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NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

In the Matter of)
METROPOLITAN EDISON COMPANY, ET AL.)
(Three Mile Island Nuclear Station,)
Unit No. 1)

Docket No. 50-289 **51**
(Restart Remand
on Management)

TESTIMONY OF JULIUS J. PERSENSKY, JOSEPH J. BUZY
AND DOLORES S. MORISSEAU ON THE REMANDED
TRAINING ISSUE FROM ALAB-772

Q.1 Please state your names and positions with the NRC.

A.1 (Mr. Persensky): My name is Julius J. Persensky. I am the Section Leader of the Personnel Qualifications Section, Licensee Qualifications Branch, Division of Human Factors Safety, U.S. Nuclear Regulatory Commission. A copy of my professional qualifications is attached.

(Mr. Buzy): My name is Joseph J. Buzy. I am a Systems Engineer (Training & Assessment) in the Licensee Qualifications Branch, Division of Human Factors Safety. A statement of my professional qualifications is attached.

(Ms. Morisseau): My name is Dolores S. Morisseau. I am a Training and Assessment Specialist, Licensee Qualifications Branch, Division of Human Factors Safety. A statement of my professional qualifications is attached.

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Q.2 What is the purpose of this testimony?

A.2 The purpose of this testimony is to address the training issue that the Atomic Safety and Licensing Appeal Board, in ALAB-772, remanded to the Licensing Board. Specifically, the Appeal Board remanded to the Licensing Board "that part of this proceeding devoted to training, for further hearing on the views of Licensee's outside consultants (including the OARP Review Committee) in light of both the weaknesses demonstrated in Licensee's training and testing program and the subsequent changes therein." ALAB-722, 19 NRC 1193 (1984) at 1239. This testimony addresses the adequacy of the methodology utilized by Licensee's outside consultants in their reevaluation of training.

Q.3 Why does the Staff limit its review to methodology and not address the issue of the content of the training program in its testimony?

A.3 The Staff does not address the actual content of the training program in its testimony because the Staff's view of the program, which was presented in testimony after the cheating incidents were discovered, is not the subject of the Appeal Board's remand. The Appeal Board stated in ALAB-772 that the remand is not a matter of bringing a stale record in a closed hearing up to date, but rather akin to recalling a "crucial witness" for further testimony in the light of new developments during a lengthy trial (i.e., the discovery of cheating). 16 NRC at 1237, n. 58. That "crucial witness" is the Committee. Accordingly, the Staff testimony on remand is limited to a review of the methodology used by the Committee to address the Appeal Board's questions.

Q.4 What is the Staff's approach to addressing the remanded training issue?

A.4 The Staff's approach to testimony on this issue will be to identify the issues raised in ALAB-772 and to evaluate the methodology used by the Reconstituted OARP Review Committee (Committee) in addressing those issues. This will be accomplished by comparing the Committee methodology to a methodology that the Staff considers acceptable and appropriate.

Q.5 How has the Staff determined the major issues for further review after ALAB-772?

A.5 The Staff has determined the major issues through review of the remand and the questions and issues raised by the Appeal Board. Though there are numerous questions and issues mentioned in ALAB-772, it is possible to group them in three major categories.

Q.6 What are the three major categories the Staff has identified?

A.6 The three major categories identified by the Staff are Management/Communications/Attitudes, Training Systems/Programs, and GPUN Examinations.

Q.7 By category, list the questions and issues raised by the Appeal Board in ALAB-772, as identified by the Staff.

A.7 For Management/Communications/Attitudes, the Staff has identified the following questions and issues:

- Do instructors and operators take the training courses and examination process seriously (ALAB-772 at 1233)?
- What is the degree of pride and enthusiasm of GPUN employees in the training program (Id. at 1234)?
- What is the degree of professionalism of the instructors (Id. at 1234)?
- Do post-cheating changes in the training program adequately ameliorate the lack of communication between top management, training staff and operating crews (Id. at 1236)?
- Are important personnel changes within the training department appropriate (Id. at 1236)?

For Training Systems/Programs, the Staff has identified the following questions and issues:

- Are deficiencies in operator testing, as manifested by the cheating episodes, symptomatic of more extensive failures in the overall training program (Id. at 1233)?
- Does the training program enhance operators' knowledge or simply encourage memorization for test-taking purposes (Id. at 1233)?
- Are training facilities adequate (Id. at 1235)?
- Have the instructors taken special teacher training courses (Id. at 1235)?
- The Committee should review licensee's new training instructor criteria (Id. at 1235).

- Should greater usage of simulators in training and testing be required (Id. at 1236)?

For GPUN Examinations, the Staff has identified the following questions and issues:

- Is the Licensee's examination an effective way to measure an operator's ability to run the plant (Id. at 1233)?
- Do the format and content of written examinations encourage cheating (Id. at 1233)?
- Should simulator testing be required of all operators (Id. at 1236)?

Q.8 In presenting its testimony, how does the Staff intend to deal with the specific questions raised by the Appeal Board?

A.8 The Staff has listed each question individually under the appropriate category, described the methodology suggested by the Staff, compared that approach to the approach used by the Committee, and identified any differences in approach or limitations in the Committee's approach.

Q.9 How did the Committee approach the identification of issues in their report?

A.9 The Committee used a similar method of indicating questions and grouping them for response in their June 12, 1984 Report. However, these groupings were somewhat different from the Staff's.

Q.10 Do the Committee's categories have an impact on the quality of their product?

A.10 No, their categories reflect specific questions asked of them by the Appeal Board and their interpretation of those questions. Although their groupings differ from the Staff's, the Committee has treated all the questions and issues the Staff has identified.

Q.11 Given the differences in grouping of questions, can you still compare your methodology to the Committee's?

A.11 Yes.

Q.12 How did Staff determine the Committee's methodology?

