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Inspection Report Number: 50-528/90-16, 50-529/90-16, 50-530/90-16

License Numbers: NPF-41, NPF-51, NPF-74

Licensee: Arizona Nuclear Power Project
P. O. Box 52034
Phoenix, Arizona 85072-2034

Facility Name: Palo Verde Nuclear Generating Station Units 1, 2, and 3

Inspection Conducted: May 14 - 18, 1990

Submitted By: G. Johnston, Operator Licensing Examiner — Date Signed 6/7/90

Accompanying Personnel:
M. Thompson, NRR-DLPQ
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D. Pereira, Region V
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Summary:

Inspection on May 14, 1990 - May 18, 1990, (Report Nos. 50-528, 50-529, 50-530/90-16)

Areas Inspected:

A regional initiative team inspection of the Licensee Training Program in accordance with Inspection Module 41500 and NUREG-1220, "Training Review Criteria and Procedures."

Results:

The inspection determined that the licensee has a training program structured in the format of a Systems Approach to Training (SAT) program as outlined in NUREG-1220, "Training Review Criteria and Procedures." All five elements were identified to be in place and functioning.

Two items of concern were identified in the area of requalification of licensed operators. There was no formal mechanism in place to ensure that licensed operators were receiving the required medical examination every two years as required by 10 CFR 55. The licensee committed to review all medical records to ensure that all licensed operators had been examined at the required frequency.

The facility procedure governing the annual operating tests required of the licensed operators allows the return of an operator who failed the operating test to return to shift work prior to passing a second test. If this actually occurred as permitted by the procedure, it would be contrary to NRC requirements. The licensee committed to review all annual operating test failures to determine whether any operators had been permitted to return to duty prior to passing an annual operating test.

Significant Safety Issues:

No significant safety issues were identified.

Items of Noncompliance:

No items of noncompliance or deviations were identified.

Open Items: Two

REPORT DETAILS

1. Persons Contacted

ANPP Personnel:

*J. Levine, Vice President Nuclear Production - ANPP
*E. Firth, Training Manager
*L. McMullen, Maintenance Training Supervisor
*W. Aho, Lead Simulator Instructor
*D. Brown, Simulator Upgrade Manager
*J. Sills, RP Technical Services Acting Manager
*C. Whisnant, Instructor Support Supervisor
*D. Heinicke, Unit 2 Plant Manager
*W. Doyle Jr., Training Department
*D. Fuller, Unit 1 Chemistry Manager
*R. Sorensen, Unit 2 Chemistry Manager
*D. Peterson, Mechanical Maintenance Training Coordinator
*P. Connells, RP/CHEM/GET Training Supervisor
*D. Nissen, Misc. Maintenance Training Coordinator
*M. Halmer, Instrument and Controls Training Coordinator
*J. Fabre, Technical Training Supervisor
*M. Sexton, Radiation Protection Training Coordinator
*R. Bouquot, Quality Audits Supervisor
*R. Joyce, Site Maintenance Manager
*K. Oberdorf, Radiation Protection Manager
*S. Zerkel, Unit 1 Operations Training Coordinator
*L. Buchanan, Electrical Maintenance Training Coordinator
*R. Gouge, Unit 3 Operations Manager
*J. Scott, Site Chemistry Manager
*J. Bailey, Unit 3 Assistant Plant Manager
*J. Minnicks, Unit 3 Maintenance Manager
*A. Peroutka, Lead Nuclear Instructor
*W. Ide, Unit 1 Plant Manager
*R. Fullmer, QA and M Manager
*T. Bradish, Compliance Manager

NRC:

*G. Johnston, Team Leader, Operator Licensing Examiner, RV
*D. Pereira, Operator Licensing Examiner, RV
*M. Thompson, NRR-DLPQ, NRC HQ
*B. Brett, SAIC Inc. (Contractor)
*J. Sloan, Resident Inspector
*L. Miller Jr., Operations Section Chief, RV
*T. Chan, Project Manager, NRR

In addition, other members of the licensee staff were contacted during the course of the inspection.

