U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-237/95006; 50-249/95006

Docket Nos. 50-237; 50-249

Licenses Nos. DPR-29; DPR-27

Licensee: Commonwealth Edison Company
Opus West III
1400 Opus Place
Downers Grove, IL 60515

Facility Name: Dresden Nuclear Power Station

Inspection At: Dresden Nuclear Power Station
Morris, IL

Inspection Conducted: February 21 through February 24, 1995

Inspector: E. Plettner — E. Plettner — Date: 3/23/95

Inspector: E. Plettner for — R. Miller — Date: 3/23/95

Approved By: E. Plettner for — M. Jordan, Chief, Operator Licensing Section 1 — Date: 3/23/95

Inspection Summary

Inspection Conducted February 21 - February 24, 19954 (Report No. 50-237/95006; 50-249/95006).
Areas Inspected: Special, announced inspection of the licensed reactor operator (RO), senior reactor operator (SRO), and the senior reactor operator limited (SROL) requalification training programs. Included was a review of training administrative procedures, requalification training records and operating examination material; observation and evaluation of operator performance and licensee evaluators during requalification operating examination and remediation training administration; an evaluation of program controls to assure a systems approach to training; and an assessment of simulator fidelity. The inspectors used the guidance in inspection procedure 71001.

Requalification Inspection Results:

The inspectors concluded that the licensee's overall implementation of the licensed RO, SRO, and SROL requalification training programs were in accordance with 10 CFR Part 55 requirements. The following strengths and weaknesses were noted:

Strengths:

- Operations management observation and participation in crew evaluations during dynamic scenario examinations (Section 2.1.1).
- The improved written questions for the Part A (static) and Part B (written) exams (Section 2.1.3).
- Evaluators ability to identify performance issues during exam administration (Section 2.3).
- Operations management actively provided input regarding required training (Section 2.5).

Weaknesses:

- There was no sample plan of record for the development of the SROL annual requalification examination as required by 10 CFR Part 55.59 (Section 2.1.2).
- There was no program control to ensure that the SROLs attended the selected licensed operator continued training (LOCT) lectures as required by training department instruction (TDI) 513, SRO Limited Continuing Training (Section 2.1.2).
- Lecture evaluation forms for SROLs were either incomplete or not reviewed by appropriate training department personnel (Section 2.1.2).
- Scenario sample plan for the RO and SRO requalification exams did not prevent significant overlap in major events of the two scenarios provided to operating crews (Section 2.1.3).
- Operators demonstrated difficulty in properly utilizing and accurately performing plant procedures (Section 2.2).
- Operators on the crews were not always consistent when using three way communications (Section 2.3).
- Evaluators did not determine an aggressive remedial training action to correct procedure utilization problems and reinforce plant management's procedural philosophy (Section 2.3).
- The command and control policy of operations management has not been clearly defined and was not clearly understood by evaluators for the roles of the on-shift operations supervisors (Section 2.3).

REPORT DETAILS

1.0 Persons Contacted

The Commonwealth Edison Company

* P. Holland, Regulatory Assurance Supervisor
+B. Mitzel, Shift Operations Supervisor
* J. Kotowski, Unit 2 Operations Manager (outgoing)
* T. O'Connor, Unit 2 Operations Manager (incoming)
*+J. Kluch, Operations Training Supervisor
*+R. Sitts, Operations Training Requal Administrator
*+R. Weidner, Training Supervisor
*+J. Heck, Operations Training
*+D. Zehrung, Operations Training
* L. Cruse, Nuclear Station Operator

NRC Representatives

*+E. Plettner, Region III NRC Inspector
*+R. Miller, Contractor from Sonalysts
* A. Stone, Dresden Resident Inspector
* M. Jordan, Region III NRC Section Chief

* Denotes those present at the entrance meeting on February 21, 1995.
\+ Denotes those present at the exit meeting on February 24, 1995.

2.0 Introduction

The purpose of this inspection was to assess the licensee's requalification program for licensed ROs, SROs, and SROLs in order to determine whether the program incorporated 10 CFR Part 55 requirements for evaluating operator mastery of training objectives and revising the program.

The licensed RO, SRO, and SROL requalification program assessment included a review of training administrative procedures, requalification training records, written examination material, operating examination material, job task analysis, training lecture evaluations, job performance evaluation, and resolution of recommended training material improvements.