A.12 The Staff reviewed the Special Review of the Reconstituted OARP Committee (June 12, 1984) (Report), Licensee's responses to interrogatories, depositions of Committee members, and Licensee's prefiled testimony. However, it was sometimes necessary to interpret from these documents the methodology used because the methodology was not described in detail. Because of this there are also some instances where the Staff believes it has not been able to fully identify the Committee's methodology.

Q.13 Does the Staff's inability to fully identify the Committee's methodology affect the Staff's conclusions presented in this testimony?

A.13 Yes. To the extent that the Committee employed certain procedures that the Staff was unable to identify, the Staff was unable to consider those procedures in its overall assessment of the adequacy of the Committee's methodology. Consequently, the Staff's ability to draw conclusions on the adequacy of the Committee's reevaluation of GPU training is constrained by lack of information.

Q.14 What has the Staff determined to be the methodology used by the Committee?

A.14 The primary methodology used by the Committee in preparing its Report is described at pp. 3-4 of that Report. The Committee states that, within the time allowed, they interviewed as many instructors, supervisors, and administrators as possible. Documents reviewed are also listed. The Committee also toured the training facilities. The Committee indicated that there was no attempt to conduct a quality assurance check on any of the documents reviewed prior to preparing the Report. It is understood that the Committee was looking at the training program as it has evolved since the original review by the OARP Committee in 1980. The program that was the specific subject of the original review was a one-time program that has been replaced by a new, comprehensive training program at TMI-1. In response to interrogatories, depositions and in testimony, the Committee elaborated on their

methodological approach by discussing actions taken by Committee members since the Report. These actions include further interviews, review of additional documents, and more observations.

Q.15 What documents does the Staff believe should be reviewed by evaluators before conducting the in-depth evaluation of the TMI-1 training program?

A.15 Before attempting to evaluate the TMI-1 training and testing program, each evaluator should review a number of pertinent documents as background. These documents would serve to fill in some of the gaps after the OARP Committee's initial review as reflected in its June 1, 1980 Report. The documents are:

Report of the TMI-1 Operator Accelerated Retraining Program Review Committee, June 1, 1980

ASLE - PID (Procedural Background and Management Issues), August 27, 1981

Report of the Special Master, April 28, 1982

ASLE - PID (Reopened Proceeding) July 27, 1982

Assessment of Selected TMI-1 Training Programs, Volume 1, Data Design Laboratories, September 10, 1982 (DDL Report)

ASLAB Decision, May 24, 1984 (ALAB-772)

NUREG-0680, June 1980

NUREG-0680, Supplement 1, November 1980

NUREG-0680, Supplement 2, March 1981

NUREG-0680, Supplement 3, April 1981

NUREG-0680, Supplement 4, October 1983

NUREG-0680, Supplement 5, July 1984

D'Arcy, Paul F. and Sauer, John R., "Priority Concerns of Licensed Nuclear Operators at TMI and Oyster Creek and Suggested Action Steps" (RHR Consultation with GPU Nuclear Management), March 15, 1983 (RHR Report)

"A Review of Current and Projected Expenditures and Manpower Utilization for GPU Nuclear Corporation" (Basic Energy Technology Associates, Inc.) February 28, 1983 (BETA Report)

Evaluation of Three Mile Island Nuclear Generating Station, INPO, September 1983

- Q.16 Which of the documents listed above did the Committee review before their in-depth investigation?
- Q.16 The Committee reviewed the first four documents listed in A.15 above, and ALAB-772. The Staff has found no indication that the other documents listed were reviewed before performing the in-depth investigation.
- Q.17 What else does the Staff believe it would be appropriate for an evaluator to review?
- A.17 In addition to the documents cited above, an evaluation should also include review of training procedures and training material relevant to the issues in ALAB-772. The evaluators also should interview training managers, instructors and those who receive and use the training, and on-the-job supervisors of those who have been trained. They should also make systematic observations of classes, simulator instruction, and instructors, i.e., the training itself, as well as the administration of examinations, written, simulator and oral. The evaluators must also keep in mind that they are independent reviewers. Interviews with management should not carry an inappropriate amount of weight.

Q.18 Did the Committee review training materials, do interviews and perform observations as indicated by the Staff?

A.18 The Committee indicates that they reviewed training materials, interviewed GPUN staff and performed some observations. The descriptions of these activities are not sufficiently detailed to allow the Staff to evaluate the scope or depth of the review.

Q.19 Does the Staff believe that it would be appropriate to submit a draft report to Licensee for review?

A.19 It would be appropriate to submit a draft report to the Licensee to determine the accuracy of facts, but any such review by Licensee should not go beyond that. Changes made by Licensee's management should be carefully reviewed by the evaluators to ensure that the changes do not alter the substance of the evaluations.

Q.20 From what perspectives does the Staff believe the on-site evaluations should be conducted?

A.20 Once the evaluation of the training program begins on site, it should be done from the perspectives of the three categories of questions and issues identified by the Staff:

1. Management Communications/Attitudes
2. Training Systems/Programs
3. GPUN Examinations (Although examinations are usually considered an integral part of the training program, ALAB-772 raised the question of the impact of the cheating incidents and deficiencies in the area of testing on previous evaluations of

the training program as a whole. Therefore, the Staff believes this issue should be considered separately.)

Q.21 What does the Staff believe should generally be involved in an appropriate evaluation process for each of the three perspectives?

A.21 The Staff will address below, in turn, an appropriate evaluation process for each of these perspectives. The Staff will then compare that approach to the approach used by the Committee, and identify any differences in approaches or limitations in the Committee approach.

MANAGEMENT/COMMUNICATIONS/ATTITUDES

Q.22 What methodology has the Staff identified as appropriate to generally evaluate the issues raised under the category of Management/Communications/Attitudes?