*Persons attending Exit Meeting on May 18, 1990.

2. Inspection Profile

The inspection was conducted in accordance with NRC Inspection Module 41500, "Training Program Assessment". The module endorses NUREG-1220, "Training Review Criteria and Procedures" as the methodology to be utilized for the examination of the training program. The inspection focused on four specific training programs: Licensed Operator, Non-Licensed Operator, Electrician, and Instrument and Controls Technicians.

The five elements of a Systems Approach to Training (SAT) based training program defined in NUREG-1220 were examined for each of these four training programs. These five elements are:

1. Systematic analysis of the jobs to be performed.

2. Learning objectives that are derived from the analysis and that describe desired performance after training.

3. Training design and implementation based on the learning objectives.

4. Evaluation of trainee mastery of the objectives during training.

5. Evaluation and revision of the training based on the performance of trained personnel in the job setting.

3. Job Task Analysis

Overview:

The inspectors were to verify whether a systematic analysis of job tasks was performed in each of the training programs. This analysis would systematically identify and select tasks for training to prepare individuals to do their job tasks.

The facility program for identifying job tasks was examined and compared against the recommended elements of NUREG-1220. Each of the four training programs examined had a job task analysis (JTA) review based closely on an industry accepted generic job task analysis list. The review analyzed site specific job tasks unique to Palo Verde. Procedures were implemented to ensure that job analyses were kept current as job requirements changed. These procedures included 15DP-0RTR02, "Job Analysis and Training Recommendations," and 15DP-0TR03, "Task and Topic Analysis." From examining this review the inspectors concluded that the facility has conducted a thorough job task analysis for the four programs that were examined.

Licensed Operator:

Job Task Analyses for the Auxiliary Feedwater System (AFW), Engineered Safety Features Actuation System (ESFAS), and Reactor Protection System (RPS) were reviewed. The JTAs were completed by having job incumbents rate all tasks associated with the systems based on difficulty and importance. The results were then compiled and analyzed based on difficulty, importance, and frequency of the task. Finally, recommendations were made on the appropriateness of each of these tasks for initial, continuing, and special training and listed in the licensed operator task list. Overall, the job analyses were logically ordered, systematic, clearly documented, and approved by appropriate personnel. The job analysis process appeared to be complete and satisfactory.

Non-Licensed Operator:

The inspector verified that the non-licensed operator program had a task list which identified selected tasks for training to prepare individuals to do their jobs, and identified tasks for continuing and initial training. The task list differentiated between initial, continuing, and special training. The task list was revised when job performance requirements changed.

The inspector audited non-licensed operator classroom presentations during the week of May 14 through 17, 1990. The particular classes audited were Condensate Demineralizers, Industry Events, and Reactor Safety/Limiting Conditions for Operations (LCO). The inspector verified that the selected tasks were covered in the classroom presentation. The instructors detailed the specific enabling objectives, and covered the objectives in class. The examinations examined the specific objectives in adequate detail.

The inspector concluded that systematic analysis of jobs tasks was being performed in the non-licensed operator training department. In addition, the task list generated by this analysis was being reviewed by operations department personnel to assure credibility and timeliness.

Instruments and Controls Technician:

A thorough systematic approach was used to identify job tasks and determine training requirements for Instruments and Controls (I&C) technicians. Job Task Analyses (JTA) were performed only on those tasks where a specific procedure did not exist. The SAT process should ensure that a task analysis be performed for all identifiable tasks, from this analysis, training needs can be assessed. The absence of a task analysis for proceduralized tasks fails to meet the intent of conducting a task analysis in a SAT program.

Because of the highly detailed nature of the procedures where task analysis was not done, and the fact that training courses were in place for those procedures, the inspector concluded that the training needs of the I&C technicians would be met. The licensee should consider doing a task analysis for these proceduralized areas to ensure all tasks have been analyzed. The JTAs for the non-proceduralized tasks appear to be thorough and adequate enough to develop learning objectives appropriate for those tasks.

