U. S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NOS: 50-272/95-08
50-311/95-08

LICENSEE: Public Service Electric and Gas Company (PSE&G)
Hancocks Bridge, New Jersey

FACILITY: Salem Nuclear Generating Station, Units 1 & 2

DATES: April 10 - 19, 1995

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EXECUTIVE SUMMARY

From April 10 - 19, 1995, the NRC performed an inspection of the Salem Nuclear Generating Station, Units 1 and 2 licensed operator requalification training program.

Operations

The inspectors reviewed the licensed operator requalification program and the conduct of the annual operating examinations and concluded that these activities were effective in ensuring the continued safe operation of the two units. The requalification program was determined to be based on the systematic approach to training method. Requalification examinations were found to be effective, and no serious deficiencies involving the content of the examination were identified. The inspectors determined that excellent evaluations were performed on individual and crew performances following the conduct of their annual operating examinations.

Significant improvements from past observations were noted in crew manning, crew communications and supervisory oversight of abnormal and emergency conditions during the conduct of the simulator examinations. Further, PSE&G had effectively corrected weaknesses in remedial training and JPM administration noted during previous inspections. Also, PSE&G management has explicitly stated their expectations for operator performance, and have subsequently terminated several operator licenses for poor operations or training performance.

Some weaknesses were identified during the review of the administration of the examination and program review. These weaknesses included inadequate cues for simulated JPMs, repetition of simulator scenario component failures, the quality of self assessments, NRC notification of medical condition changes for licensed operators, for which a NCV was identified, and the disparity between the security agreement for annual examinations and the actual practice. In this last instance, the inspectors did not identify any compromise of examination security.

DETAILS

1.0 INSPECTION SCOPE AND OBJECTIVES

An announced inspection of Salem operations training and requalification program was conducted from April 10 - 19, 1995. The scope of the inspection included review and observation of operations training, including administration of the annual operating examination, required by 10 CFR 55.53. The inspection objectives included verification that the requalification program administered to Salem operators adequately evaluated how well the individual operators have mastered training and performance objectives. The inspection included an assessment of Public Service Electric and Gas'(PSE&G) effectiveness in ensuring that individuals licensed to operate the Salem facility had satisfied the license requirements of 10 CFR 55.53.

2.0 INSPECTION RESULTS

The inspectors reviewed the annual licensed operator requalification examination, and observed its administration to a number of operating crews and individuals. Overall, all parts of the examination were determined to be appropriate, with good sampling, proper administration, and excellent evaluation.

2.1 Written Examination

The inspectors did not identify any deficiencies during the review and observation of the written classroom and static simulator portions of the 1995 requalification examination. Each portion of the written examination was administered properly; however, a couple of examination answers were later changed upon further review by PSE&G. All operators passed both parts of the written examination.

2.2 Simulator Examination

The performance standards and evaluation of the dynamic simulator examination were determined to be effective in discriminating between safe and unsafe operations. All individuals evaluated were examined in at least two different scenarios and satisfactorily passed all facility requirements. Crew performance was also deemed satisfactory in all instances by the facility evaluators. The NRC inspectors were in agreement with the facility evaluators' results. Facility evaluations were excellent, in that they were very detailed and comprehensive in all facets of the examination.

Significant improvements were noted by the inspectors in regard to how the facility has trained and examined licensed operators compared to previous requalification inspections and examinations. In an ongoing effort to increase the number of personnel assigned to each unit, a crew now consists of a third reactor operator (RO). This RO is normally assigned to the work control center which is located adjacent to the Unit 1 and 2 control rooms. During abnormal or emergency conditions, this RO reports to one of the two control rooms to assist the crew with control board manipulations. Also, there is now more active participation and supervisory oversight by the senior shift supervisor. He is now expected to report to the control room as soon as an abnormal or emergency condition arises. Another change, involving more

senior reactor operator (SRO) control and oversight, included the nuclear shift supervisor relieving the desk RO once he has completed the immediate action steps of E-0. Significant improvement was noted on communications when compared with previous inspections and examinations, and during crew debriefings, the inspectors noted that management expectations included continued emphasis on improvement in this area.

