

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-277/83-33
50-278/83-31

Docket Nos. 50-277
50-277

License Nos. DPR-44
DPR-50 Priority -- Category C

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Facility Name: Peach Bottom Atomic Power Station

Inspection At: Delta, Pennsylvania

Inspection Conducted: November 28 - December 2, 1983

Inspectors: Ira Cohen
Ira Cohen
Emergency Preparedness Specialist

1/20/84
date

James J. Hawthurst
James Hawthurst
Emergency Preparedness Specialist

1-19-84
date

Approved by: H. W. Crocker
H. W. Crocker, Chief
Emergency Preparedness Section

1/20/84
date

Inspection Summary: Inspection on November 28 - December 2, 1983, (Inspection Report No. 50-277/83-33, 50-278/83-31)

Areas Inspected: Announced follow-up inspection of emergency preparedness items from a prior appraisal performed on December 7-17, 1981 (Report No. 50-277/81-28, 50-278/81-31), an appraisal follow-up on January 10-14, 1983 (Report Nos. 50-277/83-01, 50-278/83-01) and a prior Public Prompt Notification Inspection (Report Nos. 50-277/83-06, 50-278/83-06. In addition, the inspection included IE Inspection Procedure 82207. The inspection involved 64 inspector hours on site by two regionally based NRC inspectors.

Results: Of the seven Appendix A items from the appraisal, seven are closed. Of the fifty-eight Appendix B items, fifty-six were closed, two remained open. Of the six other emergency preparedness items, five were closed, one remained open. Seven additional open items resulted from this inspection. No violations were observed.

DETAILS

1. Persons Contacted

- *R. S. Fleischmann, Plant Superintendent
- S. Roberts, Manager, Operations
Shift Supervisor
- *A. E. Hilsmeir, Manager, Radiation Protection
- *R. Gambone, Site Emergency Preparedness Coordinator
- N. Gazda, Supervisor, Applied Health Physics
- E. Morgan, Assistant Shift Superintendent
- J. Baddick, Technical Assistant
- A. Marie, Corporate Emergency Planner
- J. Ballentine, Corporate Emergency Planner
- E. G. Alwood, Shift Supervisor
- Pat Brennan, Consultant (Meteorological Evaluation Services)

*Denotes attendance at the exit interview.

2. General

During the period December 7-17, 1981, an NRC team conducted an appraisal of the state of Emergency Preparedness of the Peach Bottom Atomic Station. As a result, the NRC identified seven items requiring resolution in order for the licensee to achieve an adequate state of emergency preparedness and fifty-eight improvement items. These findings were documented in a letter to the licensee dated December 24, 1981, and in the NRC Inspection Report Nos. 50-277/81-28 and 50-278/81-31. In a letter dated February 2, 1982, the licensee made commitments to resolve all significant findings and improvement items. During the period January 10-14, 1983, a follow-up inspection (Report Nos. 50-277/83-01, 50-278/83-01) indicated that forty-four items were closed, twenty-one items remained open and three new items were added. As a result of the present inspection all of the items except two Appendix B items were closed.

Of the three improvement items from the prior Prompt Public Notification Inspection, two were closed and one remained open.

The routine inspection of the emergency preparedness activities indicated that seven new items requiring follow-up were added (see paragraph 4).

3. Licensee Actions on Previous Inspection Findings

- 3.1 (Closed) 277/81-28-03; 278/81-31-03. Expand on your letter to the NRC, dated April 3, 1981, to describe how shift personnel discussed in the letter will fulfill the intent of the functions listed in Table B.1 of NUREG-0654 for 30 minute augmentation (Appendix A, Item 2).

The inspector held discussions with licensee personnel, reviewed results of response time drills and noted that the licensee was capable of meeting the 30 minute augmentation as shown in Table B.1 of NUREG-0654.