Electrician:

Personnel involved in the JTA were interviewed. A review of the JTA and the interviews indicated that JTA procedures had been applied.

The process for modifying the INPO task list had electricians in the plant review the task list and make modifications as required. Training department personnel closely supervised and actively participated in the modification process. Job task analysis worksheets were filled in completely. Good, job-oriented conditions and standards statements were formulated. Task elements were listed thoroughly, and skills, knowledge, and abilities were listed exhaustively.

A systematic process for selecting tasks for training was employed. Experienced job incumbents provided difficulty, importance, and frequency ratings for each task. For each task, means and standard deviations were computed for each rating. Excessive differences in ratings between raters were resolved by questioning the job incumbents. Mean ratings were compared with specific criteria to determine where and when to train a task. The resulting allocation of tasks for initial formal training (classroom and laboratory), continuing formal training, and on-the-job training was sound.

4. Learning Objectives

Overview:

In a SAT program, learning objectives and knowledge, skills, and abilities (KSAs) are generated which address the JTA task list. The inspector determined that the generation of learning objectives by the facility training staff and their consultants appeared to have been thorough. However, there was little available information that clearly indicated how the original generation of the learning objectives was conducted.

As changes are made to job requirements and courses are developed or modified, revisions to the learning objectives, and KSAs statements, become necessary. It appeared that the procedures and mechanisms necessary for ensuring that this process results in satisfactory revisions to learning objectives and KSAs were functioning well.

Overall, the development of learning objectives, and knowledge, skills, and abilities was satisfactory.

Non-licensed Operator:

Learning objectives were developed by the instructors in their lesson plans. The inspector noticed that the learning objectives provided the student with the information necessary to explain, state, or describe the functions of the system or components. For example, in the Condensate Demineralizer course, the lesson learning objectives were quite detailed, presented a sequence of purposes, and provided the students with a list of enabling objectives accompanying the course. The learning objectives were related to the skills, knowledge, and abilities that enabled the trainee to perform all the tasks selected and that were needed for successful job performance.

Also, in the Reactor Safety/Limiting Condition for Operation (LCO) course, the learning objectives used job performance behaviors such as state, list, or explain. They described the purposes or criteria of the course. The learning objectives stated the job performance-based conditions under which the student actions would take place, and provided a specific standard for successful performance of the learning objective.

Instrument and Controls (I&C) Technician:

The link between the JTAs and the learning objectives appeared to be poorly documented in the I&C training program. The licensee was unable to produce any documentation that correlated the JTAs and the learning objectives. Additionally, because many I&C tasks were already proceduralized, a JTA was usually not performed, and the learning objectives were developed directly from the procedures. However, a course design document was developed for each course, and the licensee considered that the review of this provided assurance that the learning objectives adequately incorporated the requirements of the procedure. In a general review of a sample of courses, the inspector identified no obvious discrepancies in this approach.

Continuing Training (CT) had only recently been conducted. Most job incumbents felt that CT had been extremely weak, lacking depth and purpose. One exception was the "Technical Skills" course. Several people felt that the principal purpose of CT was to document training hours to meet a commitment, but that CT had been a waste of time for them. The inspector's examination of the learning objectives of CT confirmed that it did reflect a lack of depth and applicability of CT to the jobs of I&C technicians. The inspector concluded that the CT program for I&C technicians was not meeting the needs of the job incumbents. The licensee should review the course catalog to determine whether the material is appropriate for CT.

Licensed Operator:

The JTAs for the following tasks were reviewed: 1) Manually initiate Engineered Safety Features from panels; 2) Place a Reactor Protection or Engineered Safety Features Actuation System (ESFAS) channel in the tripped condition; and 3) Determine if the Auxiliary Feedwater system operated properly on Auxiliary Feedwater Actuation System (AFAS) actuation. Learning objectives were provided for each task selected for this evaluation. The learning objectives were related to the knowledge and abilities associated with the successful completion of each task. Each learning objective clearly stated the behavior expected of the trainee upon completion of training. In addition, each learning objective stated the job-based conditions under which the trainee action would take place, and the associated standard for successful performance of the learning objective. Finally, procedure 15DP-0TR05, "Learning Objectives," provided guidance on modifying learning objectives when job performance requirements changed.