The inspectors identified a few concerns on the quality of the scenarios. The inspectors noted that in one scenario set, two scenarios started off with the same component malfunction, an unnecessary repetition. It was also determined that one scenario given on one day was also administered to a different crew on the following day. The training personnel stated that this was an oversight on their part and for future examinations, they will stress the quality of independent reviews. The inspector agreed that emphasis on the quality of independent review was an appropriate corrective action.

2.3 Job Performance Measures (JPMs)

The inspectors reviewed selected job performance measures, observed conduct of the JPM evaluations, and reviewed completed evaluations of performance.

The inspectors concluded that weaknesses in job performance measures administration, identified in a previous requalification inspection, had been corrected, and no repeat deficiencies were identified. Some of the weaknesses specifically corrected included consistency in administration and documentation by the evaluators, use of correct procedures and procedure revisions by the operators, and appropriate preparation for examination administration by the evaluators. None of these previously-identified deficiencies were observed during this inspection.

However, the inspectors did identify a problem with cues during the simulated in-plant JPMs. For the two JPMs observed, it was evident that the evaluators did not provide sufficient cues or feedback of equipment responses to the operators as they simulated actions during performance of these JPMs. Some licensed operators asked for feedback from the evaluators following a manipulative action, whereas others progressed through the JPM so quickly, that it would have been impossible to provide a cue, if warranted. A review of the structured JPMs indicated in many instances, JPM cues were not provided within the written JPM and therefore, the evaluators often had to ad lib, if the operators asked for a cue. The inspectors discussed this weakness with training personnel and stressed the importance of predetermined JPM cues for those simulated in the plant or simulator. Training department personnel agreed with the inspectors that more effort was needed in the area of JPM cues, both in the area of written documentation and in stressing to the operators that they should expect cues and feedback for all manipulative actions.

2.4 Operator Interviews

Interviews were conducted with many of the licensed operators,as well as a number of training instructors and supervisors. The results of these interviews are summarized below:

- The training department has provided feedback to the operators in regard to the results of their performance immediately following completion of the annual examination and this was viewed by operators as a positive change. In the past, a formal exam review was not performed until the operators returned back to training, which in most instances was several weeks later.

- Management expectations of licensed operator performance, both in training and plant operation, have been explicitly conveyed. Both licensed operators and management stated that poor performance would not be tolerated.

2.5 Review of remedial training

The inspectors reviewed facility remediation used in response to performance deficiencies by individual operators, and found the overall program to be appropriate.

From past requalification inspections, licensed operator performance on training cycle quizzes and remedial action for poor quiz performance was not always effective in ensuring satisfactory performance on the annual requalification examination. Facility management had acknowledged that consistent weak performance on training quizzes was unacceptable to them and stated an intention to review remediation activities for poor quiz performance. Followup review of this area indicated that management had reviewed this area and subsequently cautioned many of the licensed operators as to the importance of performance excellence, both in the plant and in the classroom. In a few instances, operators failed to met the standards set by management and their licenses were subsequently terminated by the facility.

As a result of the reactor trip with multiple safety injection event of April 7, 1994, PSE&G management made an internal commitment to identify historically marginal performers and develop long-term performance improvement plans. The inspectors reviewed operator performance in written exams and in simulator scenario exams over the last year of the requalification training cycle. The results showed that 11 operators had failed one or more parts of their exam. The inspector reviewed the remedial actions taken by the training staff with those operators and determined that the operators had been provided proper additional instruction and re-testing. The inspectors also concluded that PSE&G had raised their standard of acceptable performance relative to marginal performers, in that over the past requalification cycle, eight licensed operators had been removed from licensed duties as a result of repeated marginal performance.

