therefore, take exception to the appropriateness of the Board's finding that the TMI training of operators is not a "college curriculum", while we do not dispute the Board's description. (August 27 PID #262).

20. We must note that the Board's position appeared to be an accomodation to Licensee. The Board must have been aware of the Commission's standards as setout in the Report of the June 28 meeting. The Board expressed surprise when Licensee's Dr. Knief explained the absence of appropriate mathematics from the Thermodynamics training. Tr. 12,196-7.

21. After the Reopened Proceeding, the Board could not walk away from the evidence of weakness of instruction. July PID #2333-4. However, the Board still did not impose the Commission's standards. The Board would require that criteria for instructors be established by Licensee, but the Board did not establish a standard for those criteria. Id. #2421(2).

22. The Board has altered the Commission's schedule concerning augmentation of training. Whereas the Commission Order (CLI-79-8) Item 1(e) was to be met before the Board's decision to restart, the Board would allow resolution of the standards of instruction for some indefinite period after restart.

23. Although the Board found significant weakness in instruction, the Board did not find a "failure of instruction". July 27 PID #2341. At the same time, the Board would impose conditions on restart that the Board believed would provide assurance of quality of training. Id. #2344. The Board simply failed to address any standard for training, or to apply the Commission's standards.

24. Judge Milhollin did find a failure of instruction in the TMI training program:

> In sum, the Licensee's training program was poorly administered and, judging from the evidence presented before me, it was weak in content and ineffective in its method instruction. I do not believe that the Licensee's training program responded adequately to the Commission's Order of August 9, 1979. Special Master's Report #251.

. Training was not an issue in the Reopened Proceeding, however the operators were examined for the first time in the restart hearing. The evidence on training was produced coincidently. Id. 242-251.

. The Board did not accept the Special Master's findings for two reasons. July 27 PID #2335. The NRC Staff was satisfied with the performance level of the

TMI operators on the licensing examinations, and the Board believed the evidence they presented in the August 27 PID. The Board described this evidence as the "professed" knowledge of expert witnesses, Staff testimony and course outlines. The Board's weighting of this evidence over the first-hand evidence deduced by Judge Milhollin is hardly credible. In addition, the Board is capricious in their own arguments. They found within the same decision that the NRC exams can not assure that Licensee's training and examination program "have met their obligation". Id. $2346. They found, as was the case, that the Staff did not audit Licensee's training program. Id. They signaled their own doubts concerning the experts' testimony: "professed knowledge". Id. 2335. The Board's only "solid" evidence was the "course outlines", presented in Dr. Long's testimony. August 27 PID #198. Not only are these "outlines" not more than course titles, the witness was not involved in the related training program (OARP). Dr. Long and the other training management witnesses (Knief and Newton) joined the training department at the end or after the OARP was administered. Long, et al. ff. Tr. 12,140, pages 8,9,13,14, 17,18.

27. The PQS Corp. had audited the operators knowledge following the OARP, however the Board did not place any weight on this information. August 27 PID #231-2. The operators were again audited following the 1981 requalification training (Asso (Associated Technical Training Service audit). The results of both audits were dismal. Licensee Exhibit 27, page 67; Aamodt Exhibit 10 (Reopened Proceeding); Tr. 20,606 (Newton). The Board noted that audits were made (August 27 PID #276), however the Board gave no weight to the outcome of the audits.

28. The audits mocked the NRC examinations. Tr. 12,703; 12,733; 12,738 (Kelly); Tr. 12,748-9 (Boger). The ATTS audit was given two weeks prior to the NRC licensing exam and was used specifically to prepare the operators to take the licensing exam. Tr. 20,585-6; 20,605 (Newton). An intensive two week review of the training material was provided between the ATTS audit and the NRC exam.

Despite the coaching to pass the licensing exams, Senior Reactor W did not feel that he could pass the NRC exam and copied from Senior Operator O. Staff Exhibit 26, Enclosure 5 (Reopened Hearing). As deduced by Judge Milhollin, O and W were involved in a pattern of cheating that extended to the audits and the TMI training department weekly tests. Special Master's Report #21. The grades of the operators on the April NRC licensing exams, the audits and the tests given in the TMI Training Department are all clearly tainted by the administration of these tests without proctors, with books open and with communication between the examinees. After the cheating incident was revealed, Licensee provided tutoring for the operators to prepare them to take the reexamination in October. It was clear that the operators were well-coached to take the October licensing exams, and that the NRC exams are susceptible to coaching. See Aamodt Findings, filed March 4, 1982 #311-2. Despite the extensive coaching, one-half of the senior reactor candidates failed the licensing exam. Tr. 25,326-7 (Goldberg). The Board appeared unaware of this record evidence. July 27 PID #2341 Although subsequent filings of the Staff have stated that these and other operators have passed subsequent reexaminations, the following questions remain: What effect did coaching have on the final passing grades? Under what conditions were the reexaminations conducted? Unless these are resolved, and others concerning the validity of the examinations, the Board had no basis for depending on the performance level on NRC exams as evidence of the adequacy of Licensee's training.

29. Concerning the validity of the licensing exams: The Board finally came to our position after the Reopened Proceeding. July PID #2362, 2346. The evidence was quite clear in the main hearing that the licensing exams were audit-type, but not constructed through use of standard techniques to assure validity, reliablilty or appropriate choice of a critical score. See Aamodt Findings, May 15, 1981 #26-36; Aamodt Findings, March 4, 1982 #306-318.