The inspectors conducted an evaluation of operator performance and the ability of licensee evaluators to administer and objectively evaluate during requalification operating examinations. An evaluation of the effectiveness of the program controls was performed to assure a systems approach to training and remediation training was conducted. The inspectors also assessed simulator fidelity.

2.1 Licensed Operator Requalification Program Assessment

2.1.1 Program Administration

The inspectors identified the following strengths regarding the licensed RO and SRO requalification program administration:

- Operations and training management observed crew evaluations during dynamic simulator examinations.
- Operations management participated in crew evaluations during dynamic simulator examinations.
- Attendance at requalification training had an appropriately high priority.

The inspectors identified the following strengths regarding the SROL requalification program administration:

- Operations personnel and operations management actively participated in the SROL training program.
- Feedback into the training process has resulted in revisions and improvements to the SROL training program.

The inspectors concluded that the licensee was implementing the RO, SRO, and SROL requalification training programs in accordance with the licensee's administrative procedures and 10 CFR 55 requirements.

2.1.2 Requalification Training Records Review

The inspectors reviewed RO and SRO requalification training and attendance records for 1994 and 1995 training cycles and concluded that licensed ROs and SROs had attended or made up all scheduled requalification training as required by their program. The inspectors also noted an adequate continuing training program for Nuclear Operator Instructors was conducted as evidenced by attendance at scheduled training.

The inspectors reviewed SROL requalification training and attendance records for 1993 and 1994 training cycles and concluded that licensed SROLs had attended all scheduled requalification and fuel handling continuing training as required by their program. However, the inspectors determined that no records have been maintained of the selected licensed operator continuing training (LOCT) lectures that the SROLs were required to attend. TDI-513, SRO Limited Continuing Training Instruction, Section B.2, requires SROL license holders to attend selected Licensed Operator Training lectures pertaining to their job description. The Fuel Handling Training Coordinator and the SROL operator interviewed did not know that attendance of the selected LOCT lectures was mandatory, as stated by TDI-513. The Fuel Handling Training Coordinator had not tracked the attendance of the SROLs for the LOCT lectures, and he did not maintain a list of the LOCT lectures that

the SROLs have been required to attend. As a result, there has been no programmatic control to ensure that this training requirement per TDI-513 has been satisfied.

The inspectors also noted that no sample plan of record has been maintained for the development of the SROL requalification examination and the QA preparation checklist used for the SROL requalification exam does not require a sample plan to be completed. Therefore, there has been no formal mechanism for ensuring that written examination questions and job performance measures (JPMs) utilized for the SROL requalification examination have appropriately tested the SROL knowledge and abilities as identified in the job task analysis (JTA) or have appropriately evaluated retention of the training received during the requalification cycle. (The major cycle training areas include fuel handling continuing training lectures and on-the-job training, selected LOCT lectures, SROL guided self-study, and required reading.) The sample plan is required by 10 CFR Part 55.59(a).

However, by interviewing the author of the 1994 SROL requalification written examination, it was determined that this examination was developed based on the criteria for initial SROL written examinations of NUREG 1021, Operator Licensing Examiner Standards, ES-701, Section D.1 (which specifies four subject areas that must be tested and the percentage of the examination questions that are required in each subject area). NUREG 1021, ES-702, Section D.3, requalification written examination construction, additionally states that "the examination <u>should</u> include questions associated with industry and licensee event reports and recent plant modifications affecting refueling operations ...". By following the guidelines of ES-701, the facility has not considered these event reports as a source for examination question development. A review of the 1993 and 1994 requalification written examinations showed that a wide variety of subject areas were tested and the intent of the examination standards had been met, although no questions associated with event reports were immediately identified. Another example of the sample plan weakness, in the examination development process, has been the lack of any control to ensure SROLs are tested in the knowledge addressed by the selected LOCT lectures. Although it was determined that the SROLs are tested on the Fuel Handling Continuing Non-Licensed weekly examinations for information provided in the LOCT lectures, there is no mechanism to ensure this training is tested on the annual SROL requalification examination. In addition, interviews with the training staff indicated that the LOCT program does not provide any questions to the Fuel Handling Training Program for testing the SROLs in the knowledge areas addressed by the selected LOCT lectures.

