222

UCS - March 22, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

UCS' REPLY TO LICENSEE'S SUPPLEMENTAL PROPOSED FINDINGS OF FACT IN RESPONSE TO THE PROPOSED FINDINGS OF UCS (¶¶ 283-287)

In a telephone conference call on March 13, 1985, the Licensing Board indicated to the parties that its concern that Licensee had not adequately responded to UCS' Proposed Findings 283-287. As a result of this concern, the Board authorized Licensee to file supplemental response findings on the on the matters addressed by UCS in those paragraphs. UCS now replies to Licensee's supplemental filing, as further authorized by the Board.[1]

UCS' Proposed Findings 283-287 address the question of how Licensee attempts to evaluate job performance and to compare job performance to performance in the training program. They state two basic conclusions. First, Licensee does not attempt to evaluate in any systematic, objective manner the performance of

[1] During the conference call, the Board first raised the question of whether Licensee should be permitted to call additional witnesses on these matters. UCS objected to any such reopening of the hearing and to authorizing any additional filings by Licensee.

DS03

licensed reactor operators on the job after the operator has been on the job for 90 days. Second, it necessarily follows that Licensee does not, because it cannot, compare performance on the job with performance in the training program. In addition, UCS' Proposed Findings 283-287 criticize Mr. Ross for his failure to understand the crucial role of job performance evaluations in comparing performance on the job to performance in the training program.

Licensee responds to these findings with two basic arguments. First, Licensee asserts that the mundane routine of the job of reactor operator is such that an evaluation of day-to-day performance on the job would not be a reasonable or legitimate indicator of operator performance. Thus, according to Licensee, such an evaluation would not provide a meaningful measure of the effectiveness of training. Second, Licensee argues that there is no need to compare performance in training to performance on the job because the training program is performance based, and evaluations in the training program are the equivalent of evaluations of job performance. Licensee also disputes UCS' criticism of Mr. Ross.

The determining factor in this debate is the record of this hearing. That record does not support Licensee's arguments here. Licensee has failed to meet its burden on these issues.

I. Evaluations Of Job Performance Are Essential To Determine The Adequacy Of The Training Program.

According to Dr. Regan, "assessment of the training program against the operational performance of the individuals, teams, and systems involved in the program is the only reliable means of measuring the effectiveness of training" in an industrial setting such as Three Mile Island. Regan, ff. Tr. 32,693 at 3. Licensee responds to this principle primarily by mischaracterizing the type of job performance evaluation that UCS contends is necessary and by arguing that such an evaluation, as mischaracterized by Licensee, would provide no useful information about significant aspects of operator performance or training.

According to Licensee, UCS narrowly defines job performance as the routine skills required in the day-to-day operation of the power plant, and thus UCS would insist upon formal monitoring of these routine skills. Licensee Supplement at 2. Licensee cites no support for these statements. There is none. UCS in no way limits the evaluation of job performance to routine skills. The evaluation must encompass all aspects of job performance, just as the training must encompass all aspects. Routine skills would be included, as would all other skills used in the job.

The serious question suggested by Licensee but obscured by this mischaracterization of UCS' position is whether the nature of the operator's job is such that an evaluation of performance over time, six months or a year for example, would provide useful information about the operator's ability to respond to the wide range of scenarios and events for which he is trained,

including particularly those events that may affect the public health and safety.

Licensee has cited no evidence in the record on this issue. Licensee cites only the OARP Committee's 1980 statement that "the job of the operator is reduced to that of being primarily a monitor." Licensee Supplement at 3 n.3. Even if one were to accept this extremely dubious statement, it does not support the proposition that an evaluation of performance on the job would not provide useful information concerning the adequacy of training.

First, even assuming that an operator is primarily a monitor, there is no reason to believe that the operator's performance as "a monitor" has no bearing on the adequacy of training. The monitoring function itself is crucial to reactor safety. The operator must perform at least three functions as a monitor. He must remain alert so that he accurately monitors all aspects of the reactor for which he is responsible. He must be capable of recognizing abnormalities. He must be capable of determining the significance of abnormalities and taking appropriate action. He must, in short, ensure that relatively routine events do not initiate or escalate into more serious incidents. He must prevent accidents.