30. The Board asserted that they relied on the evidence of the Reopened Proceeding rather than the Special Master's Report in reaching their conclusion that training had been resolved to meet the Commission's August 9 Order. July 27 PID # 2342. The Board claimed that they relied on the testimony of the instructors and examinees and the examination papers. Id. However, the Board provided no findings which set aside Judge Milhollin's arguments nor any conclusions based reasoned analysis which would refute Judge Milhollin's arguments. There is little evidence of the Board's reliance on first-hand evidence. The Board, instead, returned over and over again to the licensing exams (and the evidence of the main hearing) that the TMI training program was adequate.

31. The Board would impose conditions to monitor Licensee's training program after restart. Id. #2421. While these conditions would appear to be assurances that Licensee's training would be monitored, the realities of NRC's regulation, even within the conduct of this hearing, destroys any assurance. There were audits of Licensee's training by PQS Corp. and ATTS. Neither the Board nor the Staff paid any attention to these audits. The Staff had intended to use the PSQ audit in April 1980 following the OARP as an assessment of Licensee's training program. SER, at C6-6 (Staff Exhibit 1). This audit contained a test (Category T) on the special training required by the Commission. However, the Staff later testified that they were not interested in the results of the audits. Tr. 20,688-9; 20,706 (Crocker); Tr. 20,697 (Swanson). The Staff testified in February 1981 that the results of the audits would be used to decide which operators could sit for the licensing examination. Tr. 12,824 (Boger); Staff Exhibit 1, page C1-16. In fact, the Staff witness assured the Board that the requirements for eligibility to pass sit for the licensing exams would be strictly enforced. Tr. 23,833-4; 12,805 (Boger). However, just over two months later, the Staff denied that there were any eligibility requirements or that there ever had been! Tr. 20,596-8 (Swanson); Tr. 20695 (Crocker); See Aamodt Findings, May 15, 1981 #1-15. The Board expressed

surprise in the hearing (Tr. 20,598 (Smith), however found (August 27 #274) that neither the Staff nor the Commission had set any elegibility requirements. In fact the Board rejected in their first decision (#264) our contention that an independent engineering firm should verify the training of TMI personnel.

32. The matter of the adequacy of training cannot be assured by audits in the future. The Staff did not pay any attention to those made during the hearing where the issue of adequate training was a focus.

33. Safe operation of the plant by competent personnel was a standard that the Board was to assure the Commission was met prior to their decision to restart. The Board has not done that. Such an assurance cannot be postponed until sometime after restart. We urge the Appeal Board to find that the Board failed to provide assurance in this critical area, and that Licensee failed to provide the burden of proof, so that in view of the overriding issue of public health and safety, the TMI-1 plant may not be restarted.

34. The Board also failed to resolve the weaknesses in training of unlicensed personnel. These weaknesses were identified in the NRC inspections, Report 50/289/80-21 of November 1980:

> The general employee indoctrination and non-licensed auxiliary operator training programs were established and implemented. Technician training was minimal other than equipment training offered by vendors or other outside sources. There was no written training program for the remaining non-licensed personnel. On-th-job training lacked management overview and appeared to be disorganized. Supervisory training in administrative and technical areas had not been developed. Staff Exhibit 4, Appendix B, page 9.

Other than their findings in Health Physics training (August 27 PID #360 forward), the Board failed to develop any significant record. The Board was satisfied with lists of courses and training organization in the matters of the training for Shift Technical Advisors, auxiliary operators, technicians, security personnel and management. Id. #208-223. The Board's other evidence was the Staff's Safety Evaluation Report (Id. #224), however, the report noted that at the time of its writing the training of non-licensed personnel had not been completed. The Staff presumed that Licensee's training

organization would adequately implement training of auxiliary operators, for instance, when acceptable procedures had been fully developed.

35. The Board also asserted that the standards of ANSI/ANS 3.1 (1978) were appropriate. Id. #164. We discussed the inappropriateness of these standards in our reply to the Staff's findings. Aamodt Reply Findings, June 30, 1981, #7-11. As set out there, ANS 3.1-1978 was simply an attempt to standardize personnel training and qualifications prior to the TMI-2 accident. The appropriate standards for TMI-1 personnel would be those that evolved from the accident, or Draft ANS 3.2-1979. The Commission had asked for augmentation of training. The new standard, where applied, would result in significant upgrading of personnel capabilities. Crocker and Allenspach ff. Tr. 12,653, pages 7, 8.

36. The Board incorrectly asserted that the training of the plant staff (in general) met the guidelines of NUREG-0731, the Staff's guidelines for management structure and technical resources. NUREG-0731 is based on the standards of ANS 3.1-1979. Even the Board's cited reference does not support the Board's assertion The Staff witnesses testified that the guidelines had not been met by Licensee. Crocker and Allenspach ff. Tr. 12,653, pages 7, 8. Even in the area of training of licensed operators, the course content did not meet the standards of the guidelines. Tr. 12,587 (Long); Tr. 12,193-6 (Kneif).

37. Concerning the Board's assertion relative to Health Physics training, we call attention to the evidence of continued "looseness" in Licensee's administration of the Radiation Worker Permit test. NRC Inspection Report 50-289/82-07, July 1, 1982, We believe that Judge Milhollin erred in not hearing our witness Harry Williams, a former TMI guard. Aamodt Findings, March 4, 1982 #265-272; Special Master's Report #179-180. Dr. Long's description of the "loose" testing practices at the time of Mr. Williams' employment was corroborative evidence. More important is the fact that just six months late after Dr. Long offered assurances that the tests would be secured, tests and

answer keys were lying on open shelves in the training area. A TMI employee, a radiological assessor made three reports of violations before the situation was corrected. This apparently déliberate exposure of the answer keys coincides with Mr. Williams' testimony that answer keys were made available to contractor personnel who would have difficulty understanding the training materials. Other aspects of these violations are discussed below.

