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SHIELDS L. DALTROFF
VICE PRESIDENT
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October 15, 1980

Re: Docket Nos. 50-277
50-278

Mr. Darrell G. Eisenhut, Acting Director
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Implementation of NRC Action Plan Requirements

Reference: (1) NUREG 0578, TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations
(2) Correspondance dated May 7, 1980, D. G. Eisenhut, NRC, to All Operating Reactor Licensees
(3) Correspondance dated September 5, 1980, D. G. Eisenhut to All Licensees of Operating Plants.

Dear Mr. Eisenhut:

This letter presents an assessment of our capabilities to implement near term NRC Action Plan requirements (NUREG 0660), and a proposed schedule for implementation. Attachment A to this letter describes the status of Philadelphia Electric Company's efforts to implement these requirements. The requirements were originally identified in references 1 and 2. The September 5, 1980 letter from D. G. Eisenhut (reference 3) provided new design criteria for many of the requirements in references 1 and 2, and proposed a new implementation schedule. The implementation schedule we propose in attachment A is consistent with most of the implementation dates proposed by the NRC in reference 3. Several additional changes in the schedule are proposed specifically for the Peach Bottom Atomic Power Station. The

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additional changes are primarily a result of the inability of some vendors to meet requested delivery schedules, and an effort to minimize the number of plant transients and economic impact resulting from plant outages, and would permit implementation in a more effective, orderly fashion. A summary of the proposed schedule for the Peach Bottom Units is presented in attachment B.

We propose the following outage schedule for implementation of near term Action Plan modifications.

1) January 1, 1981: A Unit 2 outage commencing on this date to implement those Action Plan modifications not limited by equipment unavailability.

2) On or before March 15, 1981: A Unit 3 outage to accommodate refueling and to complete most near term Action Plan modifications requiring an outage. Equipment unavailability may preclude full implementation of the following items: II.F.1(3) High Range Containment Radiation Monitors, II.F.1(4) Containment Pressure Monitors, and II.F.1(5) Containment Water Level Monitors.

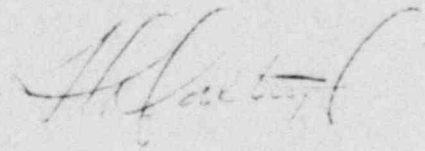
3) On or before January 1, 1982: A Unit 2 outage to complete modifications for which equipment procurement problems precluded their implementation during the January 1980 outage.

Duration of outages to accommodate the near term modifications is estimated to be two and three weeks for Peach Bottom Unit 2 and Unit 3 respectively. Current estimates of the replacement energy charges to area customers associated with the three week Unit 3 outage is $23 million. In view of the fact that Peach Bottom Unit 3 is scheduled for an extended refueling/modification outage starting in early March 1981, we propose a relaxation of the Peach Bottom Unit 3 implementation date for Action Plan requirements so that the modifications can be accommodated during the scheduled refueling outage. In addition, our fuel vendor has advised us that in order to meet the design shutdown margin criteria in the next Peach Bottom Unit 3 fuel cycle, Unit 3 must attain a shutdown exposure of at least 7700 MWD/TON. Obtaining this exposure will be difficult if a three week outage must be taken prior to the scheduled refueling shutdown. Given a three week outage, operation of Peach Bottom Unit 3 beyond the currently scheduled refueling outage date of early March 1981 will be necessary, causing further unavailability of the Unit during the summer of 1981, or alternatively the number of fresh reload assemblies may have to be reduced which will degrade the energy available from Peach Bottom Unit 3 during its next cycle.

A re-scheduling of the Unit 3 near term Action Plan requirements until the planned refueling outage would (1) enhance the implementation of the Unit 2 modifications by avoiding potential difficulties associated with manpower availability and productivity which are inherent with late December work, (2) increase Unit 3 availability during the summer of 1981, (3) permit the implementation of Action Plan requirements that would not be possible earlier due to engineering and procurement restraints, and (4) would save area customers approximately $23 million (equivalent to more than one million barrels of oil). This relaxation of the Unit 3 implementation date would involve only ten weeks and does not compromise plant safety.