- 3.2 (Closed) 277/81-28-04; 278/81-31-04. Complete the development of, and formalize the the emergency preparedness training program for Peach Bottom personnel having emergency response roles and for supporting personnel (Appendix A, Item 3).

The inspector held discussions with licensee training personnel, reviewed lesson plans, quizzes, and training records of a sample of emergency response personnel and concluded that a formal training program had been developed.

- 3.3 (Closed) 277/81-28-12; 278/81-31-12. Perform an analysis of the stack sampling system to verify that samples are representative, and if they are not, provide a description of necessary remedial actions and a schedule for their completion (Appendix A, Item 7).

Refer to Inspection Report Nos. 277/83-35, 278/83-33.

- 3.4 (Closed) 277/81-28-05; 278/81-31-05. Develop emergency preparedness instructor selection and qualification criteria (Appendix B, Item 1).

The inspector reviewed the licensee's instructor certification program and noted that criteria for selection and qualification of instructors had been developed.

- 3.5 (Closed) 277/81-28-08; 278/81-31-08. Provide a backup method to verify the habitability of the TSC (Appendix B, Item 4).

The inspector reviewed procedure EP-201, Technical Support Center (TSC) Activation, Rev. No. 6 and noted that a backup method to verify the habitability of the TSC had been provided.

- 3.6 (Closed) 277/81-28-10; 278/81-31-10. Provide dedicated maintenance and radiation protection survey equipment within the primary OSC location (Appendix B, Item 6).

The inspector held discussions with the licensee personnel, reviewed procedure EP-202, Operation Support Center (OSC) Activation, Rev. 5, toured the primary OSC location and noted that maintenance and radiation protection survey equipment would be available for use during an emergency.

- 3.7 (Closed) 277/81-28-14; 278/81-31-14. Provide a procedure to ensure safe transport of the exhaust stack air samples and cartridges (Appendix B, Item 8).

Refer to Inspection Report Nos. 277/83-35, 278/83-33.

- 3.8 (Closed) 277/81-28-15; 278/81-31-15. Develop a procedure for identifying locations and taking liquid effluent samples following an accident (Appendix B, Item 10).

The inspector held discussions with licensee personnel and noted that procedures had been established for identifying locations and taking liquid effluent samples following an accident.

- 3.9 (Closed) 277/81-28-16; 278/81-31-16. Provide appropriate supplies to enable decontamination and record tracking for the number of persons that might be expected during an emergency (Appendix B, Item 11).

The inspector held discussions with licensee personnel, inspected dedicated decontamination supplies, and noted that appropriate supplies were available.

- 3.10 (Closed) 277/81-28-21; 278/81-31-21. Include a list of those non-radiation process monitors within the Emergency Plan (Appendix B, Item 16).

The inspector reviewed the list of nonradiation process monitors to be included during the next revision of the Emergency Plan.

- 3.11 (Open) 277/82-28-22; 278/81-31-22. Document the procedures used for the inspection of the instrumentation in the control room and the meteorological towers and verify that these procedures are being followed (Appendix B, Item 17).

The inspectors reviewed the licensee's draft calibration procedures and noted that no maintenance procedures for periodic surveillance and operability checks of the meteorological equipment had been documented. The licensee will consider documenting maintenance procedures to assure surveillance requirements and operability checks are met.

- 3.12 (Closed) 277/81-28-23; 178/81-31-23. Provide quarterly calibration of the meteorological instrumentation as opposed to semi-annually (Appendix B, Item 18).

The inspectors held discussions with licensee personnel and concluded that semi-annual instrument calibration met the guidelines of Regulatory Guide 1.23, Rev. 1.

- 3.13 (Closed) 277/81-28-26; 278/81-31-26. Evaluate dedicated equipment needs for damage control, corrective action and maintenance, and the positioning of this equipment at specified locations for use during an emergency, and make changes where necessary (Appendix B, Item 21).

The inspector held discussions with licensee personnel and noted that although the licensee considered the need of equipment for damage control there was no need to provide dedicated equipment.