38. We urge the Appeal Board to find that the Board failed to provide assurance that the training of non-licensed personnel. According to Inspection Report 50/289/80-21, the Board was to verify satisfactory completion of corrective actions. In view of critical role of non-licensed personnel in the safe operation of the plant, the plant should not be restarted until this matter is resolved.

39. The Commission was particularly concerned with the capabilities of the operators to respond to transients such as the TMI-2 accident. CLI-79-8 Order Item 1(e). The Commission ordered simulator training for the operators. and a 100 percent reexamination of all operators in these areas.

40. The Board has misinterpreted the Commission's Order, and Licensee has not fulfilled the Commission's requirements. The Commission intended that all operators be tested at the simulator to ascertain that the operators have understood the training and know how to respond appropriately to a number of transients. That is clearly stated in the Commission's order.

41. The Board did not enforce simulator testing of the TMI-1 operators because the Commission only made simulator testing mandatory for licensing candidates of new licensee. 46 Federal Register 26491, 26494, May 13, 1981. August 27 PID #545. Although the Commission decided that Licensee should be considered an operating licensee, despite its license suspension, the Commission gave the Board the authority to decide where TMI-1 should be treated as an applicant. Commission Order, March 23, 1981, page 7. Even if the Commission had not ordered simulator testing of the operators in their August 9 order, the

Board should have. This was clearly a requirement which originated from identified deficiencies in the training at TMI following the TMI-2 accident. NUREG-0660.

42. The Commission by order of March 14, 1980 specifically provided that any party to the proceeding might raise an issue not specifically listed as a "short term" safety concern in the Commission's August 9 Order as long as that issue had reasonable nexus to the TMI-2 accident. On August 4, 1981, we made a motion that all TMI-1 ROs and SROs be examined by the NRC on a simulator. The Board ruled against this motion on the grounds that it was too late. The Board believed that we understood on April 30, 1981 that the NRC did not intend to perform simulator testing of previously licensed operators. August 27 PID #543. We, however, believed at that time that the Commission planned to enforce simulator examination of all operators after October 1981. It was actually not until May 13, 1981 that the Commission excluded operating licensees from the NUREG-0737 requirements. 46 Federal Register 26491, 26494, May 13, 1981. The NUREG-0737 Commission-approved requirements revised the scope of the licensing examinations to include simulator examinations for all applicants for licenses at power plants. The Board also considered it too late for the other parties to address our motion. Such was not the case. At the time of the August 27 decision, the Board was aware of the delay caused by the cheating incident. As it turned out, there has been nearly a year and a Reopened Proceeding in which the matter could have been addressed.

43. The Board also failed to provide evidence that the Licensee's simulator training program met the requirements of the Commission's Order Item II 1 (e). Licensee's program fell far short of the NUREG-0660 recommendation of 160-200 hours per operator annually. The Board found Licensee's program of one week annually to be adequate. The actual hands-on time for each operator is 20 hours. Tr. 12,156-7;12,263 (Long). The effective training time was

further reduced by the time (as much as a day and one/half) needed to adjust to the design differences between the B&W simulator and the TMI-1 control room. Licensee Ex. 27, page 109.

44. The March 28 Denton letter outlines 27 control room manipulations which are to be performed on an annual or two-year cycle. Control manipulations that cannot be performed at the plant are to be accomplished at the simulator. The capability of the 20 hour B&W program to adequately perform the Denton manipulations was not explored in the hearing. The TMI operators are only able to perform ten scenarios in a week at the simulator. Licensee Exhibit 27, page 105. Licensee admitted that this a very small sample of the possible scenarios that can happen. Tr. 12,274 (Ross).

45. The Review Committee strongly advised that Licensee obtain an exact replica simulator. Id., page 144. The Board adopted the Committee's attitude that the restart of the plant should not be delayed until such a simulator was in place. The Board failed to allow that the Committee was hired by Licensee, and the Licensee's interests were the Committee's interests.

46. The Board has erred in not finding that Licensee must provide a full replica simulator in order to assure adequate operator response to all anticipated emergencies.

OPERATIONS STAFF

47. The issue of the number of operators available to run the plant is clouded by a lack of information and the number of operators involved in cheating.

48. The attrition rate at TMI-1 has been high. In 1981, ten out of 36 operators and Shift Technical Advisors left TMI. Two overriding factors were the discovery of cheating and the weekly shift rotation. Aamodt Findings, March 4, 1981 #329, 339.

49. Licensee has recruited RO trainees and promoted from the ranks of the auxiliary operators. Both modes of replacing operators has inherent problems. The Committee preferred the hiring of degreed engineers directly in to the licensed operator program. Licensee Exhibit 27, page 340. However, the Supervisor of Operations, Michael Ross, preferred operators with on-hands experience as auxiliary operators. If the operators had progressed through the auxiliary operator program, Ross would want RO trainees to have 9 months experience before assuming a position in the control room, and SRO trainees, an additional year. If the trainees entered the licensed operator program without the auxiliary training, Ross would require an additional three years experience at the controls. Tr. 12,231 (Ross).