We believe that the proposed schedule provides for implementation of the NRC requirements in a manner which is consistent with the intent to appropriately respond to the Lessons Learned from TMI-2. Should you have any questions regarding this matter, please do not hesitate to contact us.

Very truly yours,



Attachments

ATTACHMENT A

PEACH BOTTOM ATOMIC POWER STATION
IMPLEMENTATION STATUS OF NEAR TERM NRC ACTION PLAN ITEMS

1. Requirement: Shift Technical Advisor (I.A.1.1)

The Shift Technical Advisor (STA) shall receive training in plant design and layout, including the capabilities of instrumentation and controls in the control room. They shall also have received specific training in the response and analysis of the plant for transients and accidents. This level of training shall have been attained by January 1, 1981. A description of this training, and the long term STA program, including qualification, selection criteria, and training plans shall be submitted by January 1, 1981.

Response

Enclosed is a partial response to this request, and a proposal to complete the comprehensive STA training program presently in progress and scheduled to run through February 18, 1981.

Six candidates were selected from our engineering staff for the STA position earlier this year, and have been attending a full time, twe-ty-two week training course since September 2, 1980. The training program, which includes simulator training, closely parallels the proposed INPO training standard for STA's, and is described in attachment C. The training curriculum exceeds the requirements identified in NUREG 0578, Short Term Lessons Learned.

We propose that the assignment of these personnel to replace the interim STA's be deferred until completion of the training discussed above, expected to be February 18, 1981. This would avoid disruption of the training efforts, therefore maximizing benefits gained by the trainees from the program. Information regarding the long term training and qualification criteria will be submitted January 1, 1981 as requested.

2. Requirement: Plant Shielding (II.B.2)

Perform a radiation and shielding design review of the spaces around systems that may, as a result of an accident, contain highly radioactive materials by January 1, 1980. Complete modifications, based on the shielding study, to assure adequate access to vital areas following an accident by January 1, 1981.

Response

This requirement parallels the plant shielding study of NUREG 0578, item 2.1.6b. The results of the shielding study were presented in our submittal of January 31, 1980, S. L. Daltroff to H. R. Denton. As a result of this study we proposed for completion by January 1, 1981, the relocation of equipment and facilities. This involves the relocation of the spent fuel makeup controls to areas outside the reactor building; and the establishment of a backup radiochemistry laboratory at a distance from the plant.

The NRC Region I meeting, held in Arlington, VA, on September 22, 1980, provided additional clarification of the source term design criteria for the plant shielding study. A reassessment of the shielding study, based on this new clarification, indicates that post accident radiation conditions will not impact on reactor building accessibility and the availability of the present radiochemistry laboratory. Therefore, we propose that implementation of the modifications described above be deferred until such time that their need is clearly established.

3. Requirement: Post Accident Sampling Station (II.B.3)

Upgrade the capability to obtain samples from the reactor coolant system and containment atmosphere under high radioactivity conditions by January 1, 1981.

Response

To provide for equipment delivery, and installation in an orderly fashion, we believe the January 1, 1982 implementation date proposed in the September 5, 1980 letter from D. G. Eisenhut to be appropriate for this requirement.

4. Requirement: Safety-Relief Valve Qualification Testing (II.D.1)

A plant specific submittal for safety and relief valves is required by July 1981.