Review of the student fuel handling lecture evaluation forms indicated that the evaluation forms are not consistently and thoroughly reviewed by the licensee staff. Some of the student fuel handling lecture evaluation forms were incomplete; in particular, the evaluation forms were not reviewed by either the instructor or the training group

supervisor. This lack of reviews indicated a process control weakness in one of the feedback mechanisms for the systems approach to training.

Review of the methodology utilized by the training program for tracking training revisions identified a Training Request for Revision (TRR) that had an assigned completion date which was after the next scheduled annual SROL fuel handling outage preparation training. This TRR was intended to revise the fuel lecture to address the new 9 x 9 minus 9 Seimens fuel assembly. Currently, the only mechanism identified by the inspectors which will ensure the accomplishment of this training is the memory of the Fuel Handling Training Coordinator.

2.1.3 Requalification Examination Material Review

The inspectors reviewed the licensed RO and SRO operating and written examinations administered during the inspection week. The examination material followed guidelines contained in Revision 7 of the Examiner Standards, NUREG 1021. The inspectors noted that adequate overlap existed for the JPM and dynamic simulator examinations for the duration of the examination cycle. The licensee had a tracking program to incorporate changes to the examination bank material when procedure changes or modifications were implemented by the plant. If a question is incorrectly answered on an examination a specified criteria number of times, the licensee has an evaluation program in place to review the question for clarity and correctness. A strength was noted in this area for the much improved written questions that were used in the Part A (static) and Part B (written) parts of the exam process. The licensee took corrective action to eliminate the question weaknesses identified in the 1994 requalification inspection.

Although the licensee's examination bank contains 1500 questions, there were a couple of areas which contained an insufficient number of questions to prevent repeating the questions on the written examinations throughout the annual examination cycle. This was an identified weakness in the 1994 requalification inspection. The inspectors did notice that the total number of repeat questions in the 1995 RO and SRO requalification exams had been reduced compared to the 1994 RO and SRO requalification exams. Parallel grading of the written examinations by the inspectors was identical to the licensee's.

The inspectors made the following observations regarding the examination material:

- Although the dynamic scenarios provided an acceptable examination for the evaluation of operator performance, the sample plan for the development of the operating requalification examination did not prevent the overlapping of very similar events between the scenarios administered to a single crew. Of the two operating crews observed in the simulator, each crew was tested in a redundant abnormal or major transient event in the second scenario of the two scenario set. The first crew experienced a slow drywell pressure transient in each of its scenarios. The second

crew experienced ATWS conditions requiring manual rod insertion in each of its two scenarios.

- The job performance measures (JPMs) were of good quality. They involved tasks important to safety, and appropriate steps were designated as critical for the successful completion of the task. At least 20% of the selected JPMs were not included in the most recent training cycle topics. One of the JPMs for a Low Pressure Cooling Injection (LPCI) Surveillance did not contain sufficient initial setup conditions to place the LPCI system in the precise condition for which the section of procedure being utilized would apply. This resulted in some delay and confusion for one of the operators. The utilization of an alternate path JPM aided in the identification of operator weaknesses.

The inspectors concluded that overall the RO and SRO license exams were adequate and written at an appropriate level of difficulty.

The inspectors reviewed the 1993 and 1994 SROL written examinations and the records for the operating examinations administered in 1994. The SROL examination material followed the guidelines contained in the Examiner Standards, NUREG 1021, and the regulations of 10 CFR Part 55, with the exceptions concerning the sample plan deficiency as explained in Section 2.1.2 of this report. One or more of the following occurrences were identified during a comparison of the SROL questions to the guidelines contained in NUREG/BR-0122, Revision 5, Examiners' Handbook For Developing Operator Licensing Written Examinations.

- Questions had stem information that tended to eliminate one or more of the distractors.
- Questions had distractors that were not highly plausible.

The inspectors concluded that overall the SROL examination was adequate and written at an appropriate level of difficulty.

2.2 Operator Performance Evaluation

The inspectors observed the performance of two operating crews during dynamic scenarios and one operating crew during the performance of JPM examinations. The inspectors identified the following concerns.