50. Ross would have more and higher-quality operators on each shift during the restart phase that would be required. Tr. 24,254 (Ross). He would like 3 senior operators and from 4-5 operators per shift. Tr. 24,250 (Ross). The Vice-President of TMI-1, Henry Hukill, considered five shifts to be a minimum. He would oppose starting the plant with fewer than five shifts. Tr. 24,075-6 (Hukill). The Ross and Hukill requirements would be met by a complement of 40 licensed operators. This number agrees with the requirements established by the NRC and the Licensee after the TMI-2 accident and referenced by the Commission August 9 Order. Report June 28 Meeting, CLI-79-8, page 18.

51. The Board avoided the issue of numbers of operators available to staff the plant. In addressing the issue of operator integrity, the Board refers to "some thirty to forty licensed members of the TMI-1 operating staff". July 27 PID # 2043. The Board did not provide any data to support these numbers. The uncertainty of the numbers would appear to indicate that the Board did not have any firm data.

52. The Board remained satisfied with the staffing conditions presented in the August 27 PID. Id. #2410. Condition 9 (Id. #253) listed the minimum

staffing the Board would impose. The Board's requirements fall below those of NUREG-0737 and 0731. The former, the Lessons Learned adopted by the Commission, are only applicable to new licensees as the Commission removed operating plants from the effect of their proposed rule. 46 Federal Register 26491, 26494, May 13, 1981. The reasoning was that the experience of operators of licensees would compensate for fewer numbers of operators. The Commission ruled that TMI-1 should be classed with operating plants. Commission Order, March 23, 1981. However the Commission provided for the Board to evaluate individual issues to and take exception to the March 23 Order where deemed appropriate. Id. page 7. Clearly, the turnover of operators at TMI-1 in the past year should have caused the Board to impose the staffing requirements of NUREG-0737. The requirements included shift staffing of two senior operators as a minimum, experience requirements, and limits on overtime. NUREG-0737, page 3-9, 3-10, 11, 3-16, 17.

53. NUREG-0737 considered these shift staffing requirements minimal safeguards. I.A.1.3-7. NUREG-0731, the guidelines for management, require two licensed senior operators as a minimum on each shift. These guidelines consider two SROs a minimum staff to manage emergencies. NUREG-0731, page 1, 6, 7. The guidelines describe the specific duties of the SROs. Id. page 7, 9, 19. The guidelines also advocate overtime restrictions to enhance fitness of personnel. Id. page 9.

54. The Board's Condition 9 does not specify any experience requirements, a particularly appropriate consideration for TMI-1. Only one senior operator is required per shift. An operator who has failed the senior licensing exam would be allowed to function as the Shift Foreman, in command of the control room. Individuals with licenses who have other jobs in the plant would be allowed to mann the control room, the plant could be operated for ten consequtive days with fewer operators than required by this condition, Licensee would only have to try to maintain a combination of 30 operators and trainees, and Licensee would only have to try to restrict overtime.

55. We would urge the Appeal Board to consider the Board's staffing conditions too minimal for safe operation of the plant, particularly ir view of the turnover in operators, the time the plant has been down, and the inadequacies identified in the training program. We urge the Appeal Board to recommend optimal staffing requirements that are responsive to the judgments of the Supervisor of Operations, the Vice-President of TMI-1 and the joint decisioı of NRC and the Licensee after the TMI-2 accident. We would also urge the Appeal Board to consider the staffing issue pendant on the resolution of the adequacy of the training program and the issue of operators integrity.

56. Judge Milhollin did not address the issue of staffing the plant other than that

> He found that the number, and the responsibility, of the persons on the Licensee's operations staff who were compromised by the evidence in this case was such that the overall integrity of the operations staff was shown to be inadequate. Special Master's Report #338.

57. The Board agreed that five individuals, in addition to O and W (no longer operators at TMI), either cheater or probably cheated. The Board agreed that in two other instances, the cheaters had not been identified. July 27 PID #2039, 2040, 2047, 2090-1, 2096-7, 2131-4, 2137. The Board overlooked or excused the evidence that was considered by Judge Milhollin concerning the following individuals: OO (Special Master's Report #69), P (Id.), Q (Id.), FF (Id. 94-100), and DD (Id. 101-111). The Board could not conclude that all cheating had been found. July PID 27 #2041-2, 2087.

58. The Board's assertion that "some thirty to forty licensed members of the TMI-1 operating staff did not cheat, even though they easily could have.." (Id. #2043) is obviously not supported by the record or the Board's own findings. The Board did not examine all of the evidence available, and the Board did not see any of the witnesses testify. The Board admitted that the conditions at TMI were conducive to cheating, but the Board presented no evidence why the

individuals examined in the hearing would have cheated and the remaining would not have.

60. Judge Milhollin's decision on the extent of cheating was rooted in the evidence including his observations of each witness as they testified. We observed that Judge Milhollin continually recorded his observations of the witnesses.

61. The Board concluded that all suspicious "parallelisms" on examinations were identified. Id. #2042. The Board failed to acknowledge the limitations of the Reopened Proceeding and the scope of the the extent of the limitations of the Reopened Proceeding and the NRC investigations. We discussed these limitations in Aamodt Findings, Filed January 18, 1982 #12-34; March 4, 1982 #100-168.

