UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-324/81-26, 50-325/81-26

Licensee: Carolina Power and Light Company
411 Fayetteville Street
Raleigh, N. C. 27602

Facility Name: Brunswick Steam Electric Plant

Docket Nos. 50-324 and 325

License Nos. DPR-62 and 71

Appraisal at the Brunswick site near Southport, N. C.

Inspectors: C. M. McFarland for — 1-8-82
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Approved by: G. R. Jenkins — 1/8/82
G. R. Jenkins, Section Chief, EPOS Division — Date Signed

Summary:

Inspection on October 13 - 22, 1981

Areas Inspected:

This special announced appraisal involved 476 inspector hours on site in the performance of an Emergency Preparedness Appraisal.

Results:

In the areas inspected, no violations or deviations were identified. Significant appraisal deficiencies were identified in two areas: Emergency Plan Training/Retraining (Section 3.0) and Dose Assessment (Section 7.2)

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INTRODUCTION

The purpose of this special appraisal was to perform a comprehensive evaluation of the licensee's emergency preparedness program. This appraisal included an evaluation of the adequacy and effectiveness of areas for which explicit regulatory requirements may not currently exist. The appraisal effort was directed towards evaluating the licensee's capability and performance rather than the identification of specific items of noncompliance.

The appraisal scope and findings were summarized on October 22, 1981, with those persons indicated in the attachment to this report.

DETAILS

1.0 ADMINISTRATION (RESPONSIBILITY, AUTHORITY, COORDINATION QUALIFICATION CRITERIA)

The responsibility for emergency preparedness associated with the Carolina Power and Light Company nuclear plants has been formally assigned to the Director of Emergency Preparedness. This individual directs a staff of several persons and reports directly to the Vice President, Technical Services. The Director of Emergency Preparedness is responsible for aspects of emergency preparedness which include corporate emergency plans and procedures, interrelationships with Federal and State agencies, coordination of each plant's emergency planning, and assuring that exercises are conducted and documented.

The responsibility for emergency preparedness at the Brunswick plant has been formally assigned to the Assistant to the Plant General Manager, who has been designated as the Emergency Planning Coordinator. This individual reports directly to the Plant General Manager and he directs an assistant designated as the Emergency Preparedness Specialist. The responsibilities of the Emergency Planning Coordinator include the plant emergency plan and implementing procedures, interrelationships with local off-site agencies and organizations, coordination of exercises and drills, and coordination of emergency preparedness training for both plant personnel and off-site support agencies/organizations. These responsibilities are delineated in the Emergency Planning Coordinator's specific position description. This individual, however, has significant duties and responsibilities, in his capacity as Assistant to the Plant General Manager, other than those pertaining to emergency preparedness. The primary duties and responsibilities of the Emergency Preparedness Specialist, as delineated in his specific position description, coincide with those of the Emergency Planning Coordinator. The auditor noted that plant management and staff personnel are familiar with the identity and responsibilities of the Emergency Planning Coordinator and his assistant, the Emergency Preparedness Specialist. The auditor also noted that these two individuals interface directly with the Plant General Manager in the performance of their duties and do have the full support of the Plant General Manager.

Discussions with licensee representatives indicated that adequate coordination and cooperation exist between the corporate staff and plant staff in the area of emergency preparedness and that emergency preparedness receives adequate visibility and management support at both the corporate and plant levels. Discussions with individuals of various offsite agencies/organizations indicated that adequate coordination exists with these groups (see Section 6.0).

The Director of Emergency Preparedness, Emergency Planning Coordinator and the Emergency Preparedness Specialist have been formally selected and designated to provide expertise in disciplines that licensee management considers important in emergency preparedness. The auditor noted that specific position descriptions existed for each of these individuals which identified the responsibilities of these positions and the criteria for selection. Discussions with these individuals indicated that they possessed an understanding of the principles involved

in developing plans and procedures and had experience in aspects of emergency preparedness. The auditor noted that professional training has been and will be provided to these individuals, but that no specific training plan currently exists.

Based on the above findings, this area of the licensee's program appears to be acceptable.

2.0 EMERGENCY ORGANIZATION

2.1 Onsite Organization

The onsite emergency organization is described and illustrated in Section 3.2 of the Emergency Plan and is to be implemented in accordance with the Plant Emergency Procedures (PEP's). The Plan identifies the management positions, the individual positions, and the various emergency teams which are responsible for the functional areas of emergency response. The Plan describes the duties and responsibilities of the positions and teams and identifies, by title, persons who would fill these individual and team leader positions. The alternate and interim (if applicable) persons assigned these positions are also identified by title. The PEP's (2.6 series), specifically delineate the responsibilities and actions to be carried out by these positions and the teams. