

U. S. NUCLEAR REGULATORY COMMISSION
REGION 1

DOCKET/REPORT NOS: 50-317/94-33
50-318/94-32

LICENSEE: Baltimore Gas and Electric Company

FACILITY: Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Lusby, Maryland

DATES: November 14-18, 1994

INSPECTORS: Nancy Maquire-Moffitt, PNL
James A. Prell, NRC

CHIEF EXAMINER: James A. Prell 12/8/94
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EXECUTIVE SUMMARY

Inspection Report Nos. 50-317/94-33 & 50-318/94-32

From November 14 to November 18, 1994, two inspectors reviewed the Calvert Cliffs, Units 1 and 2, licensed operator requalification training program. This review included observation of the annual operating examinations, interviews with operations and training staff members, review of how the licensee responded to past licensee event reports that had operator training deficiency implications, and review of the training feedback program and the program for maintaining active operator licenses.

Operations

The inspectors determined that Calvert Cliffs, Units 1 and 2, has implemented an excellent, effective requalification training program.

The inspectors noted the following strengths:

- The operations department has been effectively involved with the requalification training program.
- The examination material was of excellent quality. Both the written and operating examinations were challenging and discriminating on operator performance.
- The requalification program effectively responded to past events that had operator deficiency implications.

The inspectors noted areas for improvement regarding the number of job performance measures (JPMs) in the test bank and the documentation method for plant tours associated with proficiency training.

The inspectors determined that Calvert Cliffs program for maintaining exam integrity from week to week during requalification testing was weak. Specifically, a majority of written questions and JPMs were repeated from week to week. The NRC recognizes that Calvert Cliffs has been revising major sections of their requalification testing program, primarily the written and job performance measures sections, to make them more discriminating. The size of the exam bank in these areas will understandably be reduced until this upgrading process is complete. There was no evidence of compromise of the exams. Nonetheless, Calvert Cliffs management agreed to review their program in light of this concern.

DETAILS

1.0 INSPECTION SCOPE AND OBJECTIVES

An announced inspection of Calvert Cliffs, Units 1 and 2, licensed operator requalification training program was conducted from November 14-18, 1994, using NRC Inspection Procedure 71001. The scope of the inspection included the review and observation of Calvert Cliffs' annual operating examination for licensed operators and review of the program's administration. The inspection objective was to verify that the Calvert Cliffs' requalification program effectively evaluated the operators' mastery of knowledge and skills needed to operate the plant safely. The inspection was also to assess Calvert Cliffs' effectiveness in meeting the licensed conditions specified in 10 CFR 55.53.

2.0 EXAM MATERIAL

2.1 Written Exams

The inspectors determined that the written exam material was of very good quality. No written examinations were administered during this requalification cycle. The examiners, however, reviewed several of the written exams (Parts A & B) administered during the 1993 exam cycle. The sample plans for the 1993 and 1994 cycles were reviewed and showed that Calvert Cliffs adequately covered the topics identified in 10 CFR 55.41 and 10 CFR 55.43.

Questions administered on the written exams were found to be operationally oriented and demonstrated a direct link to important facility job task analysis (JTA) tasks and learning objectives. The questions were varied from week to week so that there was at least a 25% difference from the previous exam. The inspectors expressed concern that a 75% overlap of test items could lead to exam compromise in that, if the exam was compromised, the operators would only need to know 5% of the new information to receive a passing grade. The facility did not believe they had a compromise problem, since they brief all operators that they are not to discuss the exam outside of their crew and each operator is required to sign a security statement that he or she received or gave no help. The inspectors and facility management could not determine that any compromise of the written examination had occurred. Calvert Cliffs indicated they would reassess their program for maintaining exam security.

The inspectors noted that one out of 12 written exams administered during the 1993 cycle had weak questions on the static exam. Several questions in static exam (AN01) did not require the appropriate use of procedures or analysis skills to discern the correct answer - Questions 1.02, 1.03, 1.04, 1.07 1.13 and 1.14. These questions were either direct lookup-type questions or provided clues to the correct answer in other questions.

During the 1993 requalification exam, there was only one written exam failure. An appropriate remediation plan was developed, and this individual took another written exam shortly thereafter and passed.

The inspectors assessed the written exam material to be very good, based primarily on the quality of question items administered during the 1993 written examination.