A.22 The general evaluation process for Management/Communications/Attitudes should include:

(a) Review of organizational documents to determine the structure of the training operation and its relationship to the corporate and plant management structure.

(b) Review, through interviews with training management personnel, of the communication mechanisms for all levels and in all directions.

- (c) Conduct of a quality assurance check of communications mechanisms through review of documentation (when applicable) of communication mechanisms and interviews, including:
- (i) Memoranda
 - (ii) Minutes of meetings
 - (iii) Documentation ordering changes to training procedures as a result of communication between training and operations staff.
 - (iv) Documentation ordering changes to operating procedures as a result of communication between training and operations department.
 - (v) Interviews of management, training department staff, and trainees to ensure changes have been implemented.
- (d) Review of qualifications of training department staff through inspection of resumes and GPUN personnel records and personnel evaluations.
- (i) Special attention should be paid to personnel mentioned in remand.

(ii) Review of qualifications of the individuals filling training department positions to ensure that the qualifications are consistent with the functional requirements of the positions.

(e) Review of instructor development and qualifications.

(i) Review of all available instructor development programs as well as GPUN's training instructor criteria and procedures for evaluation.

(ii) Review of actual documentation pertaining to instructor development, i.e., conduct of a quality assurance check to ascertain whether instructors have participated in programs and whether they have actually been evaluated against the criteria.

(iii) Interviews of cognizant training department personnel to obtain feedback on how the instructor development system works and perceptions of its effectiveness.

(iv) Observation of instructors to evaluate them against criteria, using nuclear subject matter expert (SME) and training specialist to determine that both content and technique are appropriate.

(v) Review of instructor evaluations performed by GPUN and by any independent reviewers.

(vi) Interviews of trainees and operators to solicit feedback on how they view the quality of the instructors. If possible (or applicable), determine if they perceive a difference since implementation of new programs and criteria. Some of these "hindsight" perceptions should be checked against operators' perceptions of the training staff as collected in the RHR survey and Supplement 4 of NUREG-0680. In addition, comparison should be made to the assessment of the instructors in the context of the training evaluation performed by Data Design Labs in 1982.

(f) Inspection of the training facility for overview.

(Specific under "Training Systems/Programs", infra.)

Q.23 Given this general process, what would the Staff's proposed approach be for the specific questions and issues raised by ALAB-772 under the category of Management/Communications/Attitudes, and what is the Staff's assessment of the adequacy of the Committee's approach?

A.23 The approach and assessment for these specific questions and issues are set forth directly below, in Q/A 24 through 33.

Q.24 What methodology would the Staff use to evaluate the seriousness of employees' attitudes toward training and examinations?

A.24 The primary source for answering the question regarding employees' attitudes should be interviews with training staff and operators. In addition, the RHR report survey data specific to TMI-1 and Supplement 4 to NUREG-0680 should be reviewed to determine attitudes related to training courses and examinations. Classes should be monitored to observe attitudes communicated by instructors as well as students' attitudes.

Q.25 What was the Committee's methodology with respect to evaluating the seriousness of employees' attitudes towards training and examinations?

A.25 The Committee interviewed the management of the training department to determine their views toward ensuring that cheating never occurs again. Although the Committee did do some interviewing of training staff and operators, there is no indication that they addressed this specific issue. The Committee's prefiled testimony does indicate that observations and discussions with operators show that operators have respect for the training program and believe it is effective. Mr. Kelly stated in his deposition that he read the RHR Report. There is no indication that anyone read Supplement 4 of NUREG-0680.

Q.26 What methodology would the Staff use to determine the degree of pride and enthusiasm of GPUN employees?

A.26 As in A.24 above, the principal source for determining the pride and enthusiasm of employees should be through personal interviews.

The interview questions should address the issues of pride and enthusiasm in such a way as to parallel the survey questions asked by RHR. In this way, data from surveys such as those in the RHR Report and Supplement 4 of NUREG-0680 could be used as a measure of change or consistency. Personnel data concerning attrition rates and absenteeism should also be used as a resource for checking employee satisfaction.

Q.27 What methodology was used by the Committee to determine the pride and enthusiasm of employees and how does it compare to the Staff methodology?

A.27 In the Report, the Committee indicates that they interviewed management and instructors. Both Dr. Uhrig and Mr. Kelly mention interviews with operators in their respective depositions. It is not clear, however, that the issues of pride and enthusiasm were directly addressed. The Committee's prefiled testimony states that additional interviews with operators have been conducted. Mr. Kelly indicated that he reviewed the RHR report, though there is no indication that Supplement 4 of NUREG-0680 has been reviewed. Absenteeism records were not reported as a means of determining employee satisfaction but attrition rates were reviewed.

Q.28 How would the Staff determine the degree of professionalism of instructors?

A.28 In addition to evaluating resumes of instructors, personnel records that address performance on the job should be reviewed to determine

the degree of professionalism. Documentation related to instructor development and evaluation should be reviewed as well. The instructors should be observed on a first-hand basis and evaluated against the GPUN evaluation criteria.

Q.29 How did the Committee address the question of pride and professionalism of instructors?

A.29 The Committee reviewed resumes of instructors and descriptions of programs related to instructor development and evaluation. The Staff has found no indication that they reviewed personnel records that addressed performance on the job, i.e. personnel evaluations, or any indication that any records were checked to ascertain actual hours of training received by instructors. While some members of the Committee observed instructors on a first-hand basis, they did not evaluate them using the present evaluation criteria. Committee members reported that they evaluated the instructors using the members' own past experience.

Q.30 How would the Staff determine the degree and quality of communications among top management, the training department, and operations staff?