Even if the reactor remains stable, it is possible to evaluate whether that the operator accurately monitors the correct functions, records the correct materials, and follows the appropriate procedures. The knowledge that an operator fails to perform these functions properly could reveal significant flaws in either the training or the testing and evaluation aspects of the training program. In particular, evaluation of an operator's

performance as an monitor could reveal whether the training program had adequately prepared the operator to remain vigilant during the long hours of boredom that would be caused by a position as routine as Licensee now suggests this job to be.

Second, Licensee has cited no evidence to the effect that all routine operator activities are limited to monitoring or that there is no relationship between performance on routine activities and performance in an emergency. Common sense suggests that one who performs well in one area is likely to do so in another, particularly to the extent that similar skills are involved, as would be true here with respect to the need for vigilance and accuracy. Moreover, parties to this hearing are certainly familiar with at least one routine operation - leak rate testing - for which operator performance can be evaluated objectively, and for which an evaluation of past operator performance may be of considerable significance.

Third, an operator would be primarily a monitor or involved in truely mundane routine activities only when the reactor is at power in a stable condition. If the reactor scrams, the operator must identify and follow appropriate procedures, perform appropriate analyses and calculations, and take appropriate actions. The same is true when the reactor is undergoing normal start-up or shutdown. During shutdown, for example, the operator must know which equipment or systems to check, what to check them for, and what equipment or systems can be taken out of service at what point during the shutdown. Similarly, when there is a need

to maintain equipment during routine operation of the reactor, the operator must be capable of determining whether and under what conditions the equipment can be taken out of service without adversely affecting the safety of reactor operation. This requires knowledge of the interrelationships of reactor equipment and systems, including the ability to identify the equipment and systems that would be available as back-up if a particular piece of equipment were taken out of service. It also requires an understanding of the effects of the operator's actions on other components or systems. Since these "routine" operations of normal startup and shutdown and equipment maintenance require adherence to procedures and analysis of equipment and system interactions, they effectively test to some extent the analytical and reasoning ability that would be relied upon in the event of an accident.

Licensee has cited no evidence that events such as these do not offer the opportunity to evaluate job performance in a meaningful way. Nor has Licensee cited any evidence as to the frequency of these types of events. Rather, Licensee relies solely upon the extremely general assertion of the OARP Committee in 1980 to create an impression that operators do virtually nothing on the job.[2] Indeed, Licensee's point seems to be

---

[2] Although not part of the record, publicly available information and general knowledge refute the impression that Licensee seeks to create. During calendar year 1983, for example, there was an average of 6.5 scrams for each operating reactor, data for January through March 1984 reveal an average of 5.4 scrams per year. AEOD/P406, Trends and Patterns Analysis of Unplanned Reactor Scrams at U.S. Light Water Reactors, January - March 1984 (November 1984), R. Dennig, L. Bell, M. Harper, K. Higgins. There are also presumably at least one or two planned shutdown and startup sequences for refueling or other purposes in

(footnote continued on following page)

that what the operator normally does on the job bears no relationship to the job for which he is trained. This is by no means intuitively obvious. In the absence of record support for Licensee's contention, the Board must reject it.

Moreover, the relevant evidence in this record refutes Licensee's position. First, while Dr. Regan is not an expert on the particular tasks that a TMI operator must perform, he is an expert on developing training, relating training to the characteristics of a job, and examining personnel systems in general. Regan, ff. Tr. 33,532 at 1-4, Resume, Tr. 32,697-700. With that expertise, Dr. Regan served on a committee that advised the Commission on the question of whether reactor operators should be required to hold college

---

(footnote continued from previous page)
the course of a year. The need to remove equipment from service for maintenance depends upon many factors, but it is reasonable to expect that it would occur at various times during the year.

The net result, using only these examples, is a substantial number of situations in which operators must do considerably more than simply monitor the reactor. A recent example illustrates how even a routine startup may reveal deficiencies in operator performance that may bear on the adequacy of the training program. According to the Office of Nuclear Reactor Regulation Weekly Activities Report, Items of Interest (Enclosure B) for Week Ending March 8, 1985, the Summer plant, during a normal startup, experienced reactor criticality approximately 130 steps earlier than the estimated critical rod position. This situation appears to have been due to a non-conservative estimate of Xenon concentration and to have been compounded by a lack of instrument monitoring by the reactor operator during the approach to criticality. It is a good example of the principle that the operator's job is to prevent accidents.

