Public Service
Electric and Gas
Company

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JAN 2 6 1990

NLR-N90021

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Gentlemen:

RESPONSE TO GENERIC LETTER 89-13, SERVICE WATER PROBLEMS AFFECTING SAFETY RELATED EQUIPMENT
SALEM AND HOPE CREEK GENERATING STATIONS
DOCKET NOS. 50-272, 50-311 AND 50-354

Public Service Electric and Gas Company (PSE&G) hereby provides a response, in Attachment 1, to the subject Generic Letter. A summary of the commitments/schedules is included in Attachments 2 and 3, for Salem And Hope Creek Stations respectively.

Please note that PSE&G initiated an aggressive program of monitoring, inspection and material replacement in advance of Generic Letter 89-13 issuance. The intention was to improve the reliability of the Service Water systems while maintaining the capability to perform their intended safety functions.

Should you have any questions regarding this response, we will be pleased to discuss them with you.

Sincerely,

S. LaBruna

Enclosure

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C Mr. J. C. Stone
Licensing Project Manager - Salem

Mr. T. Johnson
Senior Resident Inspector

Mr. W. T. Russell, Administrator
Region I

Mr. Kent Tosch, Chief
New Jersey Department of Environmental Protection
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Bureau of Nuclear Engineering
CN 415
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REF: NLR-N90021

STATE OF NEW JERSEY)
) SS.
COUNTY OF SALEM)

S. LaBruna, being duly sworn according to law deposes and says:

I am Vice President - Nuclear Operations of Public Service Electric and Gas Company, and as such, I find the matters set forth in our letter dated January 26, 1990 , concerning the Salem Unit Nos. 1 and 2 and Hope Creek Generating Stations, are true to the best of my knowledge, information and belief.

S. LaBruna

Subscribed and Sworn to before me
this 26th day of January, 1990

Vanita M. Marshall
Notary Public of New Jersey

VANITA M. MARSHALL
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires May 6, 1993

My Commission expires on _____

NLR-N90021

ATTACHMENT 1

RESPONSE TO NRC GENERIC LETTER 89-13
SALEM AND HOPE CREEK GENERATING STATIONS
DOCKET NOS. 50-272, 50-311 AND 50-354

Generic Letter (GL) 89-13 requested that licensees perform specific actions to confirm that their service water systems are in compliance and will be maintained in compliance with 10 CFR Part 50, Appendix A, General Design Criteria 44, 45, and 46 and Appendix B, Section XI.

PSE&G has experienced Service Water problems in the past. Corrective actions have resulted in the virtual elimination of bio-fouling related problems, a more focused inspection program and an intensive material replacement effort.

A seven year, multi-million dollar Service Water Improvement Project was initiated in 1986, with material replacement beginning in 1989. Extensive studies were performed, with the assistance of industry material specialists, to identify a replacement material to permanently check the corrosion mechanism within the system. A material test program was launched for several candidate materials to determine their performance in our Service Water environment. 6% molybdenum stainless steel was selected as the most feasible material to replace the existing carbon steel piping. Consequently, an aggressive piping replacement program was initiated. The Improvement Project is presently 35% complete.

The GL provides a definition of those systems that perform the function of a Service Water system. The following systems have been identified as falling within the scope of GL 89-13.

Salem	Hope Creek
Service Water	Station Service Water
Component Cooling	Safety Auxiliary Cooling

Component Cooling at Salem and Safety Auxiliary Cooling System (SACS) at Hope Creek are considered closed-cycle systems, as defined by the GL. The remaining systems are considered open cycle.

GL 89-13 identifies five (5) areas to be evaluated and requires a plant specific response for each area. The specific items to be addressed are described below along with the corresponding PSE&G response. Outstanding actions are indicated along with a schedule for completion.

ITEM 1

For open-cycle service water systems, implement and maintain an ongoing program of surveillance and control techniques to significantly reduce the incidence of flow blockage problems as a result of biofouling.

SALEM

Salem currently employs biofouling control techniques and inspection activities. However, based on our review of the GL, Salem intends to revise the existing inspection procedures to ensure that inspection activities encompass all the requirements specified in the GL.