62. We disagreed with the Board's and Judge Milhollin's uncertainty concerning Operator U. We believe that the evidence inculpates U as being stationed in the training area to provide answers to examinees during the NRC examination. Aamodt Comments, Filed May 18, 1982, pages 18-20. Judge Milhollin's uncertainty concerning U's behavior rested on his certainty of the content of the question U asked the Shift Technical Advisor KK. Judge Milhollin's certainty was not founded. Id.

63. The Board's conclusions did not take into account the reluctance of the operators to testify about their co-workers. Witnesses had withheld information from the NRC investigators. Aamodt Findings, January 18, 1982 #37-74. Although the Board noted that it was appropriate in a hearing, particularly the Reopened Hearing, to consider the witness' demeanor, the Board indicated that their standard for acceptable evidence was the actual words or documents on the record. July 27 PID #2036. The Board characterized the latter evidence as "objective". The Board would appear to impugn Judge Milhollin's objectivity.

We found that Judge Milhollin examined all the evidence, including the witnesses' demeanor, in a fair and objective manner. We found that he accorded the witness the benefit of any doubt. Aamodt Comments, May 18, 1982 page 20 (last para.) - 21.

64. We find that the Board lacked objectivity in their findings concerning the Supervisor of Operations, Michael Ross. July 27 PID #2046. Prior to the issuance of the Special Master's Report, the Board had already made their own findings concerning Ross. Board Memorandum and Order, May 5, 1982. The Board invited the parties to consider in their comments to the Board on the Special Master's Report the draft of the Board's findings on Ross. We were surprised at the Board's position that they had arrived at tentative conclusions on Ross independent of the Special Master's Report. Id. page 2. We find that Judge Milhollin's careful analysis of the evidence surrounding Ross (Special Master's Report #137-178) was set aside by the Board. The Board did not include any analysis of the Special Master's finding or the parties' comments. The Board simply preferred their views developed in the main hearing. The Board asserted in their draft "we have our own views concerning his (Ross') culpability... (developed) over many days during the main proceeding." Board's Memorandum and Order, May 5, 1982, Draft, page 10. The Board's loyalty either to Ross or their own prior statements concerning Ross (August 27 PID #155) is disturbing.

65. Michael Ross, Supervisor of Operations, is clearly culpable. Special Master's Report #137-178. We find ourselves in total agreement with the Special Master's findings. Aamodt Comments, May 18, 1982, pages 6-14. We found additional evidence which supported our belief that Mr. Ross altered his April NRC examination. Aamodt Findings, Filed January 20, 1982, pages 39-41.

66. Operator OO testified that cheating was commonplace and accepted at TMI. Tr. 5,968-969, 25,671 (OO). The tests were administered under conditions that were conducive to cheating. Tr. 25,982 (OO); Tr. 26,806-7 (U);Tr.
that were conducive to cheating. Tr. 25,982 (OO); Tr. 26,806-807, 26,811-812 (U); Tr. 26,233-234 (O); Tr. 26,306-307 (V); Tr. 26,607-608 (T); Tr. 26,453 (GG); Tr. 26,923 (DD). Licensee finally admitted that test administration was "loose". Licensee Proposed Findings, January 15, 1982, #325, 327.

67. An opinion widely-held by the operators was that providing or receiving an answer to a question or two was not cheating. Tr. 25,714 (GG); Tr. 26,352 (FF); Tr. 26,837-839 (U); Tr. 26,452, 26,495-90 (W); 25,696 (GG); Tr. 26,807 (U); Tr. 25,968-969, 25,671 (OO); Tr. 26,608 (T). Mr. O did not consider allowing Mr. W to use his papers during the licensing examination constituted an act of cheating. Staff Exhibit 26, page 46, Enclosure 4. Many operators did not believe that O's behavior warranted termination. Tr. 25,703 (GG); Tr. 26,570 (I), Tr. 24,194 (EE). The operators did not believe that the plant management would consider the behavior of O and W cheating. Tr. 26,608 (T); 26,574 (I). Aamodt Findings, March 4, 1982, #162-163.

68. The NRC Staff did not consider an unsuccessful solicitation during a test to be cheating. Id. #165 - 166. It appeared that the NRC proctors were aware of the cheating of O and W at the time. Id. #159-161, 164.

69. The total picture would strongly indicate wide-spread cheating at TMI. There is no reason for an operator to so testify (OO), other than that it was the truth. We urge the Board to find that the Board has seriously erred in their interpretation of the record.

MANAGEMENT COMPETENCY/INTEGRITY

70. The Commission's March 6, 1980 Order required the Atomic Safety and Licensing Board to decide whether the management of TMI-1 had the requisite competency and technical abilities to safely operate the plant.

71. The Board decided that all management issues were resolved in favor of Licensee following the Main Hearing. August 27 PID #584. The Board did not alter this decision following the Reopened Proceeding. Following the Reopened Proceeding, the Board identified a number of management weaknesses. These were "negligent failure to safeguard the integrity of its (Licensee's) examination process", "failure to instill an attitude of respect for the company and NRC-administered examinations", "failure to assure the quality of training instruction", and "negligence in the procedures for the certification of candidates for the NRC licensing examinations". July 27 PID #2419. The Board, however, did not alter their conclusions from the main hearing that all management issues were resolved in favor of Licensee. Id. #2423. The Board would address the management weaknesses by imposing a $100,000 fine. Id. #2419.

72. We agree with the Board that Licensee's management exhibited the weaknesses the Board identified. However, we find the weaknesses indicate serious management incompetence. As the Board noted, "Based on the post-TMI-2 attention given to training one would anticipate a model program at TMI-1." Id. #2336. We find that Licensee's failure to do so is strong evidence of management incompetence. We find that a monetary fine cannot correct management incompetence.