Finally, it is significant that many, if not virtually all aspects of reactor operation are continuously recorded, so that Licensee would have an objective record on which to evaluate many aspects of operator performance. Thus, the job performance evaluation that Licensee would perform would not be in the nature of the ratings criticized by Dr. Regan, but could be rendered both highly objective and specific to the precise activities of the operator or the shift.

degrees. Regan, ff. Tr. 33,532 at 4. In the course of that work, Dr. Regan was briefed by staff personnel about the characteristics of the job of reactor operator to the extent necessary to make a judgment on the issue before him. Regan, Tr. 32,726-31. At the time of the hearing, Dr. Regan had also reviewed the tasks associated with the job of control room operator as they had been described in an NRC document. Regan, Tr. 32,732. Thus, Dr. Regan's testimony that job performance can be related to training in a setting such as Three Mile Island has a basis in knowledge about the characteristics of the job in question.

In addition, Licensee's own testimony establishes that meaningful information can be derived from evaluating performance on the job. First, Licensee relies upon on-the-job training as one of the crucial aspects of its training and evaluation system for replacement operators and replacement senior operators. Candidates are required to complete required check-offs in the OJT program. Leonard, ff. Tr. 32,409 at 3,6, 12-13.[3] Licensee has not cited any evidence to the effect that the on-the-job training program and checkout are unrelated to performance on the job. The very fact that Licensee relies upon an on-the-job program and checkout indicates that there must be some worth to evaluating employee performance on the job.

---

[3] By contrast, operators are not required to complete any OJT program as part of requalification training. Leonard, ff. Tr. 32,409 at 15-25. Thus, Licensee does not even employ its own existing OJT checkout program as a means of evaluating job performance.

Second, Licensee itself relies upon evaluations of employee performance in reaching significant decisions. Mr. Ross testified to his central role in deciding whether an individual may continue in the requalification training program after he has flunked a written quiz. According to Mr. Ross, he takes into account the operator's "participation in shift activities, has he been involved in incidents, has he caused incidents, his general cooperativeness and general knowledge level, many things. . . . When I say an incident, it is something that shouldn't happen, a pumb breaks due to an operator error. We go back and we evaluate that and we see who was involved in that particular incident." Ross, Tr. 32,593. Thus, in that context, Licensee evaluates job performance in a manner that appears to be both objective and useful. Certainly Mr. Ross did not testify that these evaluations of job performance are meaningless, as Licensee now suggests.[4]

In sum, the relevant evidence in this record contradicts Licensee's position that the job of reactor operator is so mundane that an evaluation of performance on the job would not provide useful information concerning the adequacy of training. Licensee itself evaluates job performance for a limited purpose,

---

[4] Interestingly, Licensee also argues that operators are subjected to multiple evaluations by all of the people who logically might be able to contribute to an assessment of their performance. Licensee Supplement at 7 n.9. Licensee cites various evaluations, but all of these are part of the training program. None is an evaluation of actual performance on the job without the artificialities of a training exercise.

Licensee also discusses at length mechanisms that it already uses to assess the relationship between training and job

(footnote continued on following page)

and there are objective means by which Licensee could evaluate job performance more extensively and systematically for the purpose of validating the training program. Licensee has cited no evidence to contradict these conclusions. Nor has it refuted the principle that it is necessary to assess the training program against performance on the job.

II. Evaluations Performed As Part Of The Training Program Cannot Substitute For Evaluations Of Job Performance.

Licensee argues, in essence, that the performance evaluations that it conducts as part of the training program are the equivalent of evaluations of job performance. See, e.g., Licensee Supplement at 8. Thus, Licensee refers to its written and oral examinations, for example, as "performance

---

(footnote continued from previous page)
performance. Licensee Supplement at 11-15. Again, most of this discussion involves the use of training evaluations to identify weaknesses in training. See, e.g., Licensee Supplement at 11-12. These activities may render the training program internally consistent, but they do not assure that the training program adequately addresses job performance. Licensee also emphasizes various types of feedback in the discussion, presumably in an attempt to suggest that experience in the job is fed back into the training program. Again, however, most the feedback derives from the training program evaluations, not from previous job performance, See, e.g., Licensee Supplement at 12-13, 14-15 (discussion of the treatment of Mr. Olive, whose upgrade program resulted from poor performance on training examinations, not evaluations of job performance). Actual reviews of job performance appear to be limited to annual meetings with Mr. Hukill and general "interface" between management and the operators. Id. at 14-15. Since we know these are not formal evaluations of job performance, USC Proposed Findings ¶¶ 283-284, they must be in the nature of ratings or general observations, which would not provide the sort of objective information needed to assess the adequacy of the training program. Regan, ff. Tr. 33,532 at 12.