Response

The Peach Bottom type safety and relief valves are included in the scope of the prototype qualification testing to be performed under the auspices of the BWR Owners Group. We are providing the

necessary support through the Owners Group to develop and complete the testing program. The best effort for the Owners Group to complete the qualification testing is July 1, 1981. Additional time will be necessary to evaluate the data and provide a plant specific submittal. We propose that the schedule presented in correspondence dated September 17, 1980, D. B. Waters, Chairman of the BWR Owners Group, to R. H. Vollmer, NRC, be considered as an acceptable schedule to satisfy this requirement. The proposed schedule is as follows:

> Complete test facility: December 31, 1980. Complete shakedown tests: February 15, 1981. Complete operability tests: July 1, 1981. Complete test reports: December 31, 1981.

5. Requirement: Safety-Relief Valve Position Monitors (II.D.3)

> Reactor coolant system relief and safety valves shall be provided with a positive indication in the control room derived from a reliable valve position detection device by January 1, 1980. A qualified installation is required by January 1, 1981.

Response .

A reliable direct position indication system, utilizing acoustic sensors, is presently operational on all Peach Bottom safety-relief valves. As stated in the November 21, 1979 letter from S. L. Daltroff to H. R. Denton, we are in the process of upgrading this system to meet the safety grade design criteria applicable to this requirement. This task requires an outage on both units. We are prepared to implement the improvements by January 1, 1981; however, for the reasons discussed in the cover letter, we propose completion of all work during a Unit 2 outage starting January 1, 1981, and a Unit 3 refueling outage starting on or before March 15, 1981.

6. Requirement: Dedicated Hydrogen Penetrations (II.E.4.1)

> Evaluate the design of the purge system for post accident combustible gas control of the containment atmosphere; and complete modifications, if required, by January 1, 1981.

Response

The modifications to implement this requirement involve additional containment isolation valves on the Containment Atmospheric Dilution (CAD) system. This work has been completed on Unit 2, while Unit 3 will require a scheduled outage. For the reasons discussed in the cover letter, we propose implementation on Unit 3 during the refueling outage starting on or before March 15, 1981. The June 30, 1981 implementation date proposed in the September 5, 1980 letter from D. G. Eisenhut is therefore an appropriate schedule.

7. Requirement: High Range Effluent Monitor (II.F.1(1))

Provide high range effluent monitors for noble gases by January 1, 1981 in accordance with the design criteria presented in the October 30, 1979 letter from H. R. Denton regarding clarification of NUREG 0578, Short Term Lessons Learned.

Response

This requirement parallels item 2.1.8b of NUREG 0578, Short Term Lessons Learned. Three new monitoring systems were installed earlier this year to meet the NUREG 0578 requirements. A letter from R. W. Reid, NRC - Division of Licensing, to E. G. Bauer, states that Philadelphia Electric Company has satisfied the NRC requirements related to Item 2.1.8.b of the TMI-2 Short Term Lessons Learned requirements and Item III D.2.1 of the TMI Action Plan (NUREG 0660). In light of the revised requirements for this system specified in section II.F.1(1) of the September 5, 1980 letter from D. G. Eisenhut, it is not clear at this time whether any further action regarding these monitors is required by Philadelphia Electric Company. We propose that the modifications previously implemented, remain as an acceptable response to the requirement for upgrading the noble gas monitors. However, if further modifications are required to meet the proposed criteria presented in section II.F.1(1) of the September 5, 1980 letter, the time required to select, order, receive and install the systems would not permit completion by the NRC proposed implementation date of October 1, 1981. Therefore, we propose a deferral of the industry-wide implementation date for section II.F.1(1) requirements until July 1982.

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8. Requirement: Sampling and Analysis of Plant Effluents (II.F.1(2))

Capability for effluent monitoring of radioiodines for the accident condition shall be provided with sampling conducted by absorption on charcoal or other media, followed by on-site laboratory analysis by January 1, 1981.