Electrician:

In the five lesson plans reviewed, learning objectives could be directly related to the knowledge, skills, and abilities derived in the JTA. Also, the learning objectives clearly stated actions, conditions, and standards needed for job performance. The thoroughness with which knowledge, skills, and abilities were incorporated into training materials was confirmed by comparing JTA tasks to lesson plan learning objectives. The clarity of learning objective statements was confirmed in interviews with job incumbents who all felt that the learning objectives specified in training courses were easy to understand and focused on job requirements.

5. Training Design and Implementation

Overview:

From the learning objectives the facility training staff must design training to meet each of the identified objectives. Then the training, as devised, has to be delivered in an effective manner. This includes materials, qualified instructors, and adequate environments for instruction.

The instructor training requirements and qualifications were provided in procedure 15DP-0TR47, "Instructor Qualification Requirements and Training Description." Several instructor training files were reviewed and all appeared to meet training qualifications and requirements. Instructor training was tracked on a computer system to assure training was complete and up-to-date.

The training organization responsibilities and goals were clearly and specifically stated in procedures, specifically 150G-0ZZ01, "Nuclear Training Department Organization and Responsibility Policy." Overall, the inspectors concluded that the implementation of the training programs was in accordance with the procedure.

From observation of training courses and other activities and interviews of trainees the inspectors concluded that the training design and implementation to meet the given learning objectives met the expectations for SAT based programs.

Non-licensed Operator:

The non-licensed operator program had clearly stated goals, objectives, and authority for the training organization and its staff. The training staff appeared to have adequate qualifications and training requirements which addressed both appropriate subject matter and instructional skills. The training was organized and sequenced in accordance with the training schedule. The only discrepancy noted was that the trailer where classes were given was at times not suitable for instruction. There were posts inside it which block the viewing of slides or films. The lesson plans ensured that training was delivered consistently, and the existing instructional materials have been evaluated by the operations department. The non-licensed operators attending classes during the week suggested more detail in the content of the courses, but felt that the training was worthwhile. The inspector audited three classes during the week and determined that training appeared to be conducted in an adequate manner and records were maintained.

The inspector concluded that the non-licensed operator training program design implementation was good, although it was only recently upgraded as the result of an external organization's audit finding that non-licensed operator training was essentially nonexistent in early 1989.

Instrument and Controls Technician:

The design and implementation of this training program appeared to be satisfactory. Lesson plans provided sufficient guidance and detail to ensure accomplishment of the learning objectives. However, one instructor who was observed, deviated from the sequence of the lesson plan in the classroom and did not refer to the lesson plan at all during a lab session. The instructor's intimacy with the subject matter allowed him to deliver meaningful instruction to the class. While he appeared to have adequately addressed all the elements of the lesson plan, in his informal approach there was a possibility of inadvertent omission of some portions of the plan. Additionally, during the lab session, some of the students were given a separate problem to solve, and thus were excluded from the information given to the rest of the class in another area of the lab. The inspector concluded that all the students benefitted from the lab class, but that they each learned different things from the class.

Facilities for the classes were marginally satisfactory, in that factors such as the bright sunshine through unshaded windows were a distraction to the students. Lab facilities were fairly good, though additional equipment such as mockups and functioning systems were desired to enhance some courses. Visual aids and handouts were appropriate, with students finding them beneficial for both the immediate training purpose and as a useful reference later.

The licensee's policy of requiring all in-house instructors to spend one day per month in the plant working in an I&C shop appeared to be a positive step toward maintaining or improving instructor awareness of actual plant configurations and practices. The licensee's practice of utilizing contractors mostly for course development and leaving most of the actual teaching duties to in-house instructors was viewed as good by all of the technicians interviewed.