Salem draws its service water from the Delaware Estuary. In accordance with Enclosure 1 of the GL, Action A is a recommended surveillance technique and Actions B and C are recommended control techniques. Salem currently performs most of the recommended actions.

Action Item A of Enclosure 1 - Salem visually inspects its Service Water Intake Structure (primarily for silt accumulation) at least once each fuel cycle. The existing procedures do not specifically address biofouling. Procedures will be revised to provide guidance on biofouling inspection and removal.

Action Item B of Enclosure 1 - Salem continuously chlorinates service water with sodium hypochlorite to a level of 0.3-0.5 mg/l, measured as total residual chlorine (TRC). This chlorination practice is the result of a four year study conducted in-situ. Chlorination is in-service year round, including refueling outages. The chlorination program has effectively inhibited the population growth of marine macro-organism as verified by inspection of major service water headers and heat exchangers during refueling outages. Additionally, operations procedures require periodic high flow flushing to minimize accumulation of silt or shells at various heat exchangers. Administrative controls have been established to limit the maximum length of time that the chlorination system can remain out of service due to maintenance activities.

Action Item C of Enclosure 1 - Salem has two dead legs (Emergency connection to Auxiliary Feedwater and Emergency Air Compressor). The Emergency Air Compressor will be reviewed and inspection/flushing instituted as appropriate. The Auxiliary Feedwater dead leg is flushed monthly in accordance with existing procedures. All associated safety related flow paths will be tested or inspected as outlined in our response to Item 2 or 3 of the GL. The Salem Service Water system is designed such that cooling loops would not typically be placed in lay up. There are no "standby" or "emergency" Service Water systems at Salem.

In summary, the existing practices and procedures at Salem meet the intent of GL 89-13 and the recommended actions of Enclosure 1 with the exception of inspection/removal of macro-organisms. Existing procedures for intake structure inspection will be revised to incorporate biofouling inspection and cleaning guidelines. A procedure for inspection/flush of the Emergency Air Compressor will be generated. These changes will be implemented prior to the completion of the Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

HOPE CREEK

Hope Creek currently employs biofouling control techniques and limited inspection activities. Based on a review of the GL, Hope Creek intends to revise the existing inspection work standards and generate additional work standards to ensure that inspection activities encompass all the requirements specified in the GL.

Hope Creek draws its service water from the Delaware Estuary. In accordance with Enclosure 1 of the GL, Action A is a recommended surveillance technique and Actions B and C are recommended control techniques. Hope Creek currently performs most of these recommended actions.

Action Item A of Enclosure 1 - Hope Creek inspects its Service Water intake structure with a diver semi-annually. The existing inspections primarily focus on silt accumulation and do not direct the diver to specifically inspect for biofouling. The work standard will be revised to provide guidance on biofouling inspection and removal.

Action Item B of Enclosure 1 - Hope Creek continuously chlorinates service water with sodium hypochlorite to a level of 0.2 - 0.5 mg/l, measured as TRC. This chlorination practice has been in-effect since plant startup. Chlorination is in-service year round, including refueling outages. The chlorination program has effectively inhibited the population growth of marine macro-organism as verified by subsequent system inspections conducted in conjunction with maintenance activities.

Action Item C of Enclosure 1 - Hope Creek has several dead legs (Service Water makeup to: SACS, Fuel Pool, Residual Heat Removal and Emergency Fire Protection). These dead legs will be reviewed and inspection/flushing instituted as appropriate. All associated safety related flow paths will be tested or inspected as outlined in our response to Item 2 or 3 of the GL. The Hope Creek Service Water system is designed such that cooling loops would not typically be placed in lay up.

In summary, the existing practices and procedures at Hope Creek meet the intent of GL 89-13 and the recommended actions of Enclosure 1 with the exception of inspection/removal of macro-organisms. Existing work standards for intake structure

inspection will be revised to incorporate biofouling inspection and cleaning guidelines. A procedure for inspection/flush of the indicated dead legs will be generated. These changes will be implemented prior to the completion of the third refueling outage (3/91).

ITEM 2

Conduct a test program to verify the heat transfer capability of all safety related heat exchangers cooled by service water.

SALEM

Salem currently performs a number of Technical Specification surveillance testing activities to demonstrate the operability of the Service Water system. In addition, many of the safety-related heat exchangers that are cooled directly by service water are opened and inspected on a regular basis. However, testing is not presently performed for the specific purpose of determining heat transfer capability.

Salem has reviewed existing practices and procedures regarding heat exchanger testing and inspection. Based on this review, the need to develop a comprehensive Heat Exchanger Performance Monitoring Program for the Service Water system has been identified.

The program to be developed and implemented will include heat exchanger testing, monitoring and inspection. The procedures necessary to support heat exchanger testing, monitoring, cleaning, inspection and trending will be developed as required. Procedures will include acceptance criteria and recommended actions for unacceptable results.

The heat exchanger testing program will be developed utilizing the Heat Exchanger Performance Monitoring Guideline published by EPRI/SWWG and meet the intent of the recommendations specified in GL 89-13 and Enclosure 2 of that document.

Heat exchangers will be tested to determine the actual heat removal rate whenever practical and possible, to ensure that the heat exchanger is capable of performing its design function. When a test to determine actual heat transfer rate cannot be performed due to heat exchanger design, unavailability of adequate heat load, or statistical significance of test results; an alternate method of ensuring heat exchanger operability will be employed. The alternate test method will require the recording and trending of important system parameters (i.e. flow, temperature, pressure, etc.). Baseline values for selected system parameters will be established after the heat exchanger is opened, inspected, and cleaned (if necessary).

The "Service Water Heat Exchanger Performance Monitoring Program" will require inspections in addition to testing. The procedures/practices necessary to support these inspections will be developed and implemented. All of the safety-related heat exchangers cooled directly by service water will be inspected as part of the initial test program, with the exception of the Containment Fan Coil Units (CFCU). Each Salem Unit has five CFCUs. Each CFCU is comprised of twelve individual water boxes. Because of the CFCU cooler/piping arrangement, inspections are resource intensive efforts that take place inside containment. Therefore, a sample of CFCU water boxes (25-35% of the 60 total) will be inspected during the initial inspection program. Sampling will be adjusted based on inspection results.

The inspection program will be developed and implemented, including initial inspection activities, prior to the completion of Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

Most of "Salem's Service Water Heat Exchanger Performance Program" will be developed and implemented, including initial testing activities, prior to the completion of Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91). Numerous instrumentation hardware modifications (i.e. flow meters, pressure taps, thermowells) are being incorporated into the Service Water system. Salem has a major Service Water Improvement Project in progress during which most of the service water pipe is being replaced. Instrumentation hardware modifications are planned for installation in conjunction with the pipe replacement effort. The initial testing program will utilize existing instrumentation and satisfy all the testing requirements. Expanded testing may be implemented after the additional instrumentation is installed.

HOPE CREEK

The heat exchanger testing program at Hope Creek follows the guidance contained in the Heat Exchanger Performance Monitoring Guidelines published by EPRI/SWWG and meet the recommendations specified in GL 89-13 and Enclosure 2 of that document.

Hope Creek currently has a procedure that is used to verify heat exchanger capability on the (4) SACS heat exchangers cooled by Service Water. Previous test results indicate that system modifications are necessary to support testing, and that the test frequency should be adjusted.

Proposed hardware modifications include (but are not limited to) increasing the number of temperature sensors installed in the Service Water and Safety Auxiliary Cooling systems, and upgrading selected temperature sensors to a more sensitive type. These modifications will be implemented on "B" loop and "A" loop during the system inspections and piping modifications scheduled during the third refueling outage (3/91) and fourth refueling outage (10/92) respectively.

Monthly heat exchanger testing is currently scheduled. Performing this test during periods of extreme cold weather can result in rapid cooldown of the SACS, with the potential for unit trip. Therefore, Hope Creek is planning to conduct an annual test between March and May. This revised test frequency will ensure more accurate test data and minimize the impact on plant operations. The test procedure will be revised by April 15, 1990.

ITEM 3

Ensure by establishing a routine inspection and maintenance program for open-cycle service water system piping and components that corrosion, erosion, protective coating failure, silting and biofouling cannot degrade the performance of the safety-related systems supplied by service water.

SALEM

Salem has implemented an extensive service water piping and component inspection program. The need for service water piping inspection was identified during the first fuel cycle on Unit 1. Initial inspections concentrated on the identification of pipe wall thinning in areas that were subjected to a high degree of erosion/corrosion. Additional operating experience resulted in an expanded program to include pipe lining damage, silt accumulation and biofouling debris.

Most of Salem's inspection activities are preventive maintenance recurring tasks. These inspections include, but are not limited to, the following:

* Inspection for and repair of lining damage in piping subjected to a high degree of erosion/corrosion.

* Inspection for and repair of cavitation damage on various control valves.

* Inspection/repair of rubber expansion joints.

* Inspection, cleaning, testing and repair of various heat exchangers.

In addition to the recurring inspection activities, the Engineering Department identifies other areas of the Service Water system that require inspection prior to each refueling outage. A new Field Directive is issued prior to each refueling outage identifying specific inspection requirements. These

additional inspections are determined by experience gained during previous inspections at Salem, Nuclear Industry information and potential problems identified during the operating cycle. Listed below are some examples of previous inspection activities specified by the Engineering Department.

* Inspection/repair of flow control valves and associated downstream piping.

* Flushing of specific low/no flow deadlegs that were susceptible to a high degree of silt accumulation.

* Inspection/repair of intake structure piping and MOVs.

* Inspection of buried yard piping with divers and video/photo equipment.

* Inspection/repair of service water strainers.

* Inspection of check valves.

* Inspection/removal of macrofouling debris.

* Inspection/test for microbiologically influenced corrosion (MIC).

* Inspection/removal of silt accumulation.

* Small bore (i.e. vent, drain, instrument tap) inspection.

A major contributor to improved service water system reliability was the implementation of a continuous chlorination program. Salem was plagued by macrofouling during the early years of operation. As a result, most of the initial inspection activities involved inspection for and removal of macrofouling debris. Continuous chlorination has virtually eliminated the need for macrofouling inspection/cleaning activities.

MIC inspections and lab studies were performed throughout 1987 on the evidence of MIC attack (specifically, nodules associated with pitting in the Service Water piping). Although we have confirmed the presence of MIC, our inspections indicate that the degree and severity has not impaired system operability.

Salem continues to make hardware changes to improve system reliability and reduce the need for an extensive inspection program. These design improvements include:

* Replacement of control valve downstream piping with stainless steel removable spools.

* Replacement of service water strainers with high efficiency type strainers constructed of better performing materials.

* Replacement of all large bore motor-operated soft seat butterfly valves in the Service Water intake structure, with aluminum bronze Jamesbury valves.

* Retube/replacement of most heat exchangers (room coolers retubed with AL6X, all Component Cooling heat exchangers retubed with titanium, all CFCUs replaced with AL6X, all Chiller Condensers replaced with redesigned units of titanium).

* Elimination/replacement of most rubber expansion joints.

Most of the existing metal service water piping is being replaced with 6% molybdenum stainless steel, as part of our Service Water Improvement Project. Upon completion of the project, further reductions in inspections are anticipated.

Salem intends to incorporate those inspections previously identified by the Engineering Department into the managed maintenance system database. Inspection work orders will be generated automatically on a predetermined frequency. The database will be updated as necessary based on inspection results. The incorporation of these inspections into the work order database will improve system/component historical records and enhance the overall service water inspection program. Salem will generate the procedures and/or work standards to ensure that inspections are performed and the data recorded in a consistent and reliable manner. The procedures and database changes will be implemented prior to the completion of the Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91). A long term inspection frequency will be established based on previous inspection results.