73. We do not understand the Board's failure to recommend the removal of Dr. Long and Samuel Newton from the management of the training department. Not only did the Board find that Dr. Long was responsible for the failure of the training department (Id.#2407), they also found that Dr. Long failed to

to see that the problem of inadequate test administration was corrected after it was brought to his attention. Id.#2323. Dr. Long, in fact, misled the board to believe that the problem had been corrected. Tr. 12,740 (Long). Mr. Newton's testimony concerning the satisfactory completion of Category T tests concealed the "coaching" techniques used to facilitate the operators' passing and the "loose" administration of the tests, Tr. ___ Newton. Mr. Newton, as Supervisor of Operator Training, should have been aware of the Commission's requirement that all tests be given in a "closed book" format. Collins Letter, November 1980. His failure to enforce "closed book" tests after Dr. Long indicated that the procedure had been changed indicates willful negligence.

74. We seriously questioned Dr. Long's role in the training structure. He appeared unknowledgeable and ineffective. Aamodt Findings, May 15, 1982, #78-82. For this reason, we question Dr. Long's present role as Vice-President of Nuclear Assurance. July 27 PID #2406. It was Dr. Long who assured in the Reopened Proceeding that the RWP tests would be kept under lock and key. Long ff. 24,925 page 22,23. However, less than six months later, the RWP tests and their answer keys were found lying on open shelves in the training area. NRC Inspection Report 50-289/82-07, July 1, 1982. We found at the time Dr. Long appeared in the Reopened Proceeding, that he was unacquainted with the facts of his pre-filed testimony concerning the RWP tests. Aamodt Findings, Filed January 20, 1982, #270.

75. We seriously questioned Mr. Newton's role as Supervisor of Licensed Operators' Training. Aamodt Findings, Filed March 4, 1982, #277-281. He appeared to have deliberately misrepresented the pass/fail data provided in response to our motion to resolve conflicting data on the record. Id.

In addition, we have serious doubts that the information supplied by Mr. Newton, about the number of hours operators were in training during 1980-1981 (Licensee Exhibit 80). Id. #363-365. Mr. Newton was not candid about the "loose" test administration when he testified in the Reopened Proceeding. The first break-through into this information came from an operator.Tr25,696 (GG).

76. We do not understand the Board's conclusion that Licensee was "candid" about the inappropriate Category T testing. July 27 PID#2341. We disagree with the Licensee's description of their administration of the Category T training and testing. The operators' testimony, subsequent to the final Category T examination, was that the course material was not taken seriously by either the operators or the instructors. Tr. 26,406 (FF); Tr. 25,695-696 (GG); Tr. 25,983 (OO).

> ...everything that was asked on the test for all practical purposes was also gone over the morning before the test...they just took 20 questions, about, of the contents of what they had lectured us on... Tr. 25,746 (G).

77. We never found the Licensee forthright. Licensee's investigation attempted to cover even the blatant cheating of Operators G and H. Wilson ff. Tr.24,478, pages 6-8. Mr. Arnold, President of GPU, was satisfied with Mr. Wilson's conclusions. Tr.23,685 (Arnold). Mr. Arnold deliberately interfered with the NRC investigation of the cheating of Operators O and W and Shift Technical Advisor KK's suspicions of conspiratorial cheating involving management. Staff Exhibit (Reopened Proceeding) 26, page 7, 37; Staff Exhibit 27, page 6; Tr. 25,378-379 (Ward); Tr. 25,380 (Baci); Staff Exhibit 27, page 29, Enclosure 8, pages 1, 8. See Aamodt Findings, Filed March 4, 1982 #143.

78. We cannot help but conclude that upper management was aware of the rumors of cheating, if not actual instances of cheating, before the O and W incident was reavealed. Tr. 26,464 (GG). We found that Mr. Arnold did not need to question why O and W cheated. Mr. Arnold's explanations for his failure to

pursue the cause of the cheating (Tr. 23,784-785 (Arnold) do not hold water. We believe he did not need to ask because cheating was commonplace and accepted at TMI (Tr. 25,671, 25,968-969 (OO).. Whereas the Licensee stated that their failure to warn the operators against cheating contributed to O's and W's downfall, Mr. Frank Kelly, an auditor with many years of experience, felt that no warning should ordinarily be necessary. Tr. 24,897 (Kelly). The fact that senior operators and others who had been employed at TMI for many years did cheat, is a strong reflection on the management of TMI. We have wondered whether management even required employees to compromise their standards. For instance, Mr. Newton appeared uncomfortable with his testimony surrounding the inaccurate data, discussed in paragraph 75 above. Mr. Newton even faintly disclaimed authorship. Tr. 20,604; 25, 645 (Newton).

80. The Board found that management was responsible for the operators' "bitter" and disrespectful attitude toward the NRC licensing examinations and the training department tests. July 27 PID #2411. However, the Board was incorrect in stating that management learned after the cheating incident of these operator attitudes. Id. #2239. Mr. Ross and Mr. O'Toole, Director of Operations and Maintainance, were both aware of these attitudes for sometime prior. Tr. 24,177 (Ross); Staff Exhibit 27 (Reopened Proceeding), page 33. Mr. O'Toole felt responsible. Id. The Review Committe had the "bitter" attitude also, thus upper-management should have been aware. (Licensee Exhibit 27.)