A.30 In addition to reviewing organizational documents to determine the structure of three major areas of management (corporate, training, and plant) and their relationship to each other, the Staff would interview management personnel in each of these areas to review the communications mechanisms for all levels and in all directions. Members of both training and operations staff should also be inter-

viewed to determine their perceptions about the implementation and effectiveness of these mechanisms. A quality assurance check of communications mechanisms should also be conducted. This should include a review of documentation (when applicable) of communications mechanisms, e.g. minutes of meetings, memoranda, documentation ordering changes to training and/or operating procedures as a result of communication between training and operations staff.

Q.31 How did the Committee address the degree and quality of communications among top management, the training department, and operations staff?

A.31 The Committee interviewed management and had discussions "with a variety of GPU Nuclear personnel." In testimony, the Committee mentions corporate memoranda and staff meetings, but is not specific as to what memoranda were reviewed, and whether they actually attended meetings or were told about them by personnel whom they interviewed. The Committee also reviewed corporate documents to determine structure and functional relationships among corporate, training, and plant management. There is no indication that the Committee reviewed documentation ordering procedural changes that stemmed from the communications mechanisms.

Q.32 How would Staff determine appropriateness of the assignments specifically mentioned in ALAB-772 (Drs. Long and Coe; Mr. Newton and Mr. Frederick)?

A.32 The Staff would review documentation related to the cheating incidents to determine what, if any, involvement the personnel

mentioned had with these incidents. In addition, the resumes and personnel records relative to performance should be reviewed. Functional requirements of these positions should also be reviewed to ensure that the qualifications of the individuals are appropriate.

Q.33 How did the Committee address the question of appropriateness of the assignments of Drs. Long and Coe, Mr. Newton, and Mr. Frederick?

A.33 The Committee stated that it did not believe it was appropriate to "second-guess" GPUN management. However, they did review the resumes of the individuals mentioned in ALAB-772. They also reviewed documentation related to the cheating incidents. The Committee also reviewed the functional requirements of the positions to determine the appropriateness of the respective individuals' qualifications, i.e., education and experience.

TRAINING SYSTEMS/PROGRAMS

Q.34 What methodology has the Staff identified as appropriate to generally evaluate issues in the category of Training Systems/Programs?

A.34 The evaluation approach for Training Systems/Programs should generally include:

(a) Review of Job Task Analyses (JTA) upon which training program is based (SME to verify "correctness" of tasks).

(b) Review of procedures for linking JTA to learning objectives.

- (c) Review of training programs for properly and clearly stated learning objectives that are appropriate to the task analyses for each job.
- (d) Review of lesson plans and student handout material to ensure that the content of programs is consistent with program descriptions.
- (e) Monitoring of classes as a quality assurance check.
- (f) Review (monitoring) of on-the-job-training (OJT) and training related to procedures to ensure consistency with JTA and actual plant operations.
- (g) Monitoring of simulator training (both plant simulator and Basic Principles Trainer) to ensure consistency with program descriptions. Observation of methodology to determine whether this training is centered on problem solving and symptom-based analyses.
- (h) Review of performance evaluations of graduates of training programs to identify deficiencies which could be traced back to training.

Q.35 What approach does the Staff believe would be appropriate to the specific questions and issues raised in ALAB-772 under the category

of Training Systems/Programs, and what is the staff's assessment of the Committee's approach?

A.35 The approach and assessment of these issues are set forth below, in Q/A 36 through 47.

Q.36 How would the Staff determine whether deficiencies in testing were symptomatic of more extensive failures in the overall training program?

A.36 To determine whether the deficiencies in testing were symptomatic, the Staff would first identify the deficiencies in testing through a review of ALAB-772, ASLB-PID (Reopened Proceeding) of July 27, 1982, and the Report of the Special Master, April 28, 1982. Having ascertained what these documents determined to be deficiencies in testing, the Staff would look at the parts of the training program that are relevant to the deficiencies. A review of lesson plans and content would be necessary to determine whether there were more extensive failures in the program than the procedures for security and control of examinations, e.g. exam content not related to training objectives.

Q.37 How did the Committee deal with the issue of whether deficiencies in testing were symptomatic of more extensive failures?

A.37 Although the Committee viewed the actual cheating question philosophically rather than as a failure of the training program itself, they did review the documents specified in A.36. They also reviewed the training program descriptions, attended classes

to determine adequacy of instruction with respect to instructors' knowledge of subject and consistency with learning objectives, and reviewed examinations to determine various domains tested and relevance to actual plant operation. The Committee also reviewed the most recent procedures for security and control of exams.

- Q.38 How would the Staff determine if training programs enhance operator's knowledge or encourage memorization for test-taking purposes?
- A.38 To address the question regarding enhancement of knowledge relative to memorization the Staff would first determine the extent of memorization required to perform the job, since there are certain aspects of the job for which memorization is essential, i.e. immediate actions and back-up to automatic systems. Lesson plans and class room instructional plans (e.g., visuals) should be reviewed to inspect for inappropriate repetition and to ensure that concepts are integrated with plant operation requirements. Classes should be observed to determine if instructors encourage memorization through repetition and to determine if there is opportunity for discussion and team work. If memorization is required the reasons for it should be explained. Quizzes and examinations should be inspected to determine the types of questions asked, that there is a balance between response categories and that there are questions which encourage discussion of the relationship between concepts and operational requirements. At the simulator, lesson

plans should be reviewed and exercises observed to ascertain that a variety of situations are presented. Simulator examinations should provide situations novel to the trainees. Oral examinations should include discussion of the concepts as related to plant operations.

- Q.39 How did the Committee determine if training programs enhance operator's knowledge or encourage memorization?
- A.39 The Committee addressed the question of memorization through review of written examinations to assure there was a mix of questions, both by recalling reviews done in 1980 and current reviews by Mr. Kelly and Dr. Gardner. The mix of questions was reviewed in light of the Leonard memorandum of January 27, 1984. Instructor training courses which include examination construction were also observed. The Staff could find no indication that the Committee reviewed training materials for the purpose of determining the degree of memorization required, nor is there an indication that the Committee reviewed or observed simulator or oral examinations.
- Q.40 How would the Staff address the question, "Are training facilities adequate?"
- A.40 Training facilities should be inspected by a general overview. In addition, specific areas of the facility should be observed for appropriate use, i.e., are all the slide projectors, overheads, used correctly and appropriately or are they merely "cosmetic."