- The crews and individual operators demonstrated multiple weaknesses in their ability to utilize plant procedures and in their ability to implement plant policy for the execution of procedures. The following specific cases are provided.
  - During the observation of the simulator JPMs, three operators (1 RO and 2 SROs) demonstrated significant weaknesses in executing procedures. Each instance was expected to result in the failure of the JPM. For example, an SRO did not know the immediate action for a partial half

scram condition, i.e., the requirement to insert a manual half scram in the affected channel. Example 2, an SRO did not complete several administrative procedural requirements for a mispositioned control rod, e.g., notification of station management. (Lack of station management notification was also observed during scenarios.)

- During the observation of the in plant JPMs, two operators (2 SROs) demonstrated significant weaknesses in executing procedures. Each instance was expected to result in the failure of the JPM. For example, the first SRO did not perform correct calculations to determine if the APRMs were within calibration limits after maintenance had been performed. The second SRO did not verify that all tip ball valves were closed. In both cases the steps of the procedure were clearly identified but the SRO candidates failed to properly complete the steps.

- During the observation of the scenario examinations, one operator did not place torus cooling in operation in accordance with the prescribed plant procedure, and the same operator, after the completion of a scenario, was unable to locate the proper section of the Reactor Cleanup System procedure for the system isolation that he had performed during the scenario. In addition, the crews observed often did not notify plant management of events as required by plant procedures (a weakness also noted during the performance of a JPM).

- During the observation of one scenario examination, the crew performed insufficient verification of instrumentation failure prior to bypassing a failed instrument. Specifically, when a SRM failure occurred, the crew bypassed it within one minute. Backpanel indications, Technical Specifications, and procedures were referenced after the fact.

- During the observation of scenario examinations, one crew/operator did not properly verify the reset of a scram in accordance with plant procedures for both of the scenarios administered to the crew.

- During the observation of the performance of JPM examinations (specifically the Mispositioned Control Rod JPM), three operators (1 RO and 2 SROs) were not knowledgeable of the capability of Rod Worth Minimizer to provide the history of a control rod's movement (including time, current position, and former position).

- During observation of scenario examinations, command and control was inconsistent between crews and supervisors. In the case of one crew, the operators received directions from two different supervisors with neither supervisor being aware of all the

mitigating actions being directed and accomplished. Secondly, shift briefings were not consistently conducted or controlled. On several occasions, crew members were not present at the beginning of the shift briefing or some crew members drifted away from the briefing and began performing panel actions - resulting in a gradual dissolving of the briefing or a briefing in which the Unit Supervisor lost control. One supervisor had to prompt the crew to remain in a briefing posture several times, while other supervisors infrequently conducted shift briefings. Thirdly, global alarm silencing was inconsistent between crews. One crew allowed the panel operators to silence alarms without any announcement, which in one or more instances resulted in the Unit Supervisor being unaware that annunciators had not been reviewed and diagnosed.

- During the observation of the simulator examinations, the following additional deficiencies were observed.

    - One crew had difficulty controlling reactor water level below +48 inches in both of the scenarios administered to the crew.

    - One crew failed to identify that HPCI was injecting for more than 5 minutes before taking action to secure it, even though multiple indications were available.

    - One crew failed to identify that HPCI had not automatically initiated during a loss of coolant accident and therefore took no action to place it in service to mitigate the loss of level transient. Even after recovery of reactor water level, the crew was unable to determine that HPCI had malfunctioned. Again, multiple indications of the condition were available.

    - One crew often developed "tunnel vision" toward the panel on which a single malfunction was occurring for several events during both of the administered scenarios to the extent that no operator or supervisor was observing the remainder of the reactor plant.

Although the crews demonstrated several weaknesses, the inspectors concurred with the evaluation of the licensee evaluators that the crews were able to maintain or recover a safe plant posture.

2.3 Evaluation of Licensee Evaluators

The inspectors and the licensee evaluators overall assessment of operator performance was in agreement. The inspectors made the following observations regarding the performance of the evaluators.

- During the observation of the simulator examinations, evaluators did not determine a thorough remedial training action to correct

procedure usage problems. The immediate remedial action was to remediate the individual operators demonstrating the most problems, while the need for a root cause analysis of the common problem occurring for both crews went unrecognized.