evaluations." Id. at 11. Licensee's position derives from the premise that its training program and training evaluations are based upon analysis of the job of reactor operator.[5]

Licensee's argument is in large part a semantic one. Of course written and oral examinations are performance evaluations. But they evaluate performance in the training program and on the examinations, not on the job. Thus, they do not provide the necessary basis for relating the training program with performance on the job. Licensee cannot sustain its position by simply redefining "job performance" to mean performance in the training program.[6]

The question is whether this record supports the proposition that evaluations done by Licensee as part of the training program can serve as a substitute for evaluations of actual on-the-job performance. There is no evidence in the record to that effect.

---

[5] This premise is seriously flawed. In particular, Licensee has yet to complete the job-task analyses that form the basis for a sound "performance based" training program. UCS Proposed Findings ¶¶ 242-245. In addition, Licensee's training evaluations suffer from serious deficiencies that prevent reliance upon the examinations as valid indicators or predictors of performance on the job. UCS Proposed Findings ¶¶ 202-240.

[6] Licensee similarly relies upon language rather than facts in arguing that "evaluating operator performance has been a key factor in the development of Licensee's performance-based training system." Licensee Supplement at 5 n. 7, citing Licensee's Findings ¶¶ 98-118. The findings cited by Licensee in this reference do not support the statement. There is nothing in those findings to support the proposition that Licensee has developed its training on the basis of operator performance. Rather, Licensee has based its training on analysis of the characteristics and requirements of the position of reactor operator. Licensee's assertion here leaves the misleading impression that Licensee has taken actual on the job performance into account in some detailed and systematic way in developing the training program. That is not supported by the cited findings or by this record.

Evaluations of job performance are necessary so that performance in training can be assessed against performance on the job, with the ulimate purpose of determining the adequacy of the training program. Regan, ff. Tr. 33,532 at 9, UCS Proposed Finding ¶ 282. Licensee seeks to avoid that principle by asserting that its training evaluations are based upon analysis of the jobs, and thus measure the same things as an evaluation of job performance itself. Licensee Supplement at 6. This argument depends particularly upon the Licensee's implementation of the TSD model and performance based training. Id. at 5, n. 7.

Licensee misses the point. Job performance evaluations are necessary in order to assure that the training has been properly designed and implemented. It serves, in effect, as a quality assurance check upon or a validator of the training program. Until the training program is validated with actual experience in this manner, there can be no assurance that the training program is adequately preparing candidates to serve as reactor operators.

Several examples illustrate the application of this principle. First, even simulator examinations do not replicate conditions of actual operation. A candidate at the simulator knows an accident is coming. He simply does not know which one. He has studied for the examination, and he is psychologically primed to respond. By contrast, particularly if the job of reactor operator is as mundane as Licensee would have us believe, an operator is likely to be fighting boredom and half asleep when an accident occurs. Thus, it is important to

know how the operator acts on the job, whether he is alert and ready, and whether he performs even his routine tasks in a way that suggests he will perform well in an accident. There is no evidence in this record to support a finding that the results of training evaluations can substitute for this knowledge.

The same is true of written, oral, and OJT examinations. In all cases, the candidate has studied for the examination and is psychologically prepared to be tested. There is no question that the conditions are not equivalent to those that occur on the job, particularly if an unexpected event occurs on the job. An evaluation of an operator's response to a scram, taking into account the significant objective data from various computer monitors, would presumably provide far more accurate and useful information that the results of such examinations.

Dr. Regan testified to the use of the IQI, or the TDS as the program is called at Three Mile Island, as one intermediate indication of the effectiveness of a training program. Regan, ff. Tr. 33,532 at 13, ff. Tr. 32,693 at 3-5. He testified further, however, that the implementation of training development program such as the IQI cannot serve as a substitute for comparing performance in the training program to later performance on the job. Regan, Tr. 32,823-824. There remains the need to validate the training program by assuring that performance on the job is both adequate and consistent with performance in training.

III. Mr. Ross' Testimony Reveals A Fundamental Misunderstanding About The Significance Of Job Performance Evaluations.

Licensee seeks to explain Mr. Ross misunderstanding of the significance of job performance evaluations by asserting that his testimony merely echoes Licensee's view that job performance evaluations are of no use in determining the adequacy of training.[7] This argument simply serves to extend the criticism of Mr. Ross to Licensee's entire organization.