3.0 MANAGEMENT OVERSIGHT AND INVOLVEMENT

Station management involvement in the requalification training program was evident. Station operations management has actively participated in the Salem Operations Licensed Operator Training Review Group along with members of the PSE&G nuclear training staff. The inspector reviewed the minutes of the last several review group quarterly meetings and noted good input from station management and aggressive followup to commitments made by the Review Group.

The station operations management observed operator training during the first and fourth day of each training segment, which always included an evaluation of simulator sessions. Operations management also spent almost the entire day at the training center when they attended these training sessions. Also, they evaluated crew performance in the simulator portion of the annual operating test during the week in which the NRC witnessed licensed operator annual examinations.

Weak performance of licensed operators on training quizzes had been routinely reported to operations management by the training department. As inspected previously, both training and operations managers stated an intention to develop better coordination of training and operator performance, thus raising the threshold of management expectations regarding operator performance. The more active involvement of station management in the requalification training program, as cited above, indicated that PSE&G management has indeed followed through with informing licensed operators of their expectations. Weak performance, during both plant operations and training, has been seriously addressed and evaluated on a continuing basis by training and operations management. In a number of documented instances, operator licenses were terminated as a result of poor operator performance or failing to meet management expectations.

As an additional measure of management oversight, the inspectors reviewed PSE&G's self-assessments of the requalification training program. The PSE&G nuclear training department performed program reviews at three year intervals to satisfy the self-assessment requirements of Training Procedure SH.TO-TC.ZZ-0305(Z), "NRC Licensed Operator Requalification Program." The inspectors reviewed the latest review of the Salem licensed operator program, which had been performed by PSE&G in October 1994, and determined the review had been very administrative in nature and had not assessed the quality of the requalification program on a performance-based level. In contrast, the inspectors' review of an audit of the nuclear training program performed by PSE&G Quality Assurance in February 1995, revealed that the QA audit provided a more performance-based assessment of the training program performance. The QA assessment of the training program was primarily based on measures of actual operator performance rather than on the administrative quality of the program. After being informed of the inspectors' observations, training department management informed the inspector of their plans to improve the quality of department self-assessments, including the use of performance indicators to assess the quality of training. The inspector determined that PSE&G had acknowledged the weaknesses of the previous self-assessments and had begun to implement plans to improve the self-assessment process.

4.0 PROGRAM ADMINISTRATIVE REVIEW

The inspectors determined that the Salem requalification training program was in conformance with the systematic approach to training (SAT) methodology. Learning objectives and training were in conformance with a completed job task analysis, and appropriate feedback systems were in place to evaluate training effectiveness.

However, there were two instances in which the facility failed to adequately meet their own internal standards or regulatory requirements. In one instance, instructional activities were conducted which were not in conformance with signed examination security agreements, and in another instance, the NRC was not notified of a change to an operator's license conditions within the appropriate time frame.

During the inspectors' review of the facility's examination security measures, it was determined that a practice existed that appeared to possibly compromise the integrity of the examination. This practice involved an individual signing a security agreement and then providing training or instruction to licensed operators prior to the administration of the annual examination. In an effort to ensure the validity of an examination to be administered, the training department has validated all segments of the examination prior to its implementation. Anyone involved in the examination development or validation process has signed onto a security agreement which states that any information or knowledge of the examination will not be divulged to any other individual until completion of the examination. It also states that he is prohibited from providing any instruction, until the examination is completed. The form used was Form ES-601-1 from the NRC Examiner Standards, which did not fully apply nor was it required in this instance by either NRC regulations or the PSE&G requalification program specifications. The form's use had been established during previous NRC-administered requalification exams, and apparently, the practice had continued. However, during the review of this area, it was determined that one individual had signed the security agreement, but subsequently conducted simulator training sessions.

The inspectors performed a thorough review of this area to substantiate the validity of the examination that they had just witnessed. They determined that there was no evidence or likelihood that the examination was compromised and based this conclusion on the following results of this review.