2.2 Simulator Scenarios

The simulator scenarios administered during this annual examination were well designed to detect operator weaknesses. Nine scenarios administered during this year's requalification testing cycle were reviewed, and the scenarios administered during the exam week were observed by the inspectors. The scenarios were reviewed individually and in sets using the checklists included in Inspection Procedure 71001. The scenarios met the criteria for qualitative attributes. All scenarios consisted of related events that flowed together. The scenarios allowed sufficient time for each event so that the evaluators were able to evaluate each operator's capabilities. Technical specifications were exercised in all scenarios. Each scenario included a sufficient number of valid crew critical tasks.

During this requalification testing cycle, six operators on two staff crews failed their simulator operating tests. All five operating crews passed. Operations and training management determined the failures were due to the fact that the staff crews receive less shift and training time together and get less practice time together on the simulator. Management was considering implementing the following long term corrective actions:

- reduce the number of staff licenses
- require all staff crews to attend the same training classes that the operation crews are required to attend
- impose pay penalties for missed training or failures

Management indicated that the six operators, two crews, will not be allowed to go on shift until they have been remediated and pass a retake examination.

2.3 Job Performance Measures

The inspectors conducted a review of the job performance measure (JPM) bank. A total of 125 JPMS were in the JPM bank, with 32 of these JPMS in the revision process and unavailable for use. This left 93 JPMS available for exam purposes. The facility controls exam security by increasing each week the number of JPMS administered. For example, the first week the facility administered 15 JPMS, the second week - 25 JPMS, the third week - 41 JPMS, and the fourth week - 40 JPMS. The examiners compared JPMS given the first four weeks of this requalification examination cycle and found that 13 out of the 15 JPMS given the first week were repeated each of the following weeks and that nine of the JPMS given the second week were given the last three weeks. Thus after the first week, over half of the JPMS administered had been administered the week before. The examiner standards state that facilities should have between 130 and 150 JPMS in their bank. The purpose for having greater than 130 JPMS in the exam bank is to have a sufficient number so that exam security is not compromised. The examiners could not identify any exam compromise. Nine of the 125 JPMS were identified as alternate path (faulted) JPMS. There were no time-critical JPMS included in the JPM bank. Although a lack of time-critical JPMS is not considered a problem, Calvert Cliffs indicated that two time-critical JPMS were being developed.

During the week the inspectors were onsite, the training department had selected 40 JPMs to be administered to two staff crews and one operating crew. Twenty of these JPMs were reviewed. No discrepancies were noted regarding JPM attributes listed in the Inspection Procedure 71001 checklist. The inspectors found the JPMs to be typical of tasks used at most nuclear power plants. The inspectors witnessed JPMs being administered to several candidates. The facility did a good job of administering the JPMs without cuing the operators.

3.0 OPERATIONS REVIEW AND REQUALIFICATION PROGRAM ASSESSMENT

Licensee Event Reports (LERs) from 1993 to the time of this inspection and recent resident inspector inspection reports were reviewed to identify weak operator performance. Eight poor operator performance events were identified. The inspectors verified that all eight events were properly addressed in either requalification training lesson plans or appropriate operating procedure changes.

The inspectors reviewed the requalification training program administrative procedures and verified that Calvert Cliffs had established administrative controls for governing requalification training activities. Instructors appeared motivated as evidenced by innovative teaching techniques they used during the past training cycle, such as a pre-lecture quizzes, Jeopardy-type games, computer graphics, freezing the simulator during simulator training to point out expected alarms and indications for current plant conditions, and combining lectures with simulator demonstrations.

4.0 FEEDBACK SYSTEM

Calvert Cliffs has established an effective system for getting meaningful feedback information on their training program. Trainee reaction forms are filled out by the students, reviewed and responded to by the instructors, and reviewed by the superintendent for requalification training. The inspectors verified that meaningful comments were made by the students and addressed by the training department in a meaningful and timely manner. The training department has also established other, less formal methods for getting student feedback. Some of these methods are: allowing each crew to have four hours every session week devoted to any training that the crew's shift supervisor feels is important; assigning training department mentors to each crew to provide technical information or simulator time, as needed; providing instant feedback of written test results; having the crews critique their own performance following simulator training sessions with a training department facilitator present; freezing of the simulator during scenarios to allow the instructors to identify and discuss plant parameters the crew should be aware of; and using computer graphics during class lectures.