- During the observation of the simulator examinations, evaluators did not have a clear criteria/policy from which to evaluate crew command and control. For example, evaluators criticized a Shift Manager for aggressively getting involved in control of the crew, when deemed appropriate by the NRC inspection team; but the evaluators failed to criticize/identify the failure of another Shift Manager to rigidly enforce 3-way communications (note: this Shift Manager actually gave a weak reminder to the crew to use 3-way communications, but when the crew continued with improper communications, the Shift Manager failed to correct the condition).

- During the observation of the simulator examinations, only a single technical error was noted by the facility evaluators. One evaluator missed a reactor operator error during manual tripping of the HPCI turbine. The operator released the trip pushbutton too early (about 3,000 rpm) resulting in a HPCI restart, but the operator quickly corrected his error without consequence.

- The licensee evaluators observed during the simulator JPM examinations and the dynamic scenarios demonstrated keen observation skills, performed follow-up questioning in appropriate areas, and exhibited professional demeanor.

The inspectors concluded that the licensee evaluators could adequately administer the requalification examinations and objectively evaluate the performance of the operators.

2.4 Systems Approach to Training Controls

The inspectors reviewed the previous years Safety Assessment and Quality Verification (SAQV) audit, 12-94-03 for requalification training. Items identified by 12-94-03 appear to have been adequately addressed by the licensee based on a comparison of audit results and the inspectors review of the licensed operator required reading packages.

The inspectors concluded that the licensee's program had controls in place to revise the licensed RO and SRO training program as needed based on audits, industry and plant events, system and procedure modifications, and operator feedback.

A review of the structure of the SROL requalification training program included the job task analysis, selected objectives developed during the job task analysis, selected objectives in the lesson plans, and examinations. The inspectors concluded that the licensee's program had satisfied the intent of a systems approach to training and had controls in place to revise the SROL training program as needed based on industry and plant events, operator job performance, student lecture evaluations,

operations requests, plant engineering, and management requirements.

2.5 Personnel Interviews

The inspectors conducted interviews with a cross section of management and staff from both operations and requalification training groups. Results indicated that: plant, training and operations management periodically observed and participated in requalification evaluations of licensed personnel in dynamic simulator scenarios; operations management exhibited ownership of the requalification training program; and, training management and staff were responsive to operations requests. Interviews also verified the SAQV audit findings and corrective actions identified in Section 2.4 of this report.

2.6 Simulator Fidelity

The simulator model handled all phases of the dynamic scenarios and appeared to reflect how the plant responds. No discrepancies were noted during performance of the operating examination. The inspectors review of the simulator fidelity log indicated that a continuous review and upgrade program is in place and continues to effectively address immediate and long range repair and improvement of the simulator.

The inspectors noted the recently installed backpanels were being utilized during certain parts of the operating examination. The work is proceeding slowly. Some benefit in the training and evaluation was noticed by reducing the amount of face to face communications between the crew and simulator operators as the operators could obtain real time data from equipment backpanels that have computer screen displays of equipment that is vital to performing certain Emergency Operating Procedures. The NRC encourages the licensee to complete the project in a timely manner.

3.0 Licensee Actions on Previous Inspection Findings (92702)

(CLOSED) Violation (50-237/93024-01(DRS); 50-249/93024-01(DRS)): This violation involved licensed operators who failed to receive a medical examination by a physician every two years. The inspectors reviewed the licensee's training department instruction, TDI-502, "Administrative Process for NRC Licenses", Revision 0, dated February 1995. Section 4.0 of the procedure describes the steps necessary to ensure that operators will receive a physical every two years. This item is closed.

4.0 Exit Meeting

The inspectors conducted the exit meeting on February 24, 1995. Present were the plant management, training staff, and other staff listed in Section 1.0 of this report. The inspectors discussed the major areas reviewed during the inspection, the strengths and weaknesses observed, and the inspection results. The inspectors also discussed the likely informational content of the inspection report. The licensee did not identify any documents or processes as proprietary.

Attachment

SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Dresden Nuclear Power Station

Facility Licensee Docket No.: 50-237, 50-249

Operating Tests Administered: February 21 - 24, 1995.
This form is to be used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed (if none, so state):

ITEM	DESCRIPTION
NONE OBSERVED	