Response

Based on the results of the shielding study submitted on January 31, 1980, S. L. Daltroff to H. R. Denton, we proposed the relocation of the iodine effluent sampling system from the reactor building to the turbine building by January 1, 1981, to meet the requirements of section II.F.1(2). As a result of additional clarif'cation of the source term criteria provided at the NRC Region I meeting on September 22, 1980, and discussed in item 2 above, relocation of the iodine monitors is no longer deemed necessary to meet this requirement. The September 5, 1980 letter from E. G. Eisenhut presents design criteria for the high range radioiodine sampling system that represents new requirements. The present installation at Peach Bottom, which provides continuous effluent sampling for iodines and particulates, would require new equipment to comply with the new criteria. The NRC proposed implementation date of October 1, 1981 would not provide sufficient time because of the long lead times expected for procurement of the new custom equipment after an engineering review. Therefore, we propose an implementation date of July 1, 1982 to implement the new requirements for the radioiodine sampling system.

9. Requirement: Drywell Radiation Monitors (II.F.1(3))

Install high range radiation monitors in the drywell by January 1, 1981.

Response

Delivery of the monitors is presently scheduled for late this year (one half of the monitors by November 15, 1980, and the other half by December 15, 1980). This modification could be completed during an outage starting January 1, 1981, if the equipment is received on schedule and satisfactorily passes receipt inspection; however, a qualified recorder will not be available by this date. Since the schedule is very tight and a orderly installation is desirable, and qualified recorders will not be availably by January 1, 1981, we believe that the October

1, 1981 implementation date proposed in the September 5, 1980 letter from D. G. Eisenhut will be necessary to effectively complete implementation. Under this time schedule, implementation would be completed on Unit 3 during the refueling outage, and on Unit 2 before October 1, 1981.

10. Requirement: Containment Pressure Monitor (II.F.1(4))

Install high range containment pressure monitor by January 1, 1981.

Response

We have been actively working with the General Electric Company and the BWR Owners Group for the past year to develop qualified equipment to implement this requirement. There is no manufacturer of pressure transmitters that we have found that can meet the requirements of IEEE Standard 323-1974. We have contracted with the General Electric Company to provide us with qualified equipment. However, due to problems with sub-vendor qualification programs, they are not able at this time to identify a delivery date for this equipment. Since there is no existing containment pressure instrumentation capable of monitoring the range required by the NRC, we have purchased pressure transmitters from Rosemount that are qualified to IEEE Standards 323-1971 and 344-1975. We are prepared, with NRC approval, to install these Rosemount pressure transmitters during the first scheduled outages proposed in the cover letter. This is the best available equipment on the market today. Therefore, we propose that this modification be accepted as the permanent installation for upgrading the containment pressure instrumentation. Qualified recorders may not be available from the General Electric Company by the first scheduled outages. We propose to install non-qualified recorders at this time and replace them with qualified recorders during the first scheduled outage following delivery.

11. Requirement: Containment Water Level Monitor (II.F.1(5))

Install high range containment level monitor by January 1, 1981.

Response

We are experiencing the same procurement problems for this equipment as described for the pressure monitor in item 10.

However, the existing non-safety related containment water level instrumentation is capable of monitoring the range required by the NRC. We propose upgrading the containment water level instrumentation during the first scheduled outage following delivery of the qualified equipment.

12. Requirement: Containment Hydrogen Monitor (II.F.1(6))

Continuous indication of hydrogen concentration in the containment atmosphere shall be provided in the control room.

Response

The original NRC design criteria for the hydrogen monitors, presented in the October 30, 1979 clarification letter on NUREG 0578, required by January 1, 1981, a measurement capability over the range of 0-10% hydrogen concentration for both positive and negative ambient pressure conditions, and compliance with Regulatory Guide 1.97, Revision 2. We have reviewed the design of the existing Containment Atmospheric Dilution (CAD) System analyzers installed at Peach Bottom, and conclude that they comply with this criteria. On this basis, modification to the hydrogen analyzers is not required.