Are the people who use the facility properly trained to use the equipment to its best advantage? Expenditures should be examined to determine adequacy and appropriateness for the programs involved.

Q.41 How did the Committee address the adequacy of the training facility?

A.41 The Committee toured the facility and was briefed on facts and figures by GPUN management. There is no indication that specific areas of the facility were observed for appropriate use, i.e., were slide projections and overheads used correctly and appropriately; were instructors properly trained to use the equipment to its best advantage?

Q.42 How would the Staff determine whether the instructors have taken special teacher training?

A.42 Documentation should be reviewed that would indicate which instructors have received teacher training, how many hours of instruction were given, and the performance of instructors in those courses. Instructors should also be interviewed and classes observed.

Q.43 How did the Committee determine whether the instructors have taken special teacher training?

A.43 The Committee reviewed the programs for instructor development, as listed in its Report. There is no indication in the Report that any other method was used to ascertain that instructors were

receiving teacher training. However, Dr. Gardner indicated in his deposition that he attended several classes of licensed operator training, and Licensee's prefiled testimony indicates that Committee members expect to attend some instructor training classes and interview instructors. Mr. Kelly stated in his deposition that he has conducted interviews of instructors.

Q.44 How would the Staff review the Licensee's new training instructor criteria?

A.44 In addition to reviewing the new forms for evaluating instructors, documentation related to instructor development and evaluation should be reviewed. Resumes and personal records relevant to actual job performance should also be examined. Instructors should be observed and evaluated against the GPUN criteria. These quality assurance checks would help to ensure that new criteria for instructors are actually being used, that they are workable, and that their use results in well-qualified and effective training staff.

Q.45 How did the Committee review the Licensee's new training instructor criteria?

A.45 The Committee did review the new forms for evaluating instructors, and descriptions of programs for instructor development and evaluation. There is no indication that they reviewed performance evaluations or training records indicating actual hours of participation in instructor development courses. Although Committee

members observed and evaluated instructors on a first-hand basis, they did so on the basis of their own past experience rather than by using the GPUN evaluation criteria.

Q.46 How would the Staff evaluate the amount of time spent on simulator training?

A.46 Simulator programs should be reviewed to determine if all the requirements for manipulations are met. Lesson plans and behavioral objectives should be audited for consistency with task analyses. Classes on both the Lynchburg and the BPT simulators should be observed by an SME and a training specialist. GPUN evaluations of simulator instructors should be examined. These checks need to be performed to ensure that the quality of instruction on simulators is adequate. It is not enough to audit hours spent on simulator training in order to evaluate the adequacy of the time spent on such training.

Q.47 How did the Committee address the question of time spent on simulator training?

A.47 The Committee reviewed simulator training program descriptions. Dr. Christensen and Mr. Kelly went to the B&W Simulator and discussed some of the exercises with several operators. There was a briefing by Licensee on the programs. There is, however, no indication that GPUN evaluations were reviewed or that the lesson plans and learning objectives were audited for consistency with task analyses.

GPUN EXAMINATIONS

Q.48 What methodology has the Staff identified as appropriate to evaluate GPUN examinations?

A.48 A general evaluation of GPUN examinations should include:

- (a) Review of improved procedures for security and control of examinations.
- (b) Review of documentation that shows implementation of examination control procedures.
- (c) Review of content of actual examinations with respect to JTA and objectives of training programs and current plant design and procedures.
- (d) Review of examination questions to determine the balance between questions that require memorization and those that actually address plant systems and integrated response, including problem solving, e.g., will they measure ability to run the plant effectively and safely.
- (e) Review (observation) of simulator and oral examinations for content and methodology.
 - Review of standard for oral examinations.
- (f) Checking examination results against personnel evaluations to determine examination validity.

(g) Observation of administration of different types of examinations to ensure that proctors and trainees observe all rules of test administration procedures.

Q.49 What would be the Staff approach for evaluating specific questions and issues raised by ALAB-772 under the category of GPUN Examinations, and what is the Staff's assessment of the Committee's approach?

A.49 The Staff's specific approach to those questions, and assessment of the Committee's approach, are set forth below in Q/A 50 through 54.

Q.50 What methodology would the Staff use to determine if the Licensee's examination is an effective way to measure an operator's ability to run the plant?

A.50 The preferred method of determining if the Licensee's examination is an effective way to measure an operator's ability to run the plant is by determining if general and specific tasks for operating the plant are contained in the training program and by observing individuals and crews performing these tasks in the plant. Since TMI-1 has not operated at power for over five years there has been limited opportunity to observe job performance.

The measure of performance is, therefore, limited to evaluations which may be made during simulator exercises at the B&W simulator and by oral examinations conducted in the TMI-1 control room.

These evaluations should be based on tasks identified in the JTA and in station operating procedures. Written examinations can also provide an effective measure providing they contain questions involving integrated response and problem solving and are also based on tasks contained in JTA.

The combination of simulator, oral and written examinations provide the best available means to evaluate TMI-1 operators today.

Thus, the Staff would review procedures for developing and administering simulator, oral and written examinations and determine that written examination questions, simulator and oral examinations are based on the JTA or station procedures. Further, oral and simulator examinations should be observed and written examinations reviewed to assure that the procedures are properly implemented. A check of personnel on-the-job evaluations should be performed.

Q.51 What was the Committee's methodology with respect to whether Licensee's examination is an effective way to measure an operator's ability to run the plant?

