U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-277/90-07 & 50-278/90-07

Docket No. 50-277 & 50-278

License Nos. DPR-44 & DPR-56

Licensee: Philadelphia Electric Company
P.O. Box 7520
Philadelphia, Pennsylvania 19101

Facility Name: Peach Bottom 2 & Peach Bottom 3

Inspection At: Delta, Pennsylvania

Inspection Conducted: February 26 - March 28, 1990

Inspectors: S. Sherbini 4/17/90
S. Sherbini, Senior Radiation Specialist — date
Facilities Radiation Protection Section

for S. Sherbini 4/17/90
P. O'Connell, Radiation Specialist — date
Facilities Radiation Protection Section

D. Chawaga 4-17-90
D. Chawaga, Radiation Specialist — date
Facilities Radiation Protection Section

Approved by: for S. Sherbini 4/17/90
W. Pasciak, Chief, Facilities Radiation Protection Section — date

Inspection Summary: Inspection on February 26 - 28 and March 12, 13, 28, 1990 (Combined NRC Report Nos. 50-277/90-07 & 50-278/90-07)

Areas Inspected: A routine, unannounced safety inspection was performed to evaluate the radiological controls program on site.

Results: Within the scope of this inspection, no violations were identified.

DETAILS

1.0 Personnel Contacted

1.1 Licensee Personnel

E. Barnett, Senior Instructor, Health Physics
G. DePasquale, Nuclear QA Auditor
W. Downey, Radiological Engineering Supervisor
* D. Foss, Licensing Engineer
* D. Lequia, Superintendent, Plant Services
* P. Sawyer, Senior Health Physicist
E. Tucker, Health Physics Technician
T. Albright, Tech. Assistant, Radiological Engineering
C. Hoffmaster, Tech. Assistant, Radiological Engineering
K. Holsopple, Director, Radiation Protection
K. Borton, Engineer, Radiation Protection
S. Levine, Engineer, Radiation Protection

1.2 NRC Personnel

J. Lyash, Senior Resident Inspector
* L. Myers, Resident Inspector
R. Urban, Resident Inspector

* Denotes attendance at exit meeting on March 28, 1990.
S. Sherbini was not present at the exit meeting.

2.0 Status of Previously Identified Items

(Closed) Unresolved Item (89-21-01) Display contact dose rates on hot spot tags and post other data such as area dose rates. The licensee has in place a program where a Technical Assistant in Radiological Engineering is responsible for tracking hot spots in the plant. As part of the hot spot reduction program, dose rate information is posted on the hot spot tag. During tours of the facility the inspectors verified that hot spot stickers in the plant contained dose rate information. The licensee is also implementing a program where survey information is summarized on large display boards throughout the facility. This item is closed.

3.0 Organization and Qualifications

The radiological controls program on site is under the direction of the Plant Services Superintendent, who also supervises the Chemistry and the Radwaste Departments. The Plant Services Superintendent reports to the Plant Manager. The Radiological Controls Department is headed by the Senior Health Physicist, a title equivalent to radiation protection manager as found in Regulatory Guide 8.10 and NUREG 0761. The Senior Health Physicist supervises three sections: Radiological Engineering, Applied Health Physics, and

Support Health Physics. Each of these sections is headed by a Supervisor. The Applied Health Physics section is equivalent to the section sometimes referred to in other organizations as the field operations section.

The Radiological Engineering section's duties are limited to three main functions: the site ALARA program, the hot spot identification and elimination program, and shielding calculations. The staff consists of the Supervisor, a Senior Technical Assistant, an Engineer, and six Technical Assistants. The Senior Technical Assistant position has been vacant for approximately one year, and the licensee stated that the position is being considered for elimination because they believe it is unnecessary. According to the position descriptions for the staff in this section, the Technical Assistants require a minimum of 2 years of nuclear power plant health physics experience plus an associate degree or equivalent in applied technology. The Senior Technical Assistant requires a minimum of five years of nuclear power plant health physics experience plus an associate degree. The Engineer requires an engineering degree.

A review of the qualifications of the staff in the Radiological Engineering section showed the following areas of concern:

- Only one of the six Technical Assistants meets the associate degree specification denoted in the position description. Another Technical Assistant will soon complete work toward a Bachelor Degree. The licensee stated that all the Technical Assistants graduated from the licensee's Health Physics Technician (HPT) training program and that the classroom training they received during that training is considered to be equivalent to the two-year associate degree. However, the total classroom training received in that program is less than eight months. Furthermore, a large proportion of this training is of a basic nature designed to teach a person with a high school diploma the basics of health physics in preparation for a job as a HPT.

- The qualifications requirements specify a minimum of two years nuclear power plant health physics experience. This level of experience, however, is below the minimum experience level currently accepted by the licensee for hiring Senior HPTs. The licensee stated that the position requirements have not been revised for some time and that they plan to revise them soon and will increase this experience requirement. The licensee further stated that every Technical Assistant currently in the section has at least 13

years of health physics experience at the site and that they are all graduates of the licensee's technician training program.