The September 5, 1980 letter provided several new requirements for the hydrogen analyzers and proposed a revised completion date of October 1, 1981. The Peach Bottom equipment meets the new requirements except for the revised measurement accuracy requirement. We propose that the accuracy requirement should be deleted for the following reasons:

a) Qualified, safety grade, hydrogen analyzers are not commercially available with an accuracy of $\pm$0.1 volume percent hydrogen for a 10 volume percent range.

b) The Peach Bottom containments are inerted (maintained at less than 4% oxygen).

c) Post LOCA combustible gas concentrations are controlled by the CAD System. The system is operated to add nitrogen and vent containment gases in order to maintain oxygen concentration below the combustible limit. Therefore, the CAD System oxygen analyzers are important for proper combustible gas control and the hydrogen analyzers are used for information only. (Refer to the Peach Bottom FSAR, Supplement 1, response to question 14.6 for further information.)

a) The post-accident sampling system being installed in response to II.B.3 is designed to take containment gas samples for gas chromatographic analysis in the on-site laboratory.

The information regarding the hydrogen analyzers requested by October 1, 1981 in the September 5, 1980 letter will be provided by that date. Qualification of the oxygen analyzers is being pursued as part of the response to IE Bulletin 79-01B.

13. Requirement: Auto Restart of RCIC (II.K.3.13)

The RCIC system initiation logic should be modified so that the RCIC system will restart on low water level by April 1, 1981.

Response

We are planning to implement this modification during the scheduled outage on Unit 2 to implement Lessons Learned requirements, and on the Unit 3 refueling outage starting March 15 1981, well before the implementation schedule of April 1, 1981.

14. Requirement: HPCI/RCIC Break Detection (II.K.3.15)

The pipe break detection circuitry should be modified so that pressure spikes resulting from HPCI and RCIC system initiation will not cause inadvertent system isolation.

Response

We are prepared to implement this modification by January 1, 1981. An outage is not required to implement the modifications. However, if implemented without an outage, it requires removing safety related equipment from service during installation. In addition, plant availability may be jeopardized by this work. Therefore for this reason, and for reasons stated in the cover letter, we propose completion of this task during a Unit 2 outage starting January 1, 1981, and a Unit 3 refueling outage starting on or before March 15, 1981.

15. Requirement: Technical Support Center (III.A.1.2)

Upgrade the emergency support facilities in accordance with NUREG 0696 by April 1, 1982.

Response

Item 2.2.2b, NUREG 0578, Short Term Lessons Learned, presented the requirements for establishing a permanent Technical Support Center (TSC) by January 1, 1981. Correspondence dated January 2, 1980, S. L. Daltroff to H. R. Denton, presented our commitment to meet this requirement by January 1, 1981. Section III.A.1.2 of the September 5, 1980 letter from E. G. Eisenhut, envokes NUREG 0696 as the design criteria for the TSC and proposes an implementation date of April 1, 1982. We have submitted comments on NUREG 0696 (draft) in correspondence dated September 23, 1980, V. S. Boyer to S. L. Ramos, NRC. It is our understanding that NUREG 0696 will be issued later this year.

Additional time, as proposed in the September 5, 1980 letter, will be necessary to implement the new requirements anticipated in NUREG 0696, and to complete in an orderly fashion our previous commitments. With the exception of data acquisition, we propose a completion date of April 1, 1981, for the TSC. Philadelphia Electric Company's capability of implementing the data acquisition and other new requirements will be assessed following issuance of the final draft of NUREG 0696.

16. Requirement: Containment Isolation Dependability (II.E.4.2)

a) All non-essential systems shall be automatically isolated by the containment isolation signal by July 1, 1981.

b) The containment setpoint pressure that initiates containment isolation for non-essential penetrations must be reduced to minimum, compatible with normal operating conditions by July 1, 1981.