A.51 The Committee's Report states that Mr. Kelly reviewed the 1982 and 1983 written RO and SRO requalification examinations and answer keys and individual results on these written examinations as part of an overall review but does not elaborate on any additional areas included in his overall review.

The Committee's testimony further indicates that Dr. Gardner and Mr. Kelly also reviewed all of the most recent comprehensive initial qualification examinations. Dr. Gardner, in deposition indicated use of examination development and control procedures in the review. Mr. Kelly's deposition also provides methodology on examination evaluation.

In the Committee's testimony, they noted the examination process for operators and senior operators includes written examinations, oral examinations, on-the-job evaluations and simulator exercises. It is the Committee's judgment that the licensee's examination process can measure the operator's ability to safely operate the plant, but the Staff can find no specific references as to how this determination was made.

With the exception of written examinations the Committee does not indicate the methodology used to evaluate other elements of the examination process. There is no indication that personnel evaluation records were reviewed.

Q.52 What methodology would the Staff use to evaluate whether the format and content of the GPUN examinations encourage cheating?

A.52 The Staff would review procedures for security and control of examinations, would review the content of actual examinations with respect to objectives of the training program, and would determine the balance of questions that require memorization and those which

measure ability to run the plant effectively. In addition, the Staff would perform a review of answer keys to determine validity of answers from reference material, e.g., JTA, procedures, learning objectives. Trainees should also be interviewed to determine their views on the importance of examination integrity.

Q.53 What methodology was used by the Committee to evaluate whether the format and content of the GPUN examination encourage cheating?

A.53 The Committee has done extensive review of the examination security and control procedures. They expect to observe instructor training courses related to this area. There is indication that the Committee has compared the content of the examination with the objectives of the training program. However, the Staff can find no indication that an attempt was made to determine the validity of answer keys. Dr. Gardner's deposition indicates that he reviewed a sample of examinations in accordance with Mr. Leonard's memorandum of January 27, 1984 with regard to constructing comprehensive examinations. There is some indication that trainees may have been interviewed to determine their views toward examination integrity.

Q.54 How would the Staff evaluate whether or not simulator testing should be required of all operators?

A.54 As the Committee noted in its Report, this question is moot since all licensed operators have been tested and will continue to be tested annually on the simulator, either by the licensee or the NRC.

Q.55 What is the Staff's conclusion regarding the methodology employed by the Committee in response to the ALAB-772 remand?

A.55 The Staff concludes that the Committee's methodology was appropriate for some issues. However, there are some instances where the Committee's methodology does not appear to be complete enough to fully answer the question or issue addressed. Further, there are other instances where the Staff has not been able to identify the methodology used.

Q.56 In sum, what limitations with respect to the Committee's methodology has the Staff identified?

A.56 The limitations in the description of the Committee's methodology, both generally and by category, are:

General

Though the Committee indicates that they: reviewed documents, training materials and examinations; interviewed managers, instructors, trainees and operators; and observed classroom and simulator training, the descriptions of their activities are not sufficiently detailed to allow Staff to evaluate the scope or depth of these activities.

Management/Communications/Attitudes

- ° Though the Committee addressed the issues of employees' attitudes and pride and enthusiasm through interviews, the Staff could find no indication that the Committee compared

their findings with the findings reported in the RHR Report or NUREG-0680, Supplement 4. There is also no indication that the Committee structured their interviews in a way that such a comparison could be made.

- Though the Committee indicates that reviews of instructor resumes were performed as a means of determining degree of professionalism, the Staff can find no indication that instructors' personnel evaluations, class attendance or performance in instructor training classes were checked. The Committee does not indicate that they employed the GPUN evaluation criteria in any of their interactions with instructors. There is no indication that the interviews with operators addressed the quality of instruction, nor is there an indication of how the operators' current perceptions of the training staff relates to the RHR Report, DDL report or NUREG-0680, Supplement 4.
- There was only a limited quality assurance check on the presentation made by GPUN regarding communications mechanisms. There is no indication that the Committee reviewed documentation ordering changes to training procedures or operating procedures. It is not clear if the interviews conducted by the Committee addressed the communications issue.

Training Systems/Programs

- The Committee has not reviewed the Job/Task Analysis nor the procedures for linking the analysis to learning objectives and training materials.
- The Committee does not indicate that any on-the-job training was reviewed or observed.
- Simulator and BPTS training have been observed but it is not clear whether problem solving skills were determined from these observations.
- The Committee does not indicate that they reviewed performance evaluations of graduates to determine if training deficiencies have been indicated and communicated to the training department.
- There is no indication that the Committee reviewed training materials to determine the degree of memorization required nor is there any indication that they reviewed or observed simulator or oral examinations for this same content.
- Although the Committee toured the training facilities and was briefed on facts and figures by GPUN management, there is no indication that the Committee observed specific areas for indications of appropriate use.

- The Committee reviewed the GPUN forms for evaluating instructors but did not use them. Further, there is no indication that they reviewed completed performance evaluations or training records indicating hours of participation in instructor development courses to validate GPUN evaluation criteria.

GPU Examinations

- Although the Committee evaluated written examinations using the licensee's procedures for constructing comprehensive examinations, there was no direct linkage to the JTA indicated. The Committee did not indicate if JTA data were used in evaluating oral or simulator examinations.
- The Committee did not indicate if they reviewed on-the-job performance evaluations.
- Though the Committee has apparently thoroughly evaluated the procedures for security and control of examinations, it is not clear that they have reviewed documentation implementing these procedures or actually observed the implementation of the procedures.

Q.57 Given the limitations identified by the Staff in the Committee's methodology, what reliance should the Board place on the findings of the Committee?

A.57 The Board should accept the findings of the Committee, but weight those findings in light of the methodological limitations identified. The Board should recognize that the Committee is appropriately constituted and composed of highly qualified professionals who are familiar with the TMI-1 training programs and are individually respected in their field of expertise. The Licensing Board recognized the value of this Committee's original review in LBP-81-32 and the Appeal Board reaffirmed that opinion in ALAB-772.