5.0 INTERVIEWS

The inspectors developed a generic question sheet regarding the various aspects of the requalification training program that they then used as a basis for interviewing nine licensed operators. Three of these operators were in the training department and the rest were from operating crews. In addition the inspectors interviewed operations and training department management. Based on these interviews the inspectors concluded that:

- Operations management has been effectively involved during requal training. Several operators stated that operations management uses requal training as the primary method of getting management's concerns and methods of operating the plant to the crews. The inspectors observed the operations manager leading a two-hour training session to one of the crews. This training session was to be repeated for each of the remaining crews. During this training session, the manager discussed his expectations with regards to the recent Salem event, procedure deviation expectations, and reactor trip criteria.
- The quality of the training has improved significantly during the past three years. One of the reasons for this is that training instructors and operations personnel are periodically transferred between departments. Thus the instructors are fairly familiar with operational problems and can appropriately address them during their classroom presentations.
- The instructors were responsive to students' identified needs and problems. This was demonstrated by their willingness to use innovative teaching techniques and to furnish any technical information or training requested by the crews in a timely and responsive manner. (See paragraph 4.0 above) Operators said that this sometimes requires the operators or crew to come into the simulator at 2 or 3 a.m. in order to receive the training in a timely manner.

The operators identified an area of concern with the requalification training program:

- In the last few years, the majority of training has been devoted towards understanding new and revised procedures with a subsequent reduction in technical training on systems and plant modifications. Calvert Cliffs has had a major procedure revision program going on during this time span, which explained the greater emphasis on procedure training. The operators expressed concern that, as a consequence, their knowledge of system operation and interrelationship has been reduced. They also felt that although the training department does provide training on plant modifications, this training often does not occur in a timely manner. Calvert Cliffs indicated they would investigate and address this issue.

6.0 CONFORMANCE WITH OPERATOR LICENSE CONDITIONS

The inspectors determined that Calvert Cliffs' program for maintaining operators' licenses active and for assuring medical exams are completed have been completed. Licensed Operator Training Procedure CCI-604 was reviewed to ensure adequate guidance exists for maintaining active licenses and reactivating inactive licenses in accordance with the requirements of 10 CFR 55.53(e) and (f). The review noted the following minor deficiency: 10 CFR 55.53(f)(2) and CCI-604, Section 6.4.H.1, both state that to resume active licensed status an individual must complete a minimum of 40 hours of shift functions under the direction of an RO or SRO licensed operator. The 40 hours must include a complete tour of the plant. CCI-604 Attachments (6) and (7), "Recertification Requirements for RO and SRO Licenses," do not include the requirement for a complete tour of the plant. The requirement to perform a complete plant tour to resume active license status is not currently documented. Based on interviews with several operators, the inspectors determined that complete plant tours are being given to operators seeking to have their license reactivated. Operation management indicated they would develop a system for documenting these tours.

The inspectors reviewed a random sample of medical records for 10 operators. All medical examinations were documented and completed within the required two year period. Individual training files also included the required medical documentation denoting any specific license restrictions.

7.0 MANAGEMENT OVERSIGHT AND CONTROLS

The inspectors determined that Calvert Cliffs' management has been heavily involved in the requalification training program. This was demonstrated by operations management use of requalification training to present operational and safety concern and directions in a manner to elicit crew participation, their involvement in assessing requalification training failures and developing remediation plans, their rotational program for transferring operators between the training department and operations department in order to maintain instructor credibility, and the improvement made in the past couple of years in the ability of the requalification examination to identify weak operators.

The inspectors judged that Calvert Cliffs has made big improvements in upgrading their written test items and JPMs to make them more discriminating. The quality of the scenarios being administered has also improved in that the scenarios challenge the operators to use their diagnostic skills more. These improvements are the result of managements commitment to improve the requalification testing program.

8.0 EXIT

An exit meeting was conducted on November 18, 1994. At the meeting the lead inspector reviewed the scope and findings of the inspection, which were known at that time. These findings were acknowledged by Calvert Cliffs' management. Subsequent to the inspection, the NRC developed a concern regarding exam security, which was then identified to and acknowledged by the Supervisor -

Requalification Training via telephone on December 5, 1994. Key Calvert Cliffs personnel contacted during the inspection and attenders at the exit meeting are listed below. None of the information reviewed during the inspection was identified as proprietary.

B. Hiestand	Supervisor - Requalification Training
D. Holm	General Supervisor - Nuclear Operations Support
N. Millis	General Supervisor - Nuclear Training
M. Navin	General Supervisor - Nuclear Plant Operations
K. Nietmann	Superintendent - Operations
C. Zapp	Assistant General Supervisor - Operations Training