The Applied Health Physics Section is headed by six Health Physics Shift Supervisors, and they in turn supervise 52 Senior HPTs. Senior HPTs are subdivided into Technician 'B', Technician 'A', and Senior Technician. These classifications are primarily used for payroll purposes since all the technicians meet the minimum requirements for senior classification. The licensee's Technical Specifications require that technicians meet the minimum qualification standards specified in ANSI N18.1-1971, which call for a minimum of two years of health physics experience. The licensee, however, is using the more stringent requirements specified in ANI 3.1-1978, which specifies a minimum of three years of health physics experience. This requirement is incorporated in the revised Technical Specifications for the site that are to go into effect soon.

The licensee's representatives stated that they do not retain any long-term contractor technicians and that they only hire contractor technicians for short durations during outages. The qualification requirements for contractor technicians are specified in station procedure HP-105, "Qualification Review For Vendor Senior Health Physics Technician". According to this procedure, the technician must meet the qualifications requirements of ANI 3.1-1981. Before being accepted into the site program, the technician must score at least 70% on an entrance examination. A review of samples of these examinations showed that the questions were well selected to test the technician's practical and theoretical health physics knowledge.

A review of the Applied HP organization and the qualifications of the staff showed the following areas of concern:

- The position of Applied HP Supervisor, after being vacant for approximately one year, has recently been eliminated to reduce the levels of management between the technicians and the Plant Manager. Many of the duties that formerly were the responsibility of the Applied HP Supervisor are being performed by the Senior Health Physicist. For example, hiring of contractor technicians and reviewing their qualifications, review of examination results, and other duties which are normally done by the supervisor of field operations in other programs, are being done by the Senior Health Physicist. The Senior Health

Physicist is also involved in the details of daily activities such as surveys, work crew scheduling, and other duties that are again normally performed by the supervisor of field operations. A review of newly revised procedures showed that many of these functions have already been incorporated as functions to be performed by the Senior Health Physicist.

- Six health physics supervisors share the responsibility of running the Applied Health Physics section and all directly report to the Senior Health Physicist. The new organization leaves the section without a lead supervisor and significantly increases the workload of the Senior Health Physicist.

- Procedure HP-105 does not specify the types of experience which may be credited toward classification as a Senior HPT. The licensee stated that these requirements are specified in the contract with the contractor supplying the technicians. A review of the contract showed that it did include some guidance in that area. However, the contract does not represent company policy and is not subject to the same control that station procedures are subject to, and therefore cannot be regarded as equivalent to a procedure.

The inspectors regard the extensive practical in-plant experience possessed by the Senior Health Physicist as a valuable attribute necessary to providing proper oversight of the radiation protection program. In addition, the Senior Health Physicist appears to be well informed regarding the qualifications of his technician staff. However, the inspector expressed concern over the fact that the Senior Health Physicist in this organization serves the dual function of head of the health physics organization and head of the field operations section. These functions are normally performed by two managers in most nuclear power plants.

Management structure, position descriptions and station procedures regarding qualification of personnel are issues which will reviewed in future inspections.

4.0 Technician Level Training

A training program is implemented by the licensee to train high school graduates to become Senior HPTs. Nearly all the licensee's 50 Senior HPTs are graduates of this program.

Entry level candidates for the program must pass a screening

examination and are then given nine days of "pre-academic training", including basic mathematics and physical science. Examinations are given daily. The licensee stated that part of the purpose of this initial training is to provide a screening process for candidates based on their ability to learn technical material. Following completion of the initial entry phase, the student enters the first phase in technician training, which involves four months of classroom instruction followed by assignment to a technician on site for two months as a trainee. At the end of the six month training, the student is promoted to the first technician level, which is Health Physics Assistant Technician (HPAT). The technician must remain a HPAT for at least one year, during which a qualification manual is completed. At the end of that period the HPAT is promoted to Technician 'C'.

After promotion to Technician 'C' the student attends eight weeks of classroom training, and one week of chemistry and one week of counting room training. The technician remains Technician 'C' for at least one year. During this time, the technician may perform the various tasks for which he has been qualified.

At the end of one year as a 'C' Technician and following completion of a qualification manual, the technician may be promoted to Technician 'B'. The technician is considered by the licensee at this point to be a Senior HPT. Chemistry Technicians and HPTs receive the same training up to this level. The 'B' technician then receives three weeks of classroom training followed by on-the-job training and is required to complete a qualification manual. After five years of experience, the technician may be promoted to 'A' technician. The licensee stated that there is no distinction made in job assignment between 'B' and 'A' technicians and senior technicians, except possibly in situations where extensive experience is required in a difficult jobs, in which case an 'A' or senior technician may be preferred.