The Staff attempted to devise a model against which to compare the Committee's approach. Any group of professionals involved with such a task would likely develop their own approach based on their unique backgrounds, knowledge and capabilities. Staff believes that the approach described encompasses the essential elements common to most approaches but specific details could vary. The Staff has found that its approach is similar to that employed by DDL.

Also, the limitations noted in the Committee's approach may be based on the inadequacy of information available to the Staff. The Staff could only draw conclusions to the extent that methodological information was available from the Committee's Report, depositions, responses to interrogatories and prefiled testimony.

Q.58 Is the Staff aware of any other independent reviews of the TMI-1 operator training program that utilized an appropriate approach?

A.58 Yes, there are two independent reviews of the TMI-1 training program that the Staff believes used appropriate methodologies.

The two reviews are:

1. Design Data Laboratories (DDL), as approved by letter from H. R. Denton to H. D. Hukill, dated April 9, 1984, in accordance with ASLB-July 27, 1982, PID. The Staff assumes that the approved audit of training would use the methodology described in the DDL report to GPU dated September 10, 1982, which is similar to the approach proposed by the Staff in this testimony.

2. INPO accreditation team evaluation performed the week of October 15, 1984, as indicated in the licensee's testimony (Licensee's Testimony of Mr. Samuel L. Newton, Mr. Bruce P. Leonard and Mr. Michael J. Ross on the Issue of Licensee Operator Training at TMI-1, November 1, 1984, p. 68 (by S. Newton)). This evaluation would be appropriate since the Staff has reviewed the accreditation program and has found it acceptable. A proposed Policy Statement endorsing INPO accreditation as a means of assuring the quality of utility training programs is currently being prepared by the Staff, and will be submitted to the Commission for its review. This proposed Policy Statement is in lieu of proposed rulemaking prepared in response to § 306 of the Nuclear Waste Policy Act (P.L. 97-425).

Q.59 Does the Staff normally use the proposed approach to evaluate utility training programs?

A.59 No.

Q.60 What methodology would the Staff normally use to evaluate Licensee's training program?

A.60 The methodology normally used to evaluate Licensee's training program is contained in Section 13.2 of NUREG-0800, Standard Review Plan which summarizes training requirements. The evaluation consists of a review of syllabi or equivalent course descriptions to determine if the programs meet the guidance contained in NUREG-0800. Regional inspectors later routinely evaluate the programs using commitments made by the Licensee and guidance contained in NUREG-0800 and relevant Regulatory Guides and regulations.

Q.61 Why did the Staff select a different methodology than that contained in the Standard Review Plan?

A.61 The Staff determined that the Standard Review Plan was limited in responding to issues and questions raised by ALAB-772. For example, NUREG-0800 does not address attitudes of training instructors or operators. Also, the Committee's review is a one time effort without long-term inspection for implementation, as performed by the Regional and resident inspector. Such a one time review should have more depth than that described in NUREG-0800.

JULIUS J. PERSENSKY

Professional Qualifications

Current Position: Section Leader - Personnel Qualifications Section
Licensee Qualifications Branch
Division of Human Factors Safety
U.S. Nuclear Regulatory Commission

Education: B.A., Psychology, 1966
M.A., Experimental Psychology, 1968
Ph.D., Applied Experimental Psychology, 1971

Experience: U.S. Nuclear Regulatory Commission 1981 - Present
U.S. National Bureau of Standards, 1971-1981

Publications: Numerous publications and reports involving the behavioral aspects of nuclear safety, product safety, person-machine interface, memory, and alcoholism (available on request).

Prior to NRC - Developed and/or evaluated training programs for the U.S. Postal Service, the U.S. Air Force, University of Cincinnati Medical and Nursing Schools.

At NRC - As Section Leader, have been responsible for review of staff prepared Safety Evaluation Reports in accordance with Chapters 13.2.1 and 13.2.2 of NUREG-0800 for applicants for operating licenses; review of staff prepared evaluations of licensee requalification training program modifications; oversight of contracts related to in the NRC Safety Technology Program; review of NRC-RES research programs on training; development and review of regulations and regulatory guides related to training.

DOLORES S. MORISSEAU

Professional Qualifications

Education: B.A. - Psychology, George Mason University - 1978
M.A. - Industrial Psychology, George Mason University - 1980

Employment/Qualifications:

1982 - Present: Training and Assessment Specialist
Licensee Qualifications Branch
Division of Human Factors Safety
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission

While at NRC, I have assisted in Pressurized Thermal Shock Training audits with senior staff members who are nuclear power subject matter experts. I was part of the special inspection team at TMI-1 in response to the RHR and BETA consultant reports.

I have also participated in training audits at Calvert Cliffs, Oyster Creek, Crystal River, and the Westinghouse Training Center in Zion, Illinois, assessing all phases of licensee training programs, including classroom and simulator training as well as examinations. As part of my routine case work at NRC, I evaluate requalification training programs for both commercial power plants and research and university reactors. I assisted in pilot testing guidelines and criteria for training programs developed by the Licensee Qualifications Branch prior to the work done for SECY-84-76A (the training rule called for by Congress).

In 1983, I was task leader for the DHFS portion of the GPUN vs. B&W lawsuit review.

My position at NRC also entails research in support of senior staff members, specifically in the areas of staffing, experience and education related to power plant staffing, training, and management. I am the technical monitor for three safety technology projects which include research in shift scheduling, operator surveys, and a study of licensing additional personnel in power plants.

1981 - Present: Northern Virginia Community College

I am a part-time lecturer in Psychology.

1980 - 1982: Research Associate, Kinton Inc.

