U.S. NUCLEAR REGULATORY COMMISSION
REGION I
PEACH BOTTOM ATOMIC POWER STATION
TRAINING PROGRAM INSPECTION

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Inspectors:	C. Sisco, Operations Engineer W. Baunack, Sr. Reactor Engineer A. Finkel, Sr. Reactor Engineer M. Sjoberg, SKI, Swedish Nuclear Power Inspectorate R. Pelton, Training and Assessment Specialist, NRR
Accompanied by:	Stanley Maingi, State of Pennsylvania (observer)

Team Leader: Carl Sisco for — 9/11/92
J. H. Williams, Sr., Operations Engineer, BWR Section, Operations Branch, Division of Reactor Safety — Date

Reviewed By: Richard J Conte — 9/11/92
Richard J. Conte, Chief
BWR Section, Operations Branch
Division of Reactor Safety — Date

Approved By: Lee H Bettenhausen — 9/14/92
Lee H. Bettenhausen, Chief
Operations Branch
Division of Reactor Safety — Date

EXECUTIVE SUMMARY

A special announced training program inspection was performed at Peach Bottom Atomic Power Station from August 10 to August 14, 1992. The inspection was conducted because training programs at Peach Bottom had been placed on probation by INPO. This team inspection focused on several of Peach Bottom's systems approach to training (SAT) based training programs and their implementation. The specific training programs inspected were: licensed operator (RO and SRO), nonlicensed operator, I&C technician, electrical and mechanical maintenance technician, and technical staff. The inspection included a review of training program procedures, training materials, training records, qualification standards and other applicable documents, observations of classroom, simulator and laboratory training, interviews with operators, technicians, trainees, instructors, supervisors, managers, and engineers. In addition, the team reviewed the program at Peach Bottom for control of licensed operator medical evaluations to ensure compliance with 10 CFR 55.21.

The team concluded that the licensed operator initial training and requalification training was SAT-based. Management was actively involved in these programs. Procedures are in place and appear to be followed to keep the training program current.

The nonlicensed operator training pr[illegible]n is in transition due to the revised job classification scheme. The team concluded that [illegible]uclear plant equipment operators training program is SAT-based. This training is for [illegible]side" operators. A continuing training program for "outside" operators has been dev[illegible]oped. The outside operator replacement training program is being systematically developed at a slower pace because there is no current need to train employees for this position.

The team concluded that the I&C technician, electrical and mechanical maintenance technicians, and technical staff training programs were SAT-based, properly focused, and implemented. Management and trainees displayed a favorable attitude toward these programs. The team concluded that management had dedicated appropriate resources to these programs.

The team determined that all training programs reviewed were sound and effectively implemented. No significant deficiencies were noted in the programs. Based upon the quality of the training programs observed, it appeared that licensee management has allocated the proper resources and established the proper facility perspective with respect to training. The team noted that the PBAPS Vice President was a strong advocate of training, and the effect of his leadership in this area could be seen throughout the organization.

The team concluded that the medical evaluation program met the requirements of 10 CFR 55.21.

DETAILS

1.0 BACKGROUND AND SCOPE OF INSPECTION

The Nuclear Regulatory Commission considers effective training of personnel to be an important part of safe nuclear power plant operations. This inspection was in keeping with NRC policy as stated in the "Commission Policy Statement on Training and Qualifications of Nuclear Plant Personnel" (as published in Federal Register 53 FR 46603), which states that the NRC will expand the method by which it monitors the industry training programs by performing post-accreditation inspections at selected sites. Earlier this year, the licensee informed the NRC that some of their training programs were being placed on probation by the Institute of Nuclear Power Operations (INPO). The licensee described the issues or concerns and their corrective actions to the NRC at several meetings. This inspection was conducted after the training programs were taken off probation and examined the safety-related areas of concern.

This inspection was conducted using the guidance of NRC Inspection Manual Procedure 41500, "Training and Qualification Effectiveness." Procedure 41500 references NUREG-1220, "Training Review Criteria and Procedures." NUREG-1220 provides criteria to review performance-based training, or a Systems Approach to Training (SAT) based program. The criteria assessed the five essential elements of an SAT program. These 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.

The industry describes an SAT-based program in ACAD 91-015, "The Objectives and Criteria for Accreditation of Training in the Nuclear Power Industry." This guidance, published by INPO, also considers the five elements of a SAT-based program, but breaks the elements out in a different format.

The specific training programs inspected were licensed operator (RO and SRO), nonlicensed operator (NLO), technical staff, I&C technician, and electrical and mechanical maintenance technician.

Since the areas inspected included I&C and Maintenance (Technician Training) (Sections 4 and 5) which had been developed for these objectives, the report in Sections 4 and 5 follows the general topics of ACAD 91-015.

The inspection included a review of training program procedures, training materials, records, qualification standards and other applicable documents, observations of classroom and simulator training, interviews with technicians, operators, engineers, trainees, instructors, supervisors, and managers.

The inspection was initiated by obtaining materials related to the selected training programs from the licensee. Specific job tasks were selected for review, and training program procedures were studied in preparation for the inspection. The inspection used BNL Technical Report A-3864-2, "Peach Bottom Atomic Power Station, Unit 2 Probabilistic Risk Assessment-Based System Inspection Plan," to identify job tasks for training that were important to safety.

In addition, the inspection included a review of the licensee's program for control of licensed operator medical evaluations to ensure compliance with 10 CFR 55.21.

2.0 LICENSED OPERATOR TRAINING PROGRAM

2.1 Introduction

The scope of the inspection covered under this section was to evaluate the licensed operator training programs (RO and SRO). This inspection was conducted using the guidance of NUREG-1220, "Training Review Criteria and Procedure," and Inspection Procedure 41500, "Training and Qualification Effectiveness." The inspection included a review of training program procedures, training materials, observations of training, and interviews.

2.2 Job Task Analysis (JTA)

The team reviewed the programs established for the initial and continuing training of Senior Reactor Operators (SROs) and Reactor Operators (ROs). The following tasks were selected for review from the licensee's JTA:

Senior Reactor Operators

- Take action for inadvertent criticality during fuel loading.
- Initiate Reactor Pressure Vessel (PRV) flooding.
- Terminate/prevent injection into RPV.

Reactor Operators

- Maintain RPV pressure control using High Pressure Coolant Injection (HPCI) system.
- Manually operate the Automatic Depressurization System (ADS).

- Manually initiate drywell spray.

The team reviewed the selected tasks and the licensee's methods for task analysis. The review was to determine if a systematic method was used for identifying and selecting tasks and to determine if tasks for continuing and initial training are differentiated. Also, the team sought to determine if the JTA is adequate for development of learning objectives, and to determine if the analysis is kept current as job performance requirements change.

The licensee used a systematic procedure-based method to identify the tasks required to be performed by licensed operators. Subject matter experts (SMEs), trainers, and job incumbents reviewed plant procedures and developed a list of tasks to be performed by each licensed operator position. These lists were then reviewed against the INPO generic task list, and a specific JTA was developed. The task list that was developed appears to be complete, and differentiates between initial and continuing training tasks.

Following completion of the JTA, the licensee used the existing training materials, as well as newly developed materials, to analyze the tasks and develop a task to training cross reference matrix. The matrix specifies the tasks selected for initial and continuing training and identifies the method of training for each task. The matrix is maintained current by senior training staff members and is periodically reviewed by training department supervision in accordance with established procedures.

During the review of the JTA, the team determined the task of "Responding to a complete loss of control room annunciators" was not included in the JTA. The team determined that training had been conducted on this task as part of recent industry events training. The task is currently under review by plant management for inclusion in the training program. In addition, the licensee will revise station operating procedures, as appropriate.

The team concluded the programmatic approach the licensee has taken to develop, implement, and maintain the JTA and cross reference matrix for initial, and continuing training is a strength of the training program.

2.3 Development of Learning Objectives

The team reviewed the training materials associated with the selected tasks to determine if learning objectives exist, and if the learning objectives were related to the knowledge, skills, and abilities needed for successful job performance. In addition, the training materials were reviewed to determine if the learning objectives included job performance based on actions, conditions, and standards. The team also reviewed the licensee's method for modification of learning objectives when job performance requirements change.

Learning objectives exist for all tasks selected for review. Review of the learning objectives determined that the learning objectives are related to knowledge, skills, and abilities needed for successful job performance. The task to training cross reference matrix references the

appropriate training material (lesson plans and simulator exercise guides) that contain the learning objectives. The learning objectives reviewed contained actions, conditions, and standards appropriate to the job performance.

Licensee procedures also provide for revision of learning objectives as part of the JTA that is performed if job performance requirements change. The procedures for updating the learning objectives are adequate.

The team concluded that learning objectives are derived from the JTA and are clearly stated. In addition, the learning objectives are related to knowledge, skills, and abilities needed for successful job performance. The learning objectives contained actions, conditions, and standards appropriate to the job performance.

2.4 Design and Implement

Training department procedures were reviewed to determine if the training organization's objectives and responsibilities are clearly defined. Training materials were reviewed for technical adequacy and conformance with training department procedures.

The team determined that the training organization's objectives and responsibilities are clearly defined. Line managers are responsible for the training program. Plant management ensures personnel attend training. In addition, the training material reviewed were technically accurate, and conformed with training department procedural requirements.

Interviews conducted with training instructors and training supervisors indicated the training staff is knowledgeable of their responsibilities and the objectives of the training organization.

Interviews conducted with operations and training management indicated that effective communications and a mutual supportive relationship has been established between the departments.

Interviews conducted with licensed operators indicated that the operators are supportive of the continuing training program. In addition, the licensed operators were knowledgeable of management expectations in regard to their responsibilities as licensed operators.

Personnel that assist the training staff by performing evaluations of trainee performance during the on-the-job training are trained and evaluated by the training staff.

The team concluded that the training program requirements are contained within appropriate procedures. The operations and training organization interface appears to function well, and the organizations are mutually supportive of each other. Management expectations are routinely and effectively communicated to licensed operators. The training program prepares job incumbents to competently perform assigned duties.

2.5 Trainee Evaluation

The team reviewed the methods used for evaluation of operator performance. The team verified that the evaluations were based on job performance requirements and identified learning objectives. In addition, the team verified that objective performance feedback to the trainees was provided, as well as remedial training given to correct identified performance deficiencies.

The performance standards are based on procedural requirements from which the JTA was developed. The written examinations, simulator exercise guides, and in-plant evaluations are conducted using performance standards related to learning objectives.

Trainee performance during initial and continuing training is evaluated regularly by means of written examinations, simulator exercises, and in-plant job performance measures. Feedback on performance is given to the trainees by training staff members. During the interviews with licensed operators, the team determined the operators considered the evaluations of their performance to be conducted fairly, yet to very high standards.

Remedial training is provided for identified performance deficiencies. The remedial training is provided after the observed deficiencies are discussed fully between the training and operations management to determine the appropriate required remedial training. Licensed operators who fail the annual requalification examination are removed from licensed duties until the remedial training is completed and the operators' performance is evaluated to be satisfactory.

The team concluded training evaluations are conducted regularly using criteria established from learning objectives derived from the JTA.

2.6 Program Evaluation

The team reviewed the methods used by the licensee to evaluate the training programs. The team sought to determine if the programs are systematically evaluated and revised as necessary.

A variety of methods are used for program evaluations. The evaluations are conducted in accordance with appropriate administrative and training department procedures. The methods of training program evaluations include the following:

Ongoing Evaluations - A review process conducted by training personnel that considers issues that may require a revision to the training program.

In-Training Evaluations - An evaluation conducted by training supervision based on observations made during training and feedback from trainees.

Post-Training Evaluations - An evaluation conducted after training has been completed. The evaluation assesses how well the skills and knowledge provided through training has prepared the trainee for task performance on the job.

Comprehensive Training Program Evaluations - An evaluation conducted every two years by the Nuclear Training Section/Nuclear Training Division or other divisions. The evaluation is to assess training effectiveness, as well as training program compliance with established procedures and other requirements.

The results of selected evaluations were reviewed by the team. The team determined that systematic evaluations are effective in identifying areas for improvement in the training program. Also, the evaluations processes are effective in maintaining the training program current as plant modifications are made, new and revised procedures are issued, and on-the-job evaluations indicate revision to the training program are necessary.

A strength of the program evaluations is the attention given to comments made by the trainees and job incumbents. The comments are actively solicited by the training staff, and feedback is provided by documenting the comments and resolutions.

Program evaluation results are tracked and problem areas are assigned to individuals for corrective actions. The status of problem areas and corrective actions are monitored by management. Following corrective actions, the problem areas are routinely evaluated to ensure the corrective actions taken were effective to resolve the noted problem(s).

Comprehensive program evaluations are conducted approximately every two years. These evaluation results were reviewed by the team. The team determined that the licensee is effective in identifying problem areas within the training program. Also, the licensee is effective in developing and implementing corrective actions.

The team concluded that the licensee is effective in identifying areas of the training program that require periodic revision. The comments made by job incumbents and trainees are used as appropriate to revise the training program. The status of corrective action(s) are routinely monitored and evaluated after completion of corrective action.

3.0 NONLICENSED OPERATOR TRAINING PROGRAMS

3.1 Introduction (Scope)

The scope of the inspection covered under this section was to evaluate the nonlicensed operator (NLO) training program. This inspection was conducted using the guidance of NUREG-1220, "Training Review Criteria and Procedure," and Inspection Procedure 41500. The inspection included a review of training program procedures, training materials, and observations of training and interviews.

3.2 Job Task Analysis

Over the past two years, Peach Bottom Atomic Power Station (PBAPS) has created the positions of "inside" operator and "outside" operator to perform the nonlicensed operator duties. The inside operator, in general, performs tasks associated with the nuclear portion of the plant and the conventional portion of the plant tasks are handled by the "outside" operator. The inside operator is referred to as the Nuclear Plant Equipment Operator (NPEO), and the NPEO training program combines appropriate parts of the Auxiliary Operator (AO), Assistant Plant Operator (APO), and Plant Operator (PO) training programs. The NPEO position is the pipeline for licensed operators. This training program is in transition and appears to be progressing smoothly for completion early in 1993. A continuing training program has been developed for the outside operator, and an initial training program is under development.

Task lists for both the inside and outside operators have been developed. The licensee reviewed the old task lists for the AO, APO, and PO positions and created an overall NLO task list. In addition, a procedure based site specific task list was developed by senior NLOs and training personnel. These two task lists were used to create the final task lists. New tasks were analyzed for difficulty, importance, and frequency (DIF). The task list notes whether the task is for initial or continuing training. The team selected three NLO tasks for detail review. These tasks were:

- Place core spray in standby for automatic or manual initiation (procedure SO 14.1.A-2)

- Verify automatic actions associated with diesel generator automatic start and loading due to 4Kv bus undervoltage (procedure S0.54.7.E)

- Line up service water to supply cooling loads and raw water loads per COL 5.9.4.1.A COL

3.3 Development of Learning Objectives

The team had difficulty linking the tasks to learning objectives. The NPEO task to training matrix could not be used to identify lesson plans, on-the-job training requirements, or exam bank questions. The NPEO training program is based on the former NLO training program which are SAT-based. The licensee informed the team that prior to using any existing NLO training material for the NPEO course, a review and update is made. During the review, the task-to-training matrix, lesson plans, transparencies and handouts are updated. Changes in procedures and equipment are implemented in the lesson plan during the review prior to a lesson being taught. The licensee plans to complete the matrix and lesson plan update early in 1993. The team was satisfied that the training matrix and lesson plans would accurately reflect the job performance requirements of the NPEO after the update.

3.4 Design and Implementation

The team determined that a systematic process had been used to develop the NPEO training program. Policies and procedures were used to establish and conduct the program. The goals, objectives, and responsibility of the training staff are clearly stated. Management effectively directs and supports the training program. The interview with the operations/ training interface indicated that operations considers the training program to be theirs and view the training organization as the implementers of their program. Records of training are maintained. The training staff are qualified and maintain their instructional skills and technical competencies. The NLO training program is fully staffed with Philadelphia Electric Company employees. The team determined that OJT evaluators were trained. NLO training students considered the instructors to be credible, experienced, and concerned with the welfare of the students. The students and NLO job incumbents expressed a concern with the lack of enough practical plant experience gained through the program as currently formatted. They also expressed concern that too much information was required to be learned over a relatively short time period.

The team determined that course handout materials for the NPEO trainees was not of the same quality as that of other licensee training programs. Interviews with NPEO trainees also indicated dissatisfaction with the quality of the handouts. Training management was aware of the problem and informed the team that this problem would be corrected prior to the next group of trainees entering the program. They planned to upgrade all student handouts for the NPEO training program.

The NPEO trainees also expressed concerns over the quality of instruction in some cases and the relationship of the exam test items to the material presented in the classroom. Training management was aware of these concerns and informed the team that actions were being taken to correct them.

The academic fundamentals portion of the NPEO program will be conducted by the Nuclear Training Division at Chesterbrook for both PBAPS and Limerick. This is similar to the approach used for generic fundamentals training for licensed operators. This allows PBAPS to focus on site specific training and could strengthen the NPEO training program.

3.5 Trainee Evaluation

PBAPS has designated on-the-job trainers and on-the-job evaluators. The trainers are senior NPEOs. The evaluators are selected by the Operations Manager. Training is conducted with both groups.

Trainees are tested frequently on the course material. If a trainee fails a test, remedial training is conducted and a new test is given within 5 working days of the failure. If the

trainee fails a second time, the superintendents of training and operations will determine the appropriate course of action. To avoid examination compromise, proctors are always present during tests, and tests and answer keys are kept in locked filing cabinets.

3.6 Program Evaluation

The NLO incumbents were satisfied with the feedback process for continuing training. In this case, feedback is given weekly. For NPEO initial training, the feedback is given at the end of the course. The feedback from the trainees is frequently incorporated into the training. Instructors are evaluated on subject matter content, and instructional skills. Program evaluations are conducted by training personnel (self-evaluations) and quality assurance. The team concluded that the NPEO training program is SAT-based and should prepare operators for their job as an NPEO.

4.0 ELECTRICAL AND MECHANICAL MAINTENANCE TECHNICIAN TRAINING PROGRAM

4.1 Introduction

The scope of the inspection covered under this section was to evaluate the Electrical and Mechanical training programs. Maintenance technician training at PBAPS consists of initial and continuing training. This inspection was conducted using the guidance of NUREG-1220, "Training Review Criteria and Procedure;" Inspection Procedure 41500. The inspection included a review of training program procedures, training materials, observation of training at Peach Bottom and Barbadoes, and interviews.

4.2 Training Program Content

Training program plans have been developed which describe the mechanical and electrical maintenance technician training. The licensee has defined a new program which consists of initial apprentice technician B training followed by apprentice technician A training. After these two phases of training are completed, training is provided in one of five areas. These areas are: (1) electrical, (2) rotating machinery, (3) valve, (4) pressure vessel, and (5) repairman. The individual becomes a maintenance technician in one of these five categories. All experienced and qualified maintenance technicians have been reassigned to one of these specialties. A backfit training program has been developed and is being implemented to ease the transition into the specialties. Management is monitoring the progress of the backfit training program. The team found that personnel were receptive to the realignment. The licensee has a continuing training program of four hours per quarter. Maintenance technician training is conducted at Peach Bottom and Barbadoes (decommissioned power plant). Most of the training is conducted by the Barbadoes training section at Barbadoes. The team concluded that a comprehensive training program has been systematically developed and is being implemented which will prepare the trainee for his job.

4.3 Management Involvement in Training

A training coordinator position has been established in the maintenance branch to serve as a focal point between Peach Bottom and Barbadoes training. In addition, management has established a number of committees to address training program needs and issues. These committees monitor training performance, identify training needs, and manage training resources. These committees include:

- Station Training Council - The training council is made up of upper level management and the PBAPS Vice President.

- Maintenance Training Interface Committee - A group composed of maintenance supervisors and training coordinators from PBAPS, Limerick, and Barbadoes that discuss and resolve training issues.

- PBAPS Maintenance Interface Committee - This committee includes plant maintenance supervisors, training supervisors, and senior instructors. They review and resolve training issues unique to PBAPS.

Based upon interviews and a review of committee documentation, the team determined that management is involved in the training program. Maintenance foremen appear to be satisfied with the program. They observe training, provide feedback, and indicated that they feel involved in the training program.

4.4 Training Staff Qualification

The team reviewed records of instructor qualifications and determined that all instructors were certified. The team noted that the instructors had significant maintenance experience prior to becoming an instructor. The instructors were considered well qualified and respected by the trainees. The team concluded that the instructors were qualified.

4.5 Training Program Development and Implementation

The licensee maintains a maintenance task list which identifies the five categories of maintenance technicians. A process is in place to incorporate recent industry experience into training. The team reviewed several lesson plans which incorporated recent industry experience, including experience from outage activities at Peach Bottom.

Continuing training topics are identified by supervisors, technicians, and instructors. The team observed classes of continuing training dealing with alternate replacement items and the control of hazard barriers. Trainees actively participated in the training. Portions of several classroom and laboratory training sessions were observed at Barbadoes. During observation of the class on inspection and repair of the main steam isolation valve pneumatic control manifold, the team noted that a Limerick Generating Station procedure was being used to

teach the Peach Bottom students. The team discussed the practice of using Limerick procedures with the licensee. The team was told that, during training, the differences between plant procedures are discussed and the procedure which best enhances the trainees learning experience is used. The team had no further questions on this matter. Several lesson plans were reviewed by the team. These lesson plans identified the tasks covered by the lesson, provided learning objectives, and specified the methods of presentation. The lesson plans were well prepared. All the training observed was conducted in a professional manner, maintained trainees' attention, and appeared to be effective.

The team noted a number of training aids at Barbadoes, including an undervessel mockup for control rod drive (CRD) work, CRD rebuild facility, main steam isolation valve, hydraulic control unit, and diesel engine. Additional training aids are being added at Barbadoes and Peach Bottom.

The team concluded that adequate resources had been committed to maintenance training and that the training was well coordinated.

4.6 Trainee Evaluation

The team reviewed examinations and discussed examinations with the trainees. The trainees thought the examinations were challenging. The team determined that trainees were evaluated on course material. There are procedures in place that define the criteria for successful completion of the training program and also what constitutes program failure.

4.7 Program Evaluation

Various methods are used to evaluate training effectiveness. Post-class surveys are completed by each trainee and are reviewed and evaluated by training. Also, post-training evaluations are performed by students and foremen six to nine months following the training. Informal feedback is also solicited from trainees and foremen and is often the basis for lesson plan changes. The team noted lesson plans that had been revised as a result of post-training surveys.

Trainees felt that feedback is encouraged and that their comments are acted upon.

5.0 INSTRUMENTATION AND CONTROL TECHNICIAN TRAINING PROGRAM

5.1 Introduction

The scope of the inspection covered under this section was to evaluate the Instrumentation and Control (I&C) technician training program. The training program for I&C technicians at PBAPS consists of initial and continuing training. This inspection was conducted using the

guidance of NUREG-1220, "Training Review Criteria and Procedures." The inspection included a review of training program procedures, training materials, observation of training, and interviews.

5.2 Training Program Content

The I&C training program is described in Procedure MP-1.0, "Instrumentation and Control Technician Training Program Plan," dated July 1992. The procedure describes the program goals, objectives, and responsibilities.

The I&C training program consists of an initial training course plan and a continuing course plan. The initial course plan includes three phases:

- Phase I is approximately 332 hours of training to be completed within 18 months to prepare individuals to function as shift technicians.

- Phase II is approximately 374 hours of training to be completed within 42 months of assignment to the I&C group. This training prepares the technician to function as the lead shift technician.

- Phase III consists of specialty training to support individual needs.

The continuing training course consists of topics selected by line management. Approximately 32 hours of continuing training is planned each year. A continuing training plan for 1992 was reviewed by the team. This program includes such areas as plant modifications, procedure changes, industry events, NRC Notices, and selected tasks.

5.3 Management Involvement in Training

The responsible supervisor, working through the I&C training coordinator, establishes the training program for each I&C technician. The I&C training coordinator maintains a current training status on each technician, and identifies when their biannual training certification is to be reviewed by their supervisor. A training report is issued monthly which provides information to management on class attendance and pass/fail statistics. The team determined that policies and procedures were in place and used to establish and conduct the I&C training program. Records are being maintained. I&C management is involved in the program.

5.4 Qualified Training Staff

The team determined that methods for ensuring instructor qualification and certification were in place and being followed. The team reviewed the recertification program for instructors and determined that the program was adequate. The team verified that each of the four I&C

instructors had completed all required training and that management had reviewed and certified each instructor for 1992. Based upon observation of training, the team concluded that instructors observed were knowledgeable of the subjects taught.

5.5 Training Program Development and Implementation

The team reviewed the task-to-training matrix which listed the job task, lesson plan, laboratory exercise, and module guides as appropriate. The task-to-training matrix appeared up to date and complete. The team reviewed sixteen lesson plans used during 1992 and verified that learning objectives and skill levels were defined. The learning objectives had been effectively incorporated into the lesson plans. The team determined that methods were defined for evaluating knowledge and skill levels of the trainee.

The team observed a lesson on the use of a "Controlotron Flowmeter" system. The instrument is used to measure flow of emergency service water to ECCS coolers and the emergency diesel generator coolers. The equipment and test beds closely matched plant conditions. Lesson plans and procedures were accurate and up to date. The instructor presented the training material in a logical and detailed manner. During an I&C laboratory class instruction the team noted that the trainees understood the use of the test equipment and were able to demonstrate lesson testing goals.

The team concluded that the I&C training program was based upon a systematic approach to training.

5.6 Trainee Evaluation

If a trainee fails a lesson or is having trouble with learning the material, a meeting to discuss the problem is held. I&C management reviews all training failures to determine appropriate corrective actions. A technician who fails to meet training requirements is removed from the list of certified technicians. The team noted that one I&C technician had failed to meet training requirements and had been removed from the list. The team concluded that the licensees' program for trainee evaluation was effective.

5.7 Program Evaluation

The licensee has established methods for evaluating the training program, which includes completion of training feedback forms at the end of each class, and class audits by I&C foreman, supervisors, and the training coordinator. The team reviewed I&C class audit findings documented in reports issued in 1990, 1991, 1992, and verified that lesson plan comments had been factored into the lesson plans as appropriate. The team concluded that methods were in place and being followed to systematically evaluate the effectiveness of the training program and revise the program, as appropriate.

6.0 TECHNICAL STAFF TRAINING PROGRAM

6.1 Introduction

The scope of the inspection covered under this section was to evaluate the initial and continuing training programs provided to the technical staff at the Peach Bottom Atomic Power Station. This portion of the inspection was conducted using applicable portions of NUREG-1220, "Training Review Criteria and Procedures;" Inspection Procedure 41500, "Training and Qualification Effectiveness."

The technical staff training (TST) program consists of the BWR Systems, the Technical Staff Training, and the Technical Staff Continuing courses. The program is described in training procedure TP-280, "Technical Staff and Manager Training Program."

BWR Systems is a five-week course to familiarize the trainee with basic theories and fundamentals associated with PBAPS and BWR operations. Topics include nuclear reactor theory, heat transfer, fluid flow, and BWR (PBAPS) systems.

The Technical Staff Training course provides the trainee with a basic knowledge of the references, procedures, programs, and controls necessary to do his job. The course also includes information on plant and component design, construction, and operation to support the systems training. This is a six week course.

A minimum of 20 hours per year of continuing training is given to the technical staff. Continuing training covers plant and procedure changes and recent events at Peach Bottom and in the industry.

The inspection included a review of training program procedures, training materials, and other applicable documents. Interviews were conducted with plant engineers, instructors, supervisors, and managers. Additionally, classroom sessions were observed.

The technical staff training program did not have task analyses associated with it; therefore, no specific tasks were chosen for review. The goal of the initial training program is to supplement the trainee's previous education and experience to provide the knowledge necessary to perform his assigned duties.

6.2 Job Analysis

The intent of the technical staff training program is to enhance the trainee's knowledge to allow performance of their assigned duties. The target population consists of engineers and technical assistants employed full time by Philadelphia Electric Company. The inspection team noted that licensee management encouraged personnel to attend training and were interested in how personnel performed during training.

The inspection team reviewed the methodology used by the licensee in developing the content of the technical staff training program and determined the method was systematic and acceptable. TST program content is based upon industry guidance and has a strong input from plant management and trainees. The program is comprehensive and appears appropriate for the target population. Licensee personnel interviewed also indicated that the scope of the curriculum was appropriate and properly focused.

6.3 Learning Objectives

Learning objectives associated with various lesson plans from the TST curriculum were reviewed by the team. Lesson plans contained learning objectives that were accurately written and were appropriate for the lesson plan. While reviewing the lesson plans and learning objectives, the team noted that the training department library was well organized and staffed and used frequently by both students and instructors.

6.4 Design Implementation

The team verified that the goals and responsibilities of the training and plant staffs were clearly stated. Training staff qualification are covered by procedures. Training is appropriately organized, and sequenced and instructional settings are appropriate. One trainee, who was interviewed, thought that training on procedures and technical specifications, which were directly applicable to his job, could have been given earlier. Trainees were given an I&C lab that made use of facilities from the I&C training program. This training appeared to be enthusiastically received by the students. Student handouts were noted by the students to provide a good reference source for future use.

Most of the TST instructors are consultants. The licensee noted that efforts are underway to convert the contractor positions to company filled positions.

The team reviewed a number of lesson plans to ensure they were designed to provide for consistent delivery and that the appropriate instructional materials required were annotated.

The team observed classroom training for both initial and continuing training. All the training observed was conducted professionally, and the instructors were able to maintain the students interest throughout the sessions.

6.5 Trainee Evaluation

Course plans for the TST program have clear criteria for the administration and evaluation of trainee examinations. The frequency of examinations and the pass/fail criteria for the examinations are stated. Administrative guidance on when and how trainee remediation is conducted is also stated. Remedial training is generally given immediately after failures, which are infrequent. The team concluded that the criteria provided in these procedures was adequate.

6.6 Program Evaluation

The team reviewed the licensee's methodology for systematic evaluation of the TST program. This evaluation is necessary to ensure that the training program can be revised, as appropriate, and that continuing training is properly focused. The team found that various methods were used to evaluate and change the TST program as necessary.

The TST instructors routinely use feedback from the students, workers, and supervisors to enhance the training program. Additionally, interviews with technical staff members indicated that their concerns are addressed via various methods. The team noted that training feedback was documented with standard critique forms, memoranda, notes, meeting summaries, and assessments.

The licensee has a technical staff training interface committee. The interface committee's objective is to improve the effectiveness of the TST program by providing a forum for direct plant staff involvement in training program administration and content. The team reviewed the interface committee charter and minutes from several interface meetings. The team concluded that the interface committee has been effective in achieving its goals.

7.0 LICENSED OPERATOR MEDICAL EVALUATIONS

7.1 Introduction

The team reviewed the medical records for fifteen licensed operators to determine if the licensee performs the medical examinations and notifications required by 10 CFR 55.

7.2 Findings

The team found that medical examinations were done every two years, as required by 10 CFR 55.21. The scope of the examination is set by ANSI 3.4-1983, which requires a facility report on the operator and examinations for disqualifying conditions and minimum capacities. An annual physical examination of lesser scope is required by 10 CFR 20.103(c)(2), as part of respiratory protection qualification. The team verified that this examination was also done. The records indicated that appropriate notifications were made. A listing of medical examination dates for all licensed operators was reviewed. It was concluded by the team that all operators had been examined within the last two years.

The team raised a question about the appropriateness of the use of physicians assistants to give to medical exams and meet Part 55.4. The licensee had made a determination that their designated medical examiner (a physician's assistant) met the definition of a physician in Part 55.4. After discussions with the licensee and further review, the team concluded that the medical examinations were in accordance with NRC requirements.

8.0 OVERALL CONCLUSIONS

For the training programs reviewed by the team, the licensee has implemented a systems approach to training. The training programs prepare the trainee for the job and help in maintaining the individual's knowledge and skills once he is qualified. All levels of management are involved in the training programs. The PBAPS Vice President is a particularly strong advocate of training, and the effect of his leadership in this area could be seen throughout the organization. Policies and procedures are in place to guide and direct the training programs. The team found that the training staff was appropriately qualified. Trainee evaluations are effectively used. Various methods are used to evaluate training programs, which should allow for accurate evaluation.

9.0 EXIT MEETING SUMMARY

The training program inspection was announced to the licensee in a letter from the regional office dated June 15, 1992. This letter requested the licensee to provide the materials needed for inspection preparation. Licensee management was informed of the purpose and scope of the inspection at the entrance meeting on August 14, 1992. The NRC team leader discussed inspection findings with training management periodically throughout the inspection. The inspection findings were summarized at the exit meeting on August 14, 1992. Attendees at the entrance and exit meetings are noted in Attachment 1 of this report.

Attachment: Persons at Entrance/Exit Meetings

ATTACHMENT 1

Persons at Entrance/Exit Meetings

Philadelphia Electric Company, PBAPS

Donald Miller, Vice President (2)
Ken Powers, Plant Manager (1, 2)
Robert Klemm, Training Manager, NTD (1)
Tom Niessen, Superintendent - Operations (1, 2)
John Stankiewicz, Superintendent - Training (1, 2)
David Meyers, Superintendent - Technical (1, 2)
D. Glen Miller, Superintendent - Maintenance Training - Barbadoes (1)
George Gellrich, Manager, Shift Operations (1)
John Rogenmuser, Supervisor, Maintenance and I&C Training (1, 2)
Andrew Sherwood, Supervisor, Training Support (1, 2)
Jay Lyter, Supervisor, Technical Training (1, 2)
Dennis McClellan, Supervisor, Operations Training (1, 2)
Mitchell Rosenberg, Supervisor, Simulator Support (1)
Jerry Kernaghan, Supervisor, Maintenance (1)
Joseph Sample, Senior Instructor, I&C (2)
Kevin Patek, Senior Instructor, LOR (1, 2)
Philip Nielsen, Senior Instructor, LOT (1, 2)
Donald Crump, Senior Instructor, Technical Staff Training (1, 2)
Bernard Moore, I&C Training Coordinator (1, 2)
Henry Carr, Maintenance Training Coordinator (1, 2)
Ron Smith, Regulatory Engineer (1, 2)
Dave Foss, Regulatory Engineer (2)
S. Chris Baker, NQA (2)
L. Sollenberger, NQA (1)
Harry Abendroth, Staff Engineer, Atlantic Electric (2)
Peter Ott, Site Representative, PSE&G (1, 2)

Pennsylvania Bureau of Radiation Protection

Stan Maingi (1, 2)

U.S. Nuclear Regulatory Commission

Marvin Hodges, Director, Division Reactor Safety, Region I (2)
Herb Williams, Senior Operations Engineer (1, 2)
Carl Sisco, Operations Engineer (1, 2)
Walt Baunack, Senior Reactor Engineer (1, 2)
Al Finkel, Senior Reactor Engineer (1, 2)
Rick Pelton, Training Specialist, NRR (1, 2)
Mats Sjoberg, SKI-NRC (1, 2)
Jeff Lyash, Senior Resident Inspector (1)
Paul Bonnett, Resident Inspector (2)
Joe Shea, Project Manager, NRR (1, 2)

The inspectors also held discussions with engineers, operators, instructors, supervisors, trainees, and technicians.

Notes:
(1) Denotes those present at the entrance meeting August 10, 1992
(2) Denotes those present at the exit meeting on August 14, 1992