While it appeared that the courses were well laid out, some technicians felt that the implementation timing or sequence was weak. Two types of training were given to personnel: initial mandatory training was training required of all persons in a job classification, while initial select training was for specific job task assignments. One technician, with only a few months experience in the training sequence, was frustrated because he was being given initial select training before initial mandatory training had been completed. He, therefore, remained unqualified to do any work independently despite having completed a substantial portion of his training.

Licensed Operator:

Classroom instruction on Reactor Theory, Fluid Flow and Heat Transfer was observed. The instructor in the classroom was knowledgeable and presented the material in a clear, concise manner. The instructor adhered to the

lesson plans, and stated the objectives of the course. The instructor also was successful at facilitating relevant discussion and interactions among the students. The quality of classroom instruction appeared to be satisfactory.

Simulator training on loss of coolant outside containment, and simulator JPM evaluations were observed. Simulator instructors demonstrated technical competency and interacted well with the students. During the scenarios, the instructors pointed out issues to the operators to aid the learning process. The quality of instruction during the scenarios was satisfactory.

One potentially weak area of instructor training was identified. In procedure 15DP-OTR47, "Instructor Qualification Requirements and Training Description," a requirement for instructor training was for each instructor to have an average of 8 hours per month of in-plant time. Instructors in the academic training group and possibly several other groups were meeting this requirement by attending courses in procedures, industry events and other topics. This substitution of classroom instruction for in-plant time did not appear to meet the intent of the procedure. The policy of requiring in plant time for instructors was clearly for providing the instructors an opportunity to closely observe activities and become more familiar with the work environment of their students. The licensee should address whether the procedure should apply to all the instructors, or should exempt specific personnel from the procedure. Procedural adherence in implementing policy regarding required training is necessary to convey the importance of the policy.

All lesson plans were satisfactory and contained learning objectives, instructor activities, appropriate evaluation methods and standards, and documentation on required materials such as handouts and visual aids. The handouts examined were well written and appeared to be useful training aids. These handouts contained copies of most overhead transparencies used during class which aided students in the back of the classroom where viewing overhead transparencies was sometimes difficult.

Training facilities were not always satisfactory. Many classrooms were in trailers which were often too small to be conducive to effective training. Training tools were sometimes in poor condition. The overhead projection screen in one classroom was streaked with dirt which hindered the visual clarity of the material on the overhead transparencies. It should be noted that a new building was being built to house the training department and classrooms, which may alleviate many of these concerns with the instructional environment. However, the condition of the facilities and training tools detracted from effective learning.

Electrician:

Overall implementation of the electrical maintenance training program was sound. Instructors were technically qualified to teach the subject matter, and had good instructional backgrounds as well. There was a general reliance on classroom training as the primary instructional vehicle. A

notable exception was the soldering course which combined computer based training (CBT), video, and a laboratory in which students build their own voltmeter. This was a good example of how different training media can be combined to yield effective training.

Considerable effort had gone into developing a maintenance training laboratory. Plant personnel were very enthusiastic about the lab because it provided an opportunity for "hands-on" experience that had not been available before. They were, however, quick to point out that the lab was not complete. Equipment in the lab (motor operated valves, battery chargers, inverters, breakers) provided good introductory training for new personnel. However, equipment or mock-ups for more complex systems such as diesel generators and turbine speed controls, would be valuable. In summary, the training lab was useful but could be developed further in order to meet the needs of personnel in the plant. The training department should consider further development of the lab.

Course materials were well designed. Lesson plans had thorough outlines to guide the instructor and learning objectives were indexed to the outlines. Student handouts were of a high quality and were well liked by the students. Some students used the handout material on the job.

Training records were checked to see if they were up-to-date and accurate. Three job incumbents were asked to review the electrical maintenance task list and check those tasks they were qualified to perform. Their training records were retrieved and examined to determine if training for those tasks had been provided and was current. In all cases, the training records were accurate and correct.