- 3.14 (Closed) 277/81-28-27; 278/81-31-27. Check the type of equipment that will be borrowed during emergencies from sister plants and supplied by RMC for compatibility with existing equipment (Appendix B, Item 22).

The inspector held discussions with licensee personnel and noted that the licensee as a member of PIMS (Pool Inventory Management System) would be assured compatible operating equipment and that there was no reason to determine compatibility of equipment that may be borrowed from RMC.

- 3.15 (Closed) 277/81-28-32; 278/81-31-31. Provide an implementing procedure to aid the person assigned the responsibility of coordination of assessment actions for trend analysis, for escalation or de-escalation, and for protective action recommendations. The procedures should guide this person to the correct actions when indicated by sample analysis and process instrumentation (Appendix B, Item 26).

The inspector held discussions with licensee personnel and noted that appropriate assessment and response actions were being assured by carefully selecting personnel for response roles and by providing adequate training.

- 3.16 (Closed) 277/81-28-34; 278/81-31-34. Revise data sheets to include provisions for: (1) recording the time of each survey, (2) duration of meter reading, and (3) mode of operation in procedure EP-205B (Appendix B, Item 28).

The inspector reviewed the revised data sheet entitled Radiation-Contamination-Airborne Survey and noted that adequate provisions for types of data had been included.

- 3.17 (Closed) 277/81-28-36; 278/81-31-36. Identify in procedure HPO/CO 66 sampling points for the site perimeter (Appendix B, Item 30).

The inspector held discussions with licensee personnel, reviewed procedure EP-205B, Radiation Survey Groups, Rev. 4, and concluded that the identification of specific site perimeter sampling points within procedure HPO/CO 66 was not necessary.

- 3.18 (Closed) 277/81-28-44; 278/81-31-44. Include a procedure for post-accident sampling of displaced liquid and liquid effluent in the emergency plan implementing procedures (Appendix B, Item 38).

The inspector held discussions with licensee personnel, reviewed procedure EP 205A.8, Obtaining Liquid Radwaste Samples from Radwaste Sample Sink Following Accident Conditions, and noted that a procedure for post-accident sampling of radioactive liquids had been provided.

- 3.19 (Open) 277/81-28-47; 278/81-31-17. Revise the appropriate procedures to include: methods of monitoring and decontamination large groups of personnel during accident situations; special considerations for skin contaminated with radioiodine; data sheets and body sketches to track decontamination events; and ensuring that collected data are provided to the emergency organization element responsible for radiation protection during emergencies (Appendix B, Item 41).

The inspector reviewed procedure nos. EP-311 and HPO/CO-7 and noted that references were not made to use of body sketches and methods of monitoring and decontaminating large groups of personnel during accident conditions. The licensee intends to revise the procedures by February 1, 1984.

- 3.20 (Closed) 277/81-28-50; 278/81-31-50. Incorporate into EP-206B specific locations and descriptions of equipment (e.g., radiation detection instruments, tools, etc.); the criteria and logistics of repair team members; communications means and precautions to be employed (Appendix B, Item 44).

The inspector held discussions with licensee personnel, reviewed revised procedure EP-206B, Rev. 3, Damage Repair Group, and concluded that a means had been established to provide repair during accident conditions.

- 3.21 (Closed) 277/81-28-65; 278/81-31-65. Training on the new EAL table in EP-202 should include the purpose of EALs, and emphasize that no waiting is necessary for dose calculations (after a general emergency is declared) before notifying off site authorities. This should also be emphasized to off site authorities during their training (Appendix B, Item 58).

The inspectors held discussions with licensee personnel, reviewed lesson EP-LP-2A, Classification System and Immediate Response, and noted that appropriate training had been given concerning actions related to EALs.