A six cycle per year training program is provided for the HPTs. The licensee stated that the length of each training session is variable and depends on the amount of material to be covered during that particular cycle. The licensee stated that three topics are normally covered during each session. One of the topics is a selected theoretical review of health physics or instrumentation, a second involves review of a reactor system, and a third topic covers areas targeted for improvement. Lessons learned from industry experience at other stations are typically covered as required reading. The licensee maintains a required reading tracking system to ensure that those on the required reading list sign off indicating that they have read the material.

Following successful completion of a screening examination, incoming contractor technicians receive approximately four days of site specific training after which they must complete a qualification manual and be signed off to perform specific tasks. Contractor technicians expected to remain on site for over six months are incorporated into the cyclic training system. Contractor technicians returning to the site within less than 12 months of a previous assignment are exempt from the initial screening examination.

The licensee offers an Advanced Radiation Worker training course designed to train radiation workers to provide their own health physics coverage in certain situations. Workers eligible for this course must be qualified at the journeyman level and must have at least three years of experience in their specialty at a nuclear power plant. Candidates must be recommended by their supervisors and approved by the Senior Health Physicist. The course involves 23 hours of classroom training in contamination surveys, dose rate surveys, instrument use, job coverage, and decontamination techniques. The classroom training is followed by 80 hours of on-the-job training during which the worker demonstrates proficiency in the required tasks. Quizzes and a final examination are also given, and a qualification manual must be completed. The first Advanced Radiation Worker training was offered in July 1989. Qualified individuals may perform self coverage for all work with the exception of:

- work in airborne radioactivity areas;
- work in areas with general area dose rates in excess of 100 mR/hr and/or contact dose rates in excess of 500 mR/hr;
- work activities where the dose equivalent estimate for an individual exceeds 100 mrem;
- and, work in areas where removable surface contamination levels exceed 25,000 dpm per 100 square cm.

The licensee stated that the purpose of this program is to free the health physics technicians from having to be present when jobs of relatively minor radiological significance are performed. However, discussions with several licensee personnel indicated that the licensee is considering the expansion of this program to include work under the reactor vessel, work on the refueling floor, and other work with potentially significant radiological impact. The inspector expressed concern regarding this possible expansion of the program to include such relatively

hazardous radiological situations, and a possible degradation in the level of radiation safety and control. The status and proposed expansion of this program will be reviewed during future NRC inspections.

5.0 Postings and Radiological Controls

The inspectors toured the Radiologically Controlled Area (RCA) and found the postings to be adequate and in accordance with the requirements of 10 CFR 20.203. The inspectors observed "housekeeping" practices in the RCA and found no indication of poor performance. Work areas and general hallways were observed to be neat and orderly.

The inspectors noted that boundary postings for High Radiation Areas (HRAs) typically included no information regarding the entry requirements for these areas. The licensee implements specific controls such as notification of Applied Health Physics and possession of a radiation survey meter prior to entering HRAs. Workers are trained on the HRA entry requirements. The inspectors noted that not posting entry requirements places additional responsibility on the worker in the field. The licensee's personnel stated that less radiological control information is now posted in the field as a result of a recent external audit.

The inspectors reviewed several Radiation Work Permit (RWP) packages and the pre-job ALARA review for the removal of the 'A' source range monitor (SRM) and 'H' intermediate range monitor. The packages reviewed were complete and free of significant errors. The inspectors noted that although the licensee encountered several difficulties in the removal of the 'A' SRM, the removal was accomplished with ALARA considerations adequately implemented. In general, other RWPs which were reviewed established radiological controls that appeared to be commensurate with the hazards anticipated.

Licensee personnel utilize an apparatus which allows source checks to be performed for portable survey instruments on various dose rate scales while maintaining personnel exposures ALARA. An interlock mechanism prevents access to the Sr-90 source when it is unshielded. The inspectors viewed the use of this apparatus as a radiation protection program strength.

6.0 Corporate Health Physics Support

The Philadelphia Electric Company ALARA Manual states, in part, that Radiation Protection/Radiological Protection Personnel will as part of their routine training receive ALARA and specialized, professional level training. This

training is designed to enhance the staff's ability to perform ALARA Reviews and provide assistance to other groups in designing ALARA controls for specific tasks. Professional level health physics training is organized by the Corporate Radiological Control and Chemistry Section (RCC). The inspectors reviewed records of attendance for professional level training of station personnel and noted that only 9 of the 21 professional health physicists on site had received professional level training. Additionally, the inspectors noted that some of the training courses covered personal enrichment topics (i.e. topics on radon monitoring) and not performance based topics with direct applicability to station objectives.

The Senior Health Physicist informed the inspectors that the professional level courses offered by RCC provided minimal benefit to the radiation protection staff at the station. As a result, these courses were poorly attended. The lack of professional level training accompanied with the minimal amount of formal education possessed by the Technical Assistants indicates that additional training efforts are warranted in this area.

7.0 Exit Meeting

The inspectors met with the personnel denoted in Section 1 at the conclusion of this inspection on March 28, 1990. The scope and findings of the inspection were presented at that time.