I developed training material for the United States Navy's EPICS program under contract to the Navy Personnel Research and Development Center. This material was developed according to the Instructional Systems Development (ISD) model. The contract also required the validation of

both instructional and testing material, using potential EPICS program candidates as subjects.

1979 (Summer): Personnel Psychologist, OPM

While in graduate school, I was selected as a Federal Summer Intern by the Office of Personnel Management. In this capacity, I assisted with the development of unassembled exams, specifically the development of content valid exams for nurses and economists. I produced a large amount of highly detailed statistical work connected with data summaries from Subject Matter Expert Panels for these two examinations.

1976 - 1980: Undergraduate & Graduate, George Mason University

During these years, I was a full-time student. My undergraduate course work included Statistics, Tests and Measurements, Evaluation Research, Physiological Psychology, Industrial Psychology, and other psychology courses required for the major in this degree. My graduate course work included organizational development, human factors engineering, experimental and research design, industrial psychology, personnel testing and evaluation, advanced psychopathology, and other graduate courses relevant to the area of industrial psychology.

Publications:

McGuire, M. V., Walsh, M., Boegel, A. J., Morisseau, D. S., Persensky, J. J., Sorenson, R., "How Are Things Going? Obtaining Feedback in a Regulatory Environment" (Paper presented at American Psychological Association Convention - Toronto, 1984).

Gessner, Theodore L., and Morisseau, Dolores S., "Under the Golden Psi," Psychiatry, November 1980.

The Affects of Cold and Nitrogen Narcosis on Diverse Performance
(Unpublished research).

Human Factors Exhibit, George Mason University - Spring 1979. Project Exhibit on Work Environment and Productivity.

JOSEPH J. BUZY

Professional qualifications

Current Position: Systems Engineer (Training & Assessment)
Personnel Qualifications Branch
Division of Human Factors Safety
U.S. Nuclear Regulatory Commission

Education: B.S. Marine Engineering - 1954
U.S. Merchant Marine Academy
Kings Point, N.Y.

Experience:

- o Military Service - 1954 - 1956 Served as Damage Control Officer and later Engineering Officer on U.S.S. Hollis APD-86.
- o Nuclear - 1956 - 1960: Employed by Bettis Laboratories under contract to the Naval Reactors Program as an operating engineer for the Large Ship Prototype, AIW. I was trained and qualified as Chief Operator on the submarine prototype SIW and assisted in training Navy personnel for SIW and later AIW. I later qualified as Chief Operator on AIW and was assigned as test coordinator during the AIW power escalation program. I was later transferred to Newport News Shipyard as a Bettis Laboratory representative during the construction and start-up testing of the U.S.S. Enterprise. I assisted in initial start-up of two reactor plants on the Enterprise.

1960 - 1963: Employed by the Martin-Marietta Corporation as an operations test engineer for the PM-1 plant. The plant was built for the AEC and Airforce in Baltimore, Maryland, and transported to Sundance, Wyoming. At the site I qualified as Shift Supervisor and was in charge of a combined military crew during the start-up and demonstration phases of the PM-1 plant. I trained and qualified a majority of the military crew who later operated the PM-1 plant.

1963 - 1978 Employed by the AEC as Nuclear Engineer in the Operator Licensing branch. I was trained and qualified as an operator licensing examiner and responsible for developing and administering written and operating examinations under 10 CFR Part 55 for all types of reactor licensed under 10 CFR 55 and 115. I occasionally directed AEC consultants in development and administration of examinations. In 1970, I was appointed as Section Leader for Power and Research Reactors (P&RR). I trained and supervised several OLB examiners in addition to a group of six to eight consultant examiners. The P&RR section administered examinations at all research and test reactors, Babcock and Wilcox, Combustion Engineering, General Atomics (HTGRs at Peach Bottom and Fort St. Vrain) and the sodium cooled reactors, Fermi I and SEFOR.

Examinations also included use of simulators. The P&RR section occasionally provided personnel to conduct examinations at the Westinghouse and General Electric plants. The P&RR section also reviewed Section 13.2, Training, in the FSAR and developed safety evaluation reports in this area.

1978 - 1979: I was assigned to Region II, Atlanta, Georgia and participated in a Pilot Test Program for regionalization of OLB functions. I was responsible for all licensed operator and senior operator renewals as well as changes to requalification programs in Region II. I developed and conducted examinations on all types of reactors, including the use of simulators, in the Region. Shortly after the Three Mile Island, Unit 2, accident, I was detailed as part of the NRC team at TMI for several weeks. Due to large demands on the OLB staff at Headquarters, the Pilot Test Program was suspended in the fall of 1979 and I returned to Headquarters as the PWR (Westinghouse) Section Leader. I was employed in this capacity until February of 1982.

1982 - Present: I am currently assigned as a Systems Engineer (Training and Assessment). This position requires: review of licensee's applications in Chapter 13.2 of the FSAR and preparation of Safety Evaluation Reports, review of changes to the licensee's requalification programs, response to Regional reports to provide resolution on the interpretation of training requirements. I have been recently assigned as a reviewer of Shift Advisor training programs. I have also participated in review of the ATWS event at Salem and the review of PTS training at H.B. Robinson and Calvert Cliffs. In addition, I have participated in the review of training programs at TMI.

Publications: I have contributed to several NUREGs published by the NRC.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
METROPOLITAN EDISON COMPANY, ET AL.)
(Three Mile Island Nuclear Station,)
Unit No. 1))

Docket No. 50-289
(Restart Remand
on Management)

CERTIFICATE OF SERVICE

I hereby certify that copies of "TESTIMONY OF JULIUS J. PERSENSKY, JOSEPH J. BUZY AND DOLORES S. MORISSEAU ON THE REMANDED TRAINING ISSUE FROM ALAB-772" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, by deposit in the Nuclear Regulatory Commission's internal mail system, or, as indicated by double asterisks, by express mail, this 15th day of November, 1984:

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