81. We also found that Licensee broke the Sequestration Order of the hearing and informed two witnesses of testimony which directly involved them. The Sequestration Order was in place on November 12, 1981 and involved discussions on the record at Tr. 23,532-552. The actual implementation of the order appeared difficult to bound, however Judge Milhollin instructed attorneys to refrain from engaging in any communication which would tend to undermine the spirit of sequestration.

Tr. 23,552. Licensee broke the spirit of the sequestration order if not the order itself by informing two affected witnesses of the testimony of an NRC witness. Our motion to stay the hearing to examine the integrity of the hearing was denied (Tr. 26,788-798), as was our motion for reconsideration (January 8, 1982). We would appeal these denials. We found that the motions were denied for spurious reasons, those being that the scheduled day of the hearing and that Judge Milhollin was satisfied that he had deduced enough evidence concerning the individuals involved.

82. As the Board noted, we attempted to bring the importance of the operators' attitudes to the attention of the Board. August 27 PID #267. The Board found at that time that we were trying to identify a non-problem. Id. The Board depended on Licensee's witnesses to set aside our concern. Our concerns were expressed in the testimony of my testimony. Aamodt ff. Tr. 12,931, page 8. We specifically cited the operators' low morale due to changes that evolved from the TMI-2 accident. We were pressed by the Board to drop our request that Harold Denton address the issue of operator attitudes. Tr. (Smith). However, after the Reopened Proceeding, the Board not only found that the operators' attitudes were improper, but that Licensee had offered no evidence that this problem had been resolved. July 27 PID #2240.

83. The Board also acknowledge that improper certification of candidates to sit for the licensing examinations was "another essential link in the chain of events which ultimately resulted in this reopened proceeding". Id. #2351. The Board found after the Reopened Proceeding that formal certification procedures were needed. Id.#2350. However, the Board dismissed our attempts to force this matter after the Main Hearing. August 27 PID #275.

84. In the first decision, the Board qualified their expertise in assessing the competence of management. August 27 PID # . We find from our own experiences that a valid test of management competence is the results

management obtains. We found as did both the Board and Judge Milhollin that Licensee's management failed in a number of important respects. The Board did not find the model training program they would have expected in view of the attention given training after the accident. The Board did not understand our concerns after the Main Hearing that Licensee's assurances cannot be relied upon. August 27 PID #537, 550. Judge Milhollin expressed similar concerns after the Reopened Proceeding. Special Master's Report #537. The Board would impose a license condition of a quality assurance program for training. July 27 PID #2421. We cannot find that the Board's condition will resolve the inadequacies in training We cannot find that the present Licensee management can resolve the training inadequacies even if the Board's condition should be imposed. See Aamodt Comments, Filed August 20, 1982, pages 32-34.

CONDUCT OF THE HEARING

85. An additional management issued we raised was the "fatigue" of the operators in the control room. We approached the issue in two ways: optimizing the design of the control room and reducing the number of hours operators are on shift. Aamodt ff. 12,931, pages 2-4, 7. The Board concluded that the former was adequately addressed since Licensee had an on-going program to improve the control room environment. August 27 PID. We believe that the Board should have fully resolved the control room design issues in terms of the most optimum features. There is no record evidence that all fatiguing features were examined and minimized. Such a redesign (or remodeling) would be clearly called for in view of the NRC's new regulations which allow overtime shifts of 16 hours. Revision to Item I.A.1.3 of NUREG-0737, Generic Letter No. 82-12, June 15, 1982.

86. We believe that the overtime permitted, the 8 hour shift, and the weekly shift rotation all compromise the alertness and capabilities of the operators. Our concerns about "fatigue" of the operators was stricken from my testimony by a Board ruling that the issue lacked nexus to the TMI-2 accident. (Aamodt ff. Tr.

12,931, page 7-8), Board Confirmatory Memorandum and Order of Oral Ruling, April 6, 1981, discussed at Tr. 20,621-20,624. The Board incorrectly focused on a single argument of my supporting brief that "fatigue" had nexus to the accident. Intervenor Response to Board Request, March 10, 1981. For instance, overtime was an issued raised in the investigations of the accident, and specified in the subsequent regulations. NUREG-0680, page 20 forward; NUREG-0694; NUREG-0737, page 3-6 and 7 stated:

> The staff recognizes that there are diverse opinions on the amount of overtime that would be considered permissible and that there is a lack of hard data on the effects of overtime beyond the generally recognized normal 8 hour working day, the effects of shift rotation, and other factors.

87. NUREG-0737 concludes that topic by stating that NRC has initiated studies in the area of overtime. We not only find that the recent revision to NUREG-0737 is not reassuring. We find that the recent revision is not reassuring. In fact, it appears to be a total disregard for the health and safety of both the worker and the public. Commonsense would dictate short hours for control room operators who must remain alert and "on top of the situation" at all times. Most experiments on vigilance reveal man as a poor monitor by demonstrating decrement in response proficiency as observation time becomes longer. Human Factors, Vol. 3 (1961), pp. 213-221, Adams, Stenson and Humes.

88. We find that the Board was capricious in ruling against the evidence on fatigue.in the Aamodt testimony. See Tr. 12,909; 12919; 12418; 12419; 12, 431. The Board once described the issue as "almost half of your Contention". The even encouraged our litigation of the issue. Board Memorandum and Order, May 8, 1980, page 6. The found that the length of shifts worked by licensed operators bore on the overall subject of the Licensee's competence to safely operate the facility and that it was an issue in which the Board and the Commission have expressed strong interest. Id. In view of the high rate of attrition and Licensee's uncertain number of licensed operators, the issue is particularly important.