- 3.22 (Closed) 277/83-01-01; 278/83-01-01. Review Emergency Plan Implementing Procedures and make revisions to:
- a. Clarify required actions, and the duties and responsibilities of personnel performing these actions;
 - b. Correct wordy discussions, unnecessary references and other extraneous materials which do not help the users to perform the tasks at hand;

- c. Provide specific cross-references to other procedures in the action steps needed to further detail and clarify actions;
- d. Include lines of command, communication, and information flow as necessary to perform specific response actions; and
- e. Ensure that emergency response tasks are coordinated between appropriate elements of the emergency organization and are consistent with the organizational structures.

The inspector held discussions with licensee personnel, reviewed a sample of revised Emergency Plan and Implementing Procedures and noted that the above considerations were addressed.

- 3.23 (Closed) 277/83-01-02; 278/83-01-02. Revise Emergency Implementing Procedure EPP 205A.3 to specify criteria for using filter media (e.g., silver zeolite).

The inspector reviewed EPP 205A.3, Rev. 1, Retrieving and Changing Sample Filters and Cartridges from the Drywell Radiation Monitor During Emergencies, and noted that criteria was established for using filter media.

- 3.24 (Closed) 277/83-01-03; 278/83-01-03. Ensure that post-accident sampling and analysis equipment meets the criteria of NUREG-0737.

Refer to inspection report nos. 277/83-35, 278/83-33.

- 3.25 (Closed) 277/83-06-01; 278/83-06-01. Complete installation of additional sirens 71 and 72 located in areas identified as Bockel Landing and Muddy Creek Ravine, by March 31, 1983.

The inspector held discussions with licensee personnel, reviewed the licensee's siren location map and noted that siren nos. 71 and 72 had been installed and were operational.

- 3.26 (Closed) 277/83-06-02; 278/83-06-02. Resolve similarity between the Holtwood Hydroelectric Plant siren blast used to warn boaters and that of the siren blast used as an alert to a pending emergency at PBAPS.

The inspector held discussions with licensee personnel and noted that the Holtwood Hydroelectric Plant changed the sound of their siren blast.

- 3.27 (Open) 277/83-06-03, 278/83-06-03. Complete mechanical maintenance program to assure operability of sirens, as recommended by manufacturer.

The inspector held discussions with licensee personnel and noted that the mechanical maintenance program had not yet been completed.

4. Items Identified During This Inspection Which Should Be Considered For Improvement

- 4.1 (Open) 277/83-33-01; 278/83-31-01. Designate a qualified person in writing as the site emergency planning coordinator and furnish the designated person an appropriate job description.
- 4.2 (Open) 277/83-33-02; 278/83-31-02. Incorporate revisions to the Emergency Plan as shown in Enclosure 1 to this inspection report during the next revision.
- 4.3 (Open) 277/83-33-03; 278/83-31-03. Provide a description of the computer dose assessment model to Region I, include the basis for the meteorological and radiological parameters used.
- 4.4 (Open) 277/83-33-04; 278/83-31-04. Complete EP-315, Rev. 0, Corporate Dose Calculations, and provide appropriate training.
- 4.5 (Open) 277/83-33-05; 278/83-31-05. Identify the backup meteorological measurements in the dose assessment procedures.
- 4.6 (Open) 277/83-33-06; 278/83-31-06. Consider actual meteorological measurements in the rapid dose assessment calculation or justify in a report to Region I, dose assessment calculation based upon climatological dispersion factors as outlined in Regulatory Guide 1.145.
- 4.7 (Open) 277/83-33-07; 278/83-33-07. Consider possible ground level release pathways in the dose assessment calculation; for example, an unmonitored release from a steam-line break accident.

5. Dose Calculation and Assessment (IE Procedure 82207)

The inspector interviewed licensee personnel to determine if dose assessment calculations, equipment and aids were available and maintained. Each meteorological tower was visited and an instrument calibration was observed. The Emergency Plan and Implementing Procedures were reviewed to verify that results of dose calculations are incorporated into protective action decision making. As a result of this review, several improvement items were opened including the need to calculate the dose from a possible ground level release (refer to paragraph 4).