Response

a) As stated in the September 5, 1980 letter, additional guidance will be provided by NRR on the classification of essential vs. non-essential. Upon receipt of this guidance, we will initiate an engineering evaluation to identify modifications, if necessary, to the containment isolation system. The time to complete the engineering and procure new equipment, and the need for a plant outage, may preclude implementation by July 1, 1981. We propose a deferral of the official implementation schedule until the NRC has reviewed the January 1, 1981 submittal from each licensee.

b) In response to the September 5, 1980 letter, we have initiated studies of the feasibility of lowering the isolation setpoint and expect to report on this topic by January 1, 1981 as requested. If modifications are required as a result of the studies, the implementation schedule of July 1, 1981 may not provide sufficient time to procure equipment and to accommodate the modifications during plant outages. We propose a deferral of the official implementation schedule until the NRC has reviewed the January 1, 1981 submittal from each licensee.

ATTACHMENT 8

PROPOSED IMPLEMENTATION SCHEDULE
FOR NEAR TERM NRC ACTION PLAN ITEMS

Action Plan No.	Title	Present NRC Implementation Schedule	Proposed NRC Implementation Schedule (9/5/80 Letter)	Philadelphia Electric Proposed Schedule	
				Unit 2	Unit 3
I.A.1.1	Shift Technical Advisor	1/1/81	1/1/81	2/23/81	2/23/81
II.B.2	Plant Shielding	1/1/81	1/1/81	Note 1	Note 1
II.B.3	Post Accident Sampling Station	1/1/81	1/1/82	1/1/82	1/1/82
II.D.1	Safety-Relief Valve Qualification Testing	7/1/81	7/1/81	1/1/82	1/1/82
II.D.3	Safety-Relief Valve Position Monitor	1/1/81	1/1/81	1/1/81	3/15/81
II.E.4.1	Dedicated Hydrogen Penetrations	1/1/81	6/30/81	Complete	3/15/81
II.F.1(1)	High Range Effluent Monitor	1/1/81	10/1/81	Note 2	Note 2
II.F.1(2)	Iodine Monitor	1/1/81	10/1/81	7/1/82	7/1/82
II.F.1(3)	Containment Radiation Monitor	1/1/81	10/1/81	10/1/81	3/15/81
II.F.1(4)	Containment Pressure Monitor	1/1/81	1/1/81	1/1/81 (Note 3)	3/15/81 (Note 3)
II.F.1(5)	Containment Water Level Monitor	1/1/81	1/1/81	Note 4	Note 4
II.F.1(6)	Containment Hydrogen Monitor	1/1/81	10/1/81	10/1/81	10/1/81
II.K.3.13	Auto Restart of RCIC	4/1/81	4/1/81	1/1/81	3/15/81
II.K.3.15	HPCI/RCIC Break Detection	1/1/81	1/1/81	1/1/81	3/15/81

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Action Plan No.	Title	Present NRC Implementation Schedule	Proposed NRC Implementation Schedule (9/5/80 Letter)	Philadelphia Electric Proposed Schedule Unit 2	Unit 3
III.A.1.2	Technical Support Center	1/1/81	4/1/82	4/1/81 (Note 5)	4/1/31 (Note 5)

Note 1: Reassessment based on the NRC clarification of the plant shielding source terms indicates present plant design is satisfactory.

Note 2: Clarification from NRC necessary. See item 7 of Attachment A.

Note 3: Installation of non-qualified recorder - Unit 2: 1/1/81, Unit 3: 3/15/81. Qualified recorder - first scheduled outage following delivery.

Note 4: Non-qualified instrumentation presently installed. Qualified instrumentation - first scheduled outage following delivery.

Note 5: Except for data acquisition and other new requirements in NUREG 0696.

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ATTACHMENT C

CURRENT SHIFT TECHNICAL ADVISOR TRAINING PROGRAM

The instruction includes five phases of training over 22 weeks. These are:

Phase I - Academic Training (6 weeks)
Phase II - Management/Administrative Controls Training (2 weeks)
Phase III - Plant Systems Training (8 weeks)
Phase IV - Accident Analysis Training (3 weeks)
Phase V - Simulator Training (3 weeks)

Phases I - IV are being presented at Peach Bottom while Phase V, Simulator Training, will take place at the Limerick Training Center.