89. The Board's shift staffing conditions were arrived at through an agreement between the Licensee and the Commonwealth of Pennsylvania. We considered the entire matter a compromise by the Board and the Commonwealth. This is discussed fully in our filing of July 20, 1981. Intervenor Aamodt Management Findings from the Late-Entered Licensee Exhibits 56 and 59 (Commonwealth and Licensee Agreements).

90. The Board failed to resolve a severe problem with the loud speaker system throughout the hearing. We brought to the Board's attention that the inability to hear was more prejudicial to members of the public, including intervenors, who were not familiar with the language of the hearing. Tr. (Aamodt).

THE NRC INVESTIGATIONS

91. We take exception with the Board's findings (July 27 PID #2378-2394). The Board found that the Staff's investigations were adequate with few exceptions. One exception that the Board failed to identify was the inadequate investigation of KK's information concerning a possible conspiratorial scheme of cheating. Id. #2382. The Board, Judge Milhollin and the parties overlooked the presence of Licensee's attorney during the NRC interview of KK. They also overlooked the fact that KK discussed the matter with his management, and then Jc. Wilson prior to the NRC interview. Mr. Arnold and Mr. Stello discussed the ', also prior to the interview. We cannot believe that KK provided all the mation he had; he was reluctant to come forward in the first place and nervous he interview with the NRC until he had completed his account. See Aamodt s, Filed March 4, 1982, #143-150; Aamodt Comments, May 18, 1982, pages 18-20. A significant fact was that the caller was not hesitant to announce over a speaker system that he was calling on behalf of someone who was taking the NRC licensing exam ion. Staff Exhibit 27 (Reopened Proceeding), Enclosure 10, page 3.

93. Several other aspects of the OIE investigation, including withholding of information and Mr. Stello's allowance of management presence during the investigations, added to the ineffectualness of the investigations. Aamodt Findings, March 4, 1982, #157-166, 124-134. These aspects seriously question the integrity of the management of OIE, however such assertions are unavoidable after a study of the evidence.

THE NRC EXAMINATIONS

94. We take exception to all Board findings and conclusions which assert that the NRC licensing examinations are adequate measures of the capabilities of an opera~~tor. to o~~perat

of the operators. The August 27 PID depends heavily on the NRC licensing process as evidence of the the adequacy of operators, instructors and management. At the time of the decision, the Board had complete faith in the validity and reliability of the examination. The Board stated its belief at that time in findings that disputed our concerns about the exam process. August 27 PID, #268-272. Those findings have been affected by the Board's evidence from the Reopened Proceeding as the Board admitted. July 27 PID #2362.

95. The Board accepted in the earlier decision that preparation to pass the NRC was a reliable standard and that it was the Review Committee's standard. Id. #203. The Board accepted the exam results as an adequate audit of Licensee's training program. Id. #204. The Board's dependence on Mr. Kelly's testimony (Id. #226-228) is affected by the NRC exam since Mr. Kelly's assurance was the licensing exam. The Board's resolution of the ability of the operators to function in emergencies depended on the NRC exams. Id. #249. The Board's conclusions that an independent assessment of the operators was not needed (Id. #264), and that the Licensee's training program did not need to be reviewed (Id. #204) are both depend on the licensing exam. The Board's entire section on training (Id.

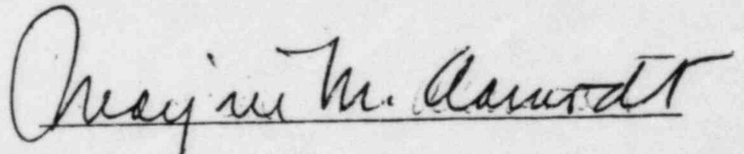
#170-276) has been affected by the Board's new position on the licensing exams.

96. There was no evidence presented in either hearing that the NRC licensing process is valid. In fact, the evidence is to the contrary. Tr. 12,797 (Boger). The examiner who constructs the tests does not use standard test construction techniques, for instance. Id. The operators did not consider the tests valid. Tr. 24,708 (GG); Tr. 26,052 (A); Tr. 23,975 (Hukill); Tr. 26,320-321 (V); Tr. 26,411 (FF); Tr. 25,585 (I). See Aamodt Findings, March 4, 1982, #306-324. Mr. Hukill considered that passing the exams represented a minimum of requisite knowledge. Tr. 23,977-978.

PREJUDICE

97. We find that Judge Smith erred in ruling orally against our filing of any findings for the Special Master after January 18, 1982. We discussed this in our January 18 findings at 31-34.

Respectfully submitted,



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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY	)	Docket 50-289 SP
	)	
(Three Mile Island Nuclear Generating Station, Unit 1)	)	
	)	

This is to certify that the document AAMODT BRIEF OF EXCEPTIONS TAKEN TO AUGUST 27, 1981, JULY 27, 1982 PARTIAL INITIAL DECISIONS (MANAGEMENT/TRAINING/INTEGRITY) was served by hand this 4th day of September, 1982 to the parties marked with * on the attached SERVICE LIST; the remaining parties were served by deposit in first class U. S. Mail.

Marjorie M. Aamodt

Marjorie M. Aamodt

September 2, 1982

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)
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METROPOLITAN EDISON COMPANY) Docket 50-289 SP
)
(Three Mile Island Nuclear)
Generating Station, Unit 1))

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Chairman, Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge John H. Buck
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