A walk-through in dose calculations was given, in the control room, by a shift supervisor to determine that dose assessment procedures were promptly and correctly followed. Upon completion of the walk-through, the inspectors concluded that several changes were needed in the procedure to reflect the newly installed meteorological equipment and clarification of the rapid dose assessment worst case meteorological dose calculation was also needed (refer to paragraph 4).

In addition, the inspectors noted that a more refined dose calculation is being reviewed by the licensee and that documentation in support of the model will be forwarded to the NRC.

6. Exit Interview

On December 2, 1983, the inspectors met with those individuals identified in paragraph 1 and discussed inspection findings.

At no time during this inspection were written materials given to the licensee.

Enclosure 1

Inspection Nos. 50-277/83-33
50-278/83-31

Philadelphia Electric Company
Peach Bottom Atomic Power Station

1. (A.1.a)* List utilities which will cooperate during an emergency in Appendix K and provide appropriate letters of agreement.
2. (A.3) Provide letters of agreement or signature page format for state agencies who provide emergency response.
3. (B.5) Revise Table 5.2 to show 30-minute augmentation.
4. (C.3) Revise paragraph 7.1.11 to show capabilities of the site laboratory to provide radiological analysis.
5. (D.1,D.2) Review the following and make appropriate changes to Table 4.1, Emergency Action Levels.

Unusual Event

Initiating Condition 2 (Radiological effluent technical specification limits exceeded). For this initiating condition which reads, "instantaneous release exceeding tech specs," consider adding EALs that address liquid radiological effluents.

Initiating Condition 7 (Loss of containment integrity). Table 4.1 lists three initiating conditions that pertain to initiating condition no. 8 of NUREG-0654. These include "non-isolable leakage," "failure to isolate penetration when isolated by a transient," and "loss of secondary containment integrity." The corresponding EALs are adequate if they address actual technical specification limits for containment integrity of the Peach Bottom Station. If not, consider listed EALs that will give indication that a loss of containment integrity requiring shutdown by technical specifications has occurred.

Initiating Condition 9 (Loss of engineered safety feature requiring shutdown by tech specs). The initiating condition "unplanned shutdown" relates most closely with the initiating condition no. 9 version given in NUREG-0654. The first EAL "controlled shutdown due to failure to meet L.C.O. (Limited

Conditions for Operation)" would be adequate if reworded such as, "Exceed any L.C.O. for engineered safety features." The second EAL "any scram other than planned" is specific to this initiating condition version and should be dropped if the NUREG-0654 initiating condition version is used.

Alert

Initiating Condition 1 (Severe loss of fuel cladding). The initiating condition "Fuel Damage" corresponds to initiating conditions no. 1 and 10 of NUREG-0654, Appendix 1. The first two EAL sets which address loss of fuel cladding are adequate except that the second set should specify how a high coolant activity of 300 $\mu\text{Ci/gm}$ dose equivalent I-131 will be indicated. Also, this high coolant activity EAL should be "ORed" rather than "ANDed" with the "main steam line high-high radiation alarm with resultant scram alarm" EAL since each EAL by itself is sufficient reason to declare an Alert.

Initiating Condition 5 (Primary coolant leak). The initiating conditions "SCRAM with Triple Low Level" and "SCRAM with small leak" seem to partially correspond to initiating condition 5 of NUREG-0654, Appendix 1. The EAL sets address a primary coolant leak inside of the drywell. This is suggested by the concurrence of low reactor water level with high containment pressure EALs. Consider developing EALs to include primary coolant losses outside of the drywell. AN EAL deserving consideration is one using the leak monitor on the reactor water cleanup system. Although the EAL sets are specified to their version of the initiating conditions, they should consider using the NUREG-0654 initiating condition version and develop corresponding EALs.

Initiating Condition 8 (Loss of all on site DC power). The "and loss of all alarms" EAL is not necessary and should be dropped.