In response to the specific question of whether Licensee could perform formal job performance evaluations for the purpose of improving the training program, Mr. Ross was unable to envision how such an evaluation might be useful for that purpose. It may be, as Licensee suggests, that Mr. Ross focussed only on the types of evaluations that address only personality and work habits. Licensee Supplement at 10. That simply confirms that Mr. Ross does not understand, indeed apparently could not conceive, how well designed job performance evaluations could be used to validate or improve the training program.

---

[7] Licensee also disputes UCS' characterization of Mr. Ross as testifying that the union contract prohibits written evaluations. In fact, Mr. Ross testified that, "our union contract almost prohibits it in some areas along those lines." Ross, Tr. 32,897. He later testified that, "we could do it, but if the union thought it was an intimidation process they could certainly stop it." Ross, Tr. 33,422. It is reasonable to read this testimony as meaning that the union contract effectively prohibits formal evaluations of employee performance. At the very least, Mr. Ross relied opon the contract during the hearing as an excuse to avoid such evaluations. At this point, of course, the issue is apparently moot because Licensee has acknowledged that it is not contractually barred from instituting such evaluations. Licensee Supplement at 9 n. 13.

The net result of the findings on this point is that there is no contractual bar to requiring Licensee to institute formal job performance evaluations for the purpose of assessing the adequacy of the training program, but that Licensee, as revealed by its supplemental findings and by the testimony of Mr. Ross, does not understand the fundamental need for such an assessment. As a result, the Board can hardly find that Licensee would properly implement the necessary job performance evaluations or the assessment of the training program based upon those evaluations.

Conclusion

For these reasons, the Board must reach the following conclusions:

1. Assessment of the training program against performance on the job is essential to measure the effectiveness of training.
2. There are means by which the performance of reactor operator can be evaluated to develop the type of objective information necessary to assess the effectiveness of the training program.
3. Licensee makes no effort to undertake these essential evaluations of performance on the job.
4. Evaluations of performance in the training program cannot be substituted for evaluations of performance on the job.

5. In the absence of a correlation between training and job performance based upon such evaluations, there is no basis for a finding that the training program adequately prepares operators to run the plant safely.

Respectfully submitted,

William S. Jordan, III

Ellyn R. Weiss

HARMON, WEISS, & JORDAN
2001 S Street, N.W.
Suite 430
Washington, D.C. 20009
(202) 328-3500

Dated: March 22, 1985

March 22, 1985

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that a copy of the UNION OF CONCERNED SCIENTISTS' SUPPLEMENTAL PROPOSED FINDINGS FO FACT IN REPONSE TO THE PROPOSED FINDINGS OF UCS (¶¶ 283-287), was served on those indicated on the accompanying Service List. Service was made by deposit in The United States mail, first class, postage prepaid, on March 22, 1985, except that those indicated by an asterisk were delivered by hand.

William S. Jordan, III

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

SERVICE LIST

Administrative Judge
Gary J. Edles, Chairman
Atomic Safety & Licensing Appeal Bd.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge
John H. Buck
Atomic Safety & Licensing Appeal Bd.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge
Christine N. Kohl
Atomic Safety & Licensing Appeal Bd.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge *
Ivan W. Smith, Chairman
Atomic Safety & Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge *
Sheldon J. Wolfe
Atomic Safety & Licensing Appeal Bd.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Administrative Judge *
Gustave A. Linenberger, Jr.
Atomic Safety & Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docketing and Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Jack R. Goldberg, Esq.
Office of the Executive Legal Dir.
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Deborah Bauser, Esquire
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N.W.
Washington, D.C. 20036

Ms. Louise Bradford
TMI Alert
1011 Green Street
Harrisburg, PA 17102

Joanne Doroshaw, Esquire
The Christic Institute
1324 North Capitol Street
Washington, D.C. 20002

Mr. and Mrs. Norman Aamodt
200 North Church Street
Parkesburg, PA 19365

Lynne Bernabei, Esq.
Government Accountability Project
1555 Connecticut Ave.
Washington, D.C. 20009

Michael F. McBride, Esq.
LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Ave, N.W. #1100
Washington, D.C. 20036

Michael W. Maupin, Esq.
Hunton & Williams
707 East Main Street
P.O. Box 1535
Richmond, VA 23212

Thomas Y. Au, Esq.
Office of Chief Counsel
Department of Environmental Resources
505 Executive Houses
P.O. Box 2357

Harrisburg, PA 17120