In summary, Salem has in the past and continues to take an aggressive stance in the area of service water system inspection, repair and improvement. Hardware improvements are being implemented to further improve system reliability. The present inspection program is extensive. A variety of components (piping, valves, heat exchangers) are inspected for silt accumulation, biofouling, lining damage and erosion/corrosion. Procedure and database upgrades will enhance the overall inspection program. It is our intent to continue to reduce required inspections by identifying the root cause of problems discovered and aggressively correcting them.

HOPE CREEK

Hope Creek performs inspections when components are opened for maintenance. There is no formal routine inspection program currently in-effect. Hope Creek plans to implement a Service Water inspection program in accordance with the recommendations provided in GL 89-13.

The formalized routine inspection program will begin with the "B" loop inspection in conjunction with the piping replacement program during the third refueling outage (3/91), the "A" loop will be accomplished during the fourth refueling outage (10/92). Any deficiencies identified during these inspections will be subsequently evaluated and corrected. Hope Creek will continue to inspect one loop per refueling outage during the piping replacement program. A long term inspection frequency will be established upon completion of the piping replacement project and based on previous inspection results.

Hope Creek continues to make hardware changes to improve system reliability. A 1988 INPO Assessment Team identified the need to correct ventilation problems and upgrade the material condition of equipment in the traveling screen area of the intake structure. The following actions have been taken to address these concerns:

* Painting has been completed on all metallic, galvanized and concrete surfaces in the upper level of the traveling screen room. Painting of the lower level is scheduled to be completed by 3/31/90.

* 25 Service Water leaks have been identified and corrected during the last two years.

* Electrical heaters in the traveling screen area have been replaced.

* Enclosures have been installed around the traveling screens to reduce water spray into the intake structure and the associated equipment corrosion.

In addition, several significant maintenance activities are presently scheduled for completion. These activities include:

* Addition of a "B" loop outlet header standpipe.

* Replacement of BIF butterfly isolation valves with a more reliable valve design.

* Replacement of selected sections of "B" loop piping with 6% molybdenum stainless steel (AL6XN or equivalent).

Completion of the valve and piping replacement programs will be driven by availability of parts and the system outage schedule.

Specific inspections have not been conducted at Hope Creek to detect the presence of MIC attack. Maintenance related inspections have indicated the presence of MIC, however, the degree and severity has not impaired system operability.

Hope Creek intends to incorporate additional inspection work standards into the recurring task database. Inspection tasks will be generated automatically on a predetermined frequency. The database will be updated as necessary based on inspection results. The procedures and database changes will be implemented prior to the completion of the third refueling outage (3/91).

In summary, Hope Creek has in the past and continues to implement hardware improvements to further improve Service Water system reliability. A formal inspection program will be implemented to address silt accumulation, biofouling, lining damage and erosion/corrosion. Procedure and database upgrades will support the inspection program.

ITEM 4

Confirm that the Service Water system will perform its intended function in accordance with the licensing basis for the plant.

SALEM/HOPE CREEK

This item contains three specific actions that must be accomplished to fully confirm that the system meets its intended function.

The first part deals with an examination of the licensing/design basis for each applicable Service Water system. Adequate confirmation does not require reconstitution of the design basis, but rather that the licensing/design basis of the system(s) be available to compare against the as-built condition. PSE&G is reviewing the design basis at Salem and Hope Creek stations as part of our Configuration Baseline Documentation (CBD) Project. Salem Service Water systems (Service Water and Component Cooling Water) CBDs are currently in draft form awaiting PSE&G review and approval. Hope Creek Service Water systems (Service Water and SACS) CBDs are scheduled for transmittal to PSE&G in draft form by 12/90. Any open items associated with the preparation of these CBDs are documented and prioritized according to their safety significance. Safety significant items are expeditiously resolved.

The second part of this item deals with a review and confirmation of the existing system's ability to perform the required safety function in the event of a single active failure. Initial system design at Salem and Hope Creek met the design criteria in-effect at that time. Subsequent modifications were reviewed for their impact on system design, including single active failure. Salem and Hope Creek will conduct reviews to confirm their Service Water systems ability to perform as required in the event of a single active component failure. These reviews will be accomplished by the completion of Salem Unit 1 ninth refueling outage (10/90), Salem Unit 2 sixth refueling outage (11/91) and Hope Creek third refueling outage (3/91).