Site Area Emergency

Initiating Condition 1 (Known LOCA). The initiating conditions "SCRAM with LOCA" differs from the NUREG-0654 initiating condition version of "known LOCA greater than makeup pump capacity." The EAL set has too many confirmatory requirements that unnecessarily complicate declaration of a Site Area Emergency. "ORing" the EALs rather than "ANDing" them would improve the EAL set. In addition, deletion of one of the low level alarm and high containment pressure EALs would be acceptable. The "SCRAM alarm" EAL would be appropriate if the NUREG-0654 initiating condition version is used.

Initiating Condition 2 (Degraded core with possible loss of coolable geometry). Although the use of control rod insertion is a recognized diagnostic tool, making it coincident with the

other EALs makes the criteria unacceptable. An adequate generic EAL set would contain EALs concerning gap activity in steam, gap activity in the primary coolant, or an uncovered core.

Initiating Condition 7 (Loss of all vital on site DC power).
The "and loss of all alarms for longer than 15 minutes" EAL is not necessary and should be dropped.

General Emergency

Initiating Condition 6b (LOCA with failure of ECCS). The EAL set is conservative and redundant in that some EALs should be "ORed" rather than "ANDed." Three EALs dealing with low level alarms and two dealing with high containment pressure are unnecessary. This NUREG-0654 initiating condition is simply a LOCA with ECCS failure resulting in damaged fuel. Appropriate EALs for fuel damage and for a LOCA for a Site Area Emergency are applicable with detailed EALs for ECCS malfunction dependent upon the licensee's particular plant. Consider the suggestions given in NUREG-0654 in developing an adequate EAL set.

Protective Action Decision Making EALS

General Emergency Initiating Condition 4 (Other plant conditions). The Plan did not address this initiating condition and should consider the notes listed under General Emergency Initiating Conditions No. 1, 2, 3, and 4 from NUREG-0654, Appendix 1, in developing off site protective action decision making for General Emergency conditions. Attached is a flowchart that can be used as a guideline in developing off site protective action decisions consistent with NUREG-0654.

Criterion 2. The following initiating conditions were not addressed.

Unusual Event: 1, 4, 5, 6, 12, 14b, 14e, 15

Alert: 4, 9, 11, 14, 15, 16, 18e, 19

Site Area Emergency: 4, 8, 9, 12, 14, 15c, 16, 17

General Emergency: 2, 3, 4, 6a, 6c, 6d, 6e

6. (G.1) Provide period (at least annually) for dissemination of public education materials.
7. (H.1,H.2) Specify if the TSC, EOF, or OSC meet the design criteria of NUREG-0696, Revision 1.

8. (H.6a) Identify where off site seismic measurements will be obtained.
9. (H.6.b) Indicate if off site monitors meet requirements of the NRC Radiological Assessment Branch Technical Position for the Environmental Radiological Monitoring Program.
10. (H.8) Include the backup and supplemental meteorological information available in support of an on site dose assessment capability. Include provisions for acquiring National Weather Service information for judgments regarding intermediate and long-range transport estimates and forecast capability.
11. (I.2) Identify specific iodine levels detailed in NUREG-0578 for in-plant instrumentation.
12. (J.m) Refer to specific emergency plans in paragraph 6.7.1.2.3.
13. (K.5.a, K.5.b) Discuss these items in plan or refer to appropriate procedures.
14. (K.6.b) Specify on site contamination control measures for drinking water and food supplies.
15. (N.1b) Reference 10 CFR 50 F.i.1.a to show NRC and FEMA regulations.
16. (N.2) Reference STEP-7 as coverage for the Health Physics Drill and indicate that drills will be supervised and evaluated by a qualified drill instructor.
17. (P.1) Provide for training of individuals responsible for planning effort.
18. (P.6) Provide a detailed listing of supporting plans.

*Refers to NUREG-0654, Rev. 1, planning standards.