- The simulator instructor was given a total of seven test scenarios to validate, of which only four would be administered during the examination. He did not become aware of which ones were to be on the annual examination until all instruction had been completed.

- Pre-written simulator training scenarios were different from pre-written examination simulator scenarios.

- Separate discussions were held with the simulator instructor and his immediate supervisor to ascertain why he was permitted to continue instruction, even though signing the security agreement precluded him from doing so. Both individuals stated that they were aware that instruction would be necessary after the exam validation due to the few simulator instructors available. Further, both individuals stated that the simulator instructor was given explicit instructions to stay within the bounds of the pre-written lesson plan. He had been informed that should questions arise that were outside the bounds of the lesson plan, the questions and subsequent answers were to be provided by the other simulator instructor who was assisting him. This individual had not been involved in the development of the examination and thus had not signed onto the security agreement.

- The inspectors held a general discussion with approximately half the operators who were examined. The operators were asked if the training department overtly or covertly taught material immediately before the exam that was on the exam. The overwhelming response was that, if anything, the opposite was true. No one identified examples of the exam material being taught.

- Only one individual had complete knowledge of the examination's content. He was totally responsible for examination development and was not involved in any instruction during this time frame.

- A previous NRC inspection finding involved the fact that security measures were so stringent that it had an adverse affect on the administration of the exam. In this instance, evaluators were not told of or given the JPMs that were to be administered until the actual day of the examination; thus they were not given the opportunity to walk the JPM down or little if any time to review the task.

- The inspectors observed the conduct of all scenarios, and in no instance was it evident that the operators had any knowledge of any planned malfunctions or major evolutions.

The inspectors held discussions with training supervision in regard to the statement on the security agreement and the implications involved should they continue this practice. Training supervision stated their conclusion that the security agreement statement needed to be changed to accommodate the manner in which they have conducted training and developed examinations.

Overall, the inspectors concluded that the instance of the instructor having trained after signing a security agreement, which prohibited such training, represented an inappropriate use of an NRC security agreement form, and insensitivity on the part of the instructor and his management to signing an agreement with which they knew they did not intend to fully comply.

The inspectors performed a review of the medical certification records for eleven licensed operators at the Salem Station. The record review indicated that PSE&G had performed medical examinations in accordance with the guidelines set forth in ANSI/ANS 3.4, "Medical Certification and Monitoring of

Personnel Requiring Operator Licenses for Nuclear Power Plants." However, during this review, the inspectors also determined that PSE&G had failed to notify the NRC within 30 days, as required by 10 CFR 50.74(c), of changes to the license conditions for one licensed operator. This licensed operator previously had no medical restrictions in regard to his license conditions. A review of his most recent medical examination, dated February 21, 1995, revealed that he now needed corrective lenses; however, the NRC had not been notified to date of this change to his medical fitness. Further review of his medical records indicated that the need for corrective lenses was first identified during an examination performed on March 15, 1994. PSE&G immediately initiated efforts to update NRC Form 396 "Certification of Medical Examination by Facility Licensee," including the recommendation that his operator's license be conditioned designating that corrective lenses were to be worn when performing licensed duties. The inspectors considered the facility's corrective actions to be prompt and appropriate, and determined that this was an isolated instance and was of minor safety significance. Therefore, per section VII.B of the enforcement policy, enforcement discretion would be exercised and no violation would be issued.

5.0 EXIT MEETING

An exit meeting was held at the conclusion of the inspection with PSE&G representatives on April 19, 1995. PSE&G representatives acknowledged the NRC findings and conclusions. A listing of exit meeting attendees is provided below:

Public Service Electric and Gas, Salem 1 and 2

L. Catalfomo	Salem Operations Manager
G. Mecchi	Principal Trainer
A. Orticelli	Nuclear Training Manager

U.S. Nuclear Regulatory Commission

P. Bissett	Sr. Operations Engineer/Examiner
S. Barr	Operations Engineer/Examiner