The final element is a recent system walkdown inspection, to ensure that the as-built system is in accordance with the appropriate licensing basis documentation. PSE&G believes that the Service Water systems at Salem and Hope Creek are properly configured and in agreement with the design basis. PSE&G does not intend to conduct full system as-built verification walkdowns. Rather, the CBD project requires that walkdowns be accomplished for those situations where a conflict exists between reference documents, or, uncertainty exists during the preparation of the CBDs. Any discrepancies noted during these processes are documented, prioritized and resolved.

ITEM 5

Confirm that maintenance practices, operating and emergency procedures, and training that involves the Service Water system are adequate to ensure that safety-related equipment cooled by the Service Water system will function as intended and that operators of this equipment will perform effectively.

SALEM

Salem implemented specific work standards in August 1989 for all station employees, as part of an effort to ensure procedure adherence, improve attention to detail and reduce personnel errors. All Salem employees have been trained on these standards and each received a copy of the Salem Handbook of Standards.

Operating Procedures - Operating and Emergency procedures have been reviewed in light of Salem and industry-wide Service Water historical problems. No deficiencies were identified at this time. Specific procedures will be developed or modified to support the testing activities discussed in response to item 2 above. Additionally, any deficiencies in existing procedures identified during the implementation of actions associated with items 1 thru 3 will be resolved.

Maintenance Practices - Maintenance is performed on the Service Water system in accordance with approved procedures that comply with established work standards and the QA Program. Procedures address major system components and specific activities such as repair of pipe flanges and application of coatings to lined pipes. Specific procedures will be developed and implemented to support the testing, monitoring, cleaning, inspection and trending activities discussed in response to items 1 thru 3 above. Additionally, any deficiencies identified in existing procedures during the implementation of testing, monitoring, cleaning and inspection will be resolved.

Training -

Operations — Service Water and Component Cooling system training is provided in the initial training programs for both licensed and non-licensed operators. This training

includes classroom lectures, qualification card completion and, for licensed operators, simulator sessions utilizing Abnormal and Emergency procedures. Refresher training and industry events are provided on a cyclic basis in the non-licensed and licensed operator requalification programs.

Maintenance — Service Water and Component Cooling system training is provided to technicians during Training Module 0102. Specific components such as pumps, traveling screens, piping and heat exchangers are covered in sufficient depth for maintenance technicians.

Technical — Service Water and Component Cooling system training is provided in the initial training program for System Engineers.

Supervisors — All station supervisors receive continuing training which includes industry events and significant industry concerns.

HOPE CREEK

In September 1987, a Service Water Safety System Functional Review (SSFR) was completed by the Hope Creek Onsite Safety Review Group and Cygna Energy Services. The SSFR focused on operating and maintenance problems identified by the NRC during their inspections/reviews at other stations. The Hope Creek reviewers observed a comprehensive program of maintenance, problem identification, root cause analysis and training.

Operating Procedures - Hope Creek has reviewed Operating and Emergency procedures for the Service Water and Safety Auxiliary Cooling systems in accordance with the recommendations of GL 89-13. The procedures were found to be adequate with the exception of Abnormal Procedure -"Service Water Malfunction" and the Alarm Response Procedure for "Service Water Trouble". The Abnormal Procedure is being revised to include the steps to be taken in response to a loss of a Service Water Pump due to reed intrusion. The Alarm Response Procedures are being revised to reference Abnormal Procedure - "Service Water Malfunction". These procedural changes will be implemented by 4/15/90. Additionally, any deficiencies in existing procedures identified during the implementation of actions associated with items 1 thru 3 will be resolved.

Maintenance Practices - Maintenance is performed on the Service Water system in accordance with approved procedures that comply with established work standards and the QA Program. Procedures address major system components and specific activities.

Procedures will be developed and implemented to support the monitoring, cleaning and inspection activities discussed in response to items 1 thru 3 above. Additionally, any deficiencies identified in existing procedures during the implementation of testing, monitoring, cleaning and inspection will be resolved.