6. Trainee Evaluation

Overview:

Training programs need effective means to evaluate personnel following training to determine the effectiveness of the training. This element is typically done using written or practical examinations. At Palo Verde there is presently limited use of practical examinations. The licensee is expanding the use of more performance based methods of evaluation, but this will require the expansion of laboratory equipment, and development of Job Qualification Measures. The inspectors concluded that the facility adequately evaluated its personnel, but needed to implement more effective performance based evaluations (i.e. practical examinations).

Non-licensed Operator:

The inspector reviewed the examinations presented during the week of May 14 through 17, 1990 for the non-licensed operator training program and determined that student performance was regularly evaluated using job performance requirements and objectives. Students who performed below minimum standards during initial and requalification training received remedial training, were retested, and were removed from training or job duties if performance was not acceptable. The inspector audited

one exam being presented and noted that precautions were in place to prevent test compromise. The training examinations required an 80% proficiency to demonstrate adequate student performance on written examinations. Examinations were conducted during the week of inspection and appeared to examine the objectives of the course.

The inspector concluded that the non-licensed operator program used proper training evaluations.

Instrument and Controls Technician:

All aspects of trainee evaluation were considered adequate. In general, all incumbents interviewed felt that tests were fair and addressed the course learning objectives. Some desired more emphasis on practical examinations using the laboratory equipment. The trainees all said they received prompt feedback on their performance on examinations. The inspector concluded that the I&C technician program used proper training evaluations.

Licensed Operator:

Trainees were evaluated on a regular basis and were provided with feedback on their performance. Training records and procedures 15DP-0TR51, "License Operator Initial Training," and 15DP-0TR53, "SRO Licensing Training," confirmed that students were provided with remedial training and re-evaluated when their performance on an evaluation was unsatisfactory.

Post scenario critiques observed during simulator training were generally limited in depth and scope, and did not fully involve the trainees in discussions and analyses of their performance. Improvement in this area would facilitate the effectiveness of simulator training.

One additional area that needed improvement concerned the student feedback system. There was no formal mechanism in place to ensure that students were consistently provided with a written response to their course and instructor evaluations. Responding to the trainees by stating how their concerns were resolved and incorporated into the training program would improve the student feedback generated during training.

Electrician:

Paper and pencil tests using multiple choice, true/false, and fill-in-the-blank questions was the primary method of student evaluation. These methods are generally satisfactory for testing subject matter knowledge. However, they fall short of true performance based evaluation that requires the student to perform the task in a job environment. With the development of their maintenance lab, more performance based evaluation was being implemented in their training. Continuing to expand the "hands-on" demonstration of ability as the method of evaluation must be pursued fully if the performance based training philosophy inherent in a Systems Approach to Training is to be fully realized.

7. Program Evaluation

Overview:

The facility training programs should have a mechanism to formally evaluate the training program. This would include feedback from trainees and supervisors, and a method of identifying training needs outside of the JTA.

The information needed to facilitate an evaluation of the training program was being collected. Feedback from trainees was considered, and reflected in changes made to the programs. However, there was a consistent theme expressed in interviews that responses to feedback were mostly verbal and timeliness was lacking. The quality of the responses varied with the instructors and the training groups.

The facility had the mechanism of the Training Change request for any person to initiate a review of a training course, or request changes to training courses. The facility also had regularly scheduled Training Interface meetings between the training department and all of the other facility departments to review training needs.

The position of Training Coordinator was created to aid in the functioning of the training program by serving as a liaison between the plant and the training department. The Training Coordinator often reviewed lesson plans for technical accuracy and completeness. This duty, while not required, strengthened the effectiveness of training and was encouraged. The Training Coordinator has the potential to make positive and valuable contributions to the training program. It appeared, however, that this individual may have had too many additional responsibilities unrelated to coordination of training activities to contribute fully to the training program. The roles and duties of this individual may need reevaluation to ensure that the training department benefits from the expertise and knowledge that this individual can provide.

One other mechanism to make training program revisions was the Weekly Action Plan Update. This weekly document provided status on action plan completed, action plan items overdue, new or revised action plans, and potential problems. This plan has received positive responses from the training staff and appeared to be successful for ensuring that revisions and additions to the training program are completed in a timely manner.

From the above, the inspectors concluded that the facility had an effective system in place to evaluate the performance of the training programs.

Non-Licensed Operator:

The inspector reviewed the non-licensed operator program and determined that feedback from trainee examinations, on-the-job experiences, and supervisors were used in program evaluation. In addition, the program was recently evaluated and revised by the operations department. The inspector interviewed several instructors and determined that the feedback forms

given at the end of each class were definitely used to revise the material for the next class. The training staff was routinely and objectively evaluated by the supervisor, and by a non-licensed representative from the operations department. The feedback forms appeared to be used in the evaluation of the course content and revisions in the course.

The inspector concluded that the non-licensed operator program had an acceptable program evaluation system.

Instrument and Controls Technician:

A major training verification was planned on a periodic basis, and was last performed in the I&C area during April 1990. This resulted in some new tasks being identified and some being eliminated. JTAs have been scheduled for the newly identified tasks. Additionally, some JTAs will be performed again later.

The inspector attended a Training Interface meeting in which I&C supervisors, the I&C Training Coordinator, the I&C Single Point of Contact (SOP) and training supervisors met to discuss current program issues. It was notable that all significant decisions were made by the plant staff, as opposed to the training staff. This meeting appears to be a very effective facet of the licensee's program evaluation system.

Licensed Operator:

There was evidence that methods were in place to systematically evaluate the effectiveness of training programs and make necessary revisions. Results of reviews of examinations, operating tests, and student feedback concerning course material were continually addressed and incorporated into appropriate lesson plans. Information obtained from job incumbents and supervisors concerning particular performance difficulties or requests for special training were noted and incorporated into the training program. Internal and external audits of the training program also ensured that the training program was revised as necessary.

Electrician:

The primary methods used to evaluate training effectiveness involved student and job incumbent supervisor feedback forms and questionnaires. Interviews with job incumbents indicated that students were encouraged to submit feedback forms and that the training department did respond by implementing suggested improvements when possible. A second type of feedback was follow-up questionnaires. These were sent to job incumbents and their supervisors several weeks after training and sought to evaluate whether training had enhanced job performance.

Item analysis identifies questions that are consistently missed by students. It is a potentially useful means of evaluating training effectiveness. If a consistently missed question is worded well, then there is a likelihood that the training for that question topic is not adequately addressing the learning objective. Item analysis was performed on test questions. However, the analysis was only used to validate test questions and not as an indicator of training effectiveness. The training department should consider extending the scope of their item analysis to incorporate training effectiveness issues.

8. Operations Computer Systems Group

The Operations Computer Systems (OCS) group at Palo Verde performed maintenance on some safety-related equipment and Technical Specification governed systems. Some courses existed for the Control Element Assembly Calculators (CEACs) and the Core Protection Calculators (CPCs), though training was very limited for the Core Operating Limits Supervisory System (COLSS). Other then these courses and on-the-job training, no formal training is currently in place. OCS foremen performed a subjective evaluation to determine if technicians and programmers are qualified to work on these systems.

The OCS group had equipment consisting of computer modules available for use in training personnel on the operation and maintenance of CPCs, CEACs, and COLSS, as well as other plant computer systems. While the training program was not very formal, these systems were utilized extensively for training. Additionally, most routine work was generally performed first on this equipment before installation and testing on the actual plant systems. This applied especially to software and database modifications. This approach minimized the sensitivity of doing work without extensive prior training. Overall, the training in these areas appeared to be adequate, though much less structured than found in other aspects of the nuclear industry or computer industry.