Classroom portions of the program normally run 8 hours per day with about 2 hours per day allotted for quizzes, examinations or structured study. There is at least one examination per class week. The details of each phase of the program are outlined as follows:

Phase I - Basic Academic Phase (6 weeks)

This portion of the program is a condensed version of the course normally presented to candidates for the reactor operator's license. The overall objective is to provide the student with a basic understanding of the scientific and engineering principles of reactor plant operation. Key academic fundamentals normally not included in a college curriculum are stressed.

Phase II - Management/Administrative Controls Phase (2 weeks)

This phase of the training introduces the duties and responsibilities of the Shift Technical Advisor. The objectives are to provide prerequisite leadership skills as well as an orientation on general plant operations and safety to ensure that each STA is familiar with plant management and administration. Phase II topics include the following:

Duties & Responsibilities of the STA
Leadership
Interpersonal Communication
Motivation of Personnel
Problem & Decisional Analysis

Attachment C
Current Shift Technical Advisor Training Program

Command Responsibilities & Limits
Stress
Human Behavior
Responsibilities for Safe Operation & Shutdown
Equipment Outages & Clearance Procedures
Use of Procedures
Plant Modifications
Shift Relief Turnover & Manning
Containment Access
Maintaining Cognizance of Plant Status
Physical Security
Control Room Access
Radiological Control Instructions
Radiological Emergency Plan
Code of Federal Regulations (appropriate sections)

Phase III - Plant Systems Phase (8 weeks)

Plant Systems training encompasses essential nuclear steam supply, secondary and emergency systems. The student will learn the general description of the system, instrumentation and controls, interconnections with other systems, operational limits and basic operation. The provisions of Technical Specifications (including bases) will be stressed. Integrated plant operations will also be introduced. A tentative list of systems to be included in this program is given below. The final list of systems will be completed after consultation with the Peach Bottom training staff. Existing Peach Bottom training materials will be used to the extent possible.

Emergency Core Cooling
Emergency Cooling Water
Emergency Electrical Power, AC & DC
Reactor Protection
Reactor Coolant
Reactor Coolant Inventory & Chemistry Control
Containment System
Closed Cooling Water
Nuclear Instrumentation
Non-Nuclear Instrumentation
Reactor Control
Containment Hydrogen Monitoring & Control
Radioactive Waste Disposal (Liquid, Gas, Solid)
Emergency Control Air
Condensate & Main Feedwater

Auxiliary Feedwater
Reactor Vessel Water Level Control
Main Steam
Status Monitoring
Seismic Monitoring
Residual Heat Removal
Radiation Monitoring
Main Turbine & Generator

Phase IV - Accident Analysis Phase (3 weeks)

The objective of this portion of the program is to prepare the STA to perform the accident assessment function. The methodology of accident analysis will be presented. Indications and the response of the plant to various accidents described in vendor accident analyses and the Final Safety Analysis Report will also be discussed. Transients of moderate frequency and infrequent and limiting faults will be covered. Course materials for this portion of the program will be developed from plant specific materials and provided each student.

Phase V - BWR Simulator Phase (3 weeks)

Boiling Water Reactor Simulator Training is an essential supplement to the classroom instruction and enhances the student's knowledge of the material covered during all four classroom phases.

Training on a full scale boiling water reactor simulator is available from General Physics Corporation utilizing the facilities. The program includes four hours of classroom instruction and four hours of "hands on" simulator training each day. Students will become familiarized with normal plant operations during Week 1. Week 2 features transients of moderate frequency. During Week 3, infrequent and limiting faults will be explained with special emphasis on the lessons learned from Three Mile Island.

The recommended class size for the BWR simulator training is 3-4 personnel. As we anticipate that 6 students will attend, the training will be given to students in two groups during a three-week period, each group using the simulator four hours per day.