Training -

Operations	Service Water and SACS training is provided in the initial training programs for both licensed and non-licensed operators. This training includes classroom lectures, qualification card completion and, for licensed operators, simulator sessions utilizing Abnormal and Emergency procedures. Refresher training and industry events are provided on a cyclic basis in the non-licensed and licensed operator requalification programs.
Maintenance	Service Water and SACS training is provided to technicians during Training Module 0102. Specific components such as pumps, traveling screens, piping and heat exchangers are covered in sufficient depth for maintenance technicians.
Technical	Service Water and Component Cooling system training is provided in the initial training program for System Engineers.
Supervisors	All station supervisors receive continuing training which includes industry events and significant industry concerns.

Procedure generation/modification necessary to support our response to items 1 thru 3 above will be implemented by the completion of Salem Unit 1 ninth refueling outage (10/90), Salem Unit 2 sixth refueling outage (11/91) and Hope Creek third refueling outage (3/91).

ATTACHMENT 2

COMMITMENTS/SCHEDULES
SALEM GENERATING STATION
DOCKET NOS. 50-272 AND 50-311

ITEM 1

Existing procedures for intake structure inspection will be revised to incorporate biofouling inspection and cleaning guidelines. A procedure for inspection/flush of the Emergency Air Compressor dead-leg will be generated. These changes will be implemented prior to completion of the Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

ITEM 2

The inspection program will be developed and implemented, including initial inspection activities, prior to the completion of Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

Salem's "Service Water Heat Exchanger Performance Program" will be developed and implemented, including initial testing activities, prior to the completion of Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

ITEM 3

Salem will generate the procedures and/or work standards to ensure that inspections are performed and the data recorded in a consistent and reliable manner. The procedures and database changes will be implemented prior to the completion of the Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

ITEM 4

Salem Service Water systems (Service Water and Component Cooling Water) CBDs are currently in draft form awaiting PSE&G review and approval. Salem will conduct reviews to confirm the Service Water systems ability to perform as required in the event of a single active component failure. These reviews will be accomplished by the completion of Salem 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

ATTACHMENT 2 (CONT.)

COMMITMENTS/SCHEDULES
SALEM GENERATING STATION
DOCKET NOS. 50-272 AND 50-311

ITEM 5

Procedure generation/modification necessary to support our response to items 1 thru 3 above will be implemented by the completion of Salem Unit 1 ninth refueling outage (10/90) and Unit 2 sixth refueling outage (11/91).

ATTACHMENT 3

COMMITMENTS/SCHEDULES
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

ITEM 1

Existing work standards for intake structure inspection will be revised to incorporate biofouling inspection and cleaning guidelines. A procedure for inspection/flush of dead legs will be generated. These changes will be implemented prior to the completion of the third refueling outage (3/91).

ITEM 2

Hope Creek is planning to conduct an annual test between March and May. The test procedure is presently undergoing revision. The revision will be completed by April 15, 1990. Instrumentation modifications will be implemented on "B" loop and "A" loop during the system inspections presently scheduled for the third refueling outage (3/91) and fourth refueling outage (10/92) respectively.

ITEM 3

The formalized routine inspection program will begin with the "B" loop inspection in conjunction with the piping replacement project during the third refueling outage (3/91), the "A" loop will be accomplished during the fourth refueling outage (10/92). Hope Creek intends to incorporate additional inspection work standards into the recurring task database. The procedures and database changes will be implemented prior to the completion of the third refueling outage (3/91).

ITEM 4

Hope Creek Service Water systems (Service Water and STACS) CBDs are scheduled for transmittal to PSE&G in draft form by 12/90. Hope Creek will conduct reviews to confirm the Service Water systems ability to perform as required in the event of a single active component failure. These reviews will be accomplished by the completion of the third refueling outage (3/91).

ITEM 5

Operations Abnormal Procedure "Service Water Malfunction" and Alarm Response Procedures for "Service Water Trouble" will be revised by 4/15/90. Procedure generation/modification necessary to support our response to items 1 thru 3 above will be implemented by the completion of the third refueling outage (3/91).