The licensee was cognizant of the need for a more formalized training program in the OCS area, and stated they were about to issue an OCS Training Program Description (TPD). An OCS training group has been formed,
and much of the work associated with developing a training program has been completed. Though various courses have already been developed, an analysis of job tasks will be performed after the TPD is issued, and courses will be added, deleted, or modified as deemed necessary. If completed, these activities may put OCS training on a par with other training programs reviewed during this inspection.

9. Licensed Operator Requalification Records

Licensed operator requalification records were examined to determine if the program was adequately documenting the training and qualification of the licensed operators in accordance with the regulations and the facility administrative procedures.

During this examination the inspector determined that the facility had no system, or person assigned the responsibility to track the status of the licensed operator biennial medical examination. The facility required the operators to undergo an annual physical for respiratory protection qualification and a biennial physical examination for maintenance of their operating license. However, there was no methodology present to ensure that the operator received a physical examination that conformed to the requirements for operator licensing and renewal.

10 CFR Part 55 requires that the licensed operators receive an eye examination, hearing examination, and blood sample analysis as part of their biennial physical examination. At Palo Verde, there was no positive

assurance that these particular areas were actually checked on the biennial interval. The examination conducted for respiratory protection qualification examined general overall health, and the cardio-vascular system. The facility management was requested during the exit meeting to conduct a review of the last biennial medical examination that each of the licensed operators have received to ensure that each operator has received a medical examination conforming to the regulations in 10 CFR 55.21, 55.23, and 55.27, and to report their findings promptly.

The status of the operators following the performance of their annual and biennial requalification examinations was also reviewed. The inspector determined that licensed personnel were receiving their annual and biennial requalification examinations and were maintaining their status within the program.

During a review of the procedures associated with the requalification program, the procedure that governs the status of the licensed operators after failure of an operating test was determined to not be consistent with the current requirements for remediating an operator following failure of the operating test. Specifically, procedure 15DP-0TR52, "Licensed Operator Continuing Training," Section 3.4.6.4 stated that "failure of an annual examination requires review by the appropriate operations manager and training manager to determine if the individual should be removed from duties until the RO/SRO has completed remediation." Therefore, an operator who has failed an operating test could have been returned, per the procedure, to shift work following an evaluation of his performance and prior to passing the operating test. This would have been contrary to the requirement of 10 CFR 55.59(a)(2) that an operator pass an annual operating test to satisfy his requalification requirements. The facility management was requested during the exit meeting to conduct a prompt review of the last annual operating test for each licensed operator who failed an operating examination, to confirm the licensee's belief that no operator who failed an annual operating examination was returned to shift prior to passing another operating examination, and to report the results of this review.

10. Simulator Status

The inspector reviewed the status of the simulator upgrade project with respect to the schedule to meet the May 1991 certification per 10 CFR 55.45(b)(iii). The schedule at the time of the inspection projected that the simulator upgrade would be completed by March 1991. The project has experienced some delays in achieving project milestones, but the licensee reported that the project was still on schedule for completion by March 1991. Reportedly, the delays have only absorbed float time in the schedule. The inspector expressed a concern that any delays in project completion would have serious consequences for operator training and requalification, since the current schedule already eliminates operator requalification training on the simulator from October 1990 until March 1991.

11. Exit Meeting

The inspectors met with the personnel identified in Paragraph 1 on May 18, 1990. The Team Leader summarized the findings of the inspection, covering the five specific areas of the SAT requirements. The training program was acknowledged to have in place all of the elements of a SAT program. Further, it was noted that the plant staff had stated during interviews that the training they have received has improved. The Team Leader indicated that an improvement in relations between the training department and the other plant organizations was apparent, most notably with Operations.

The Team Leader emphasized the importance of maintaining the schedule for the simulator upgrade program. The simulator upgrade program could severely impact licensed operator training and requalification if there are any lengthy delays in meeting the completion date of March 1991.

The Team Leader requested that the licensee examine the two items of concern in Paragraph 9 and provide a response to Region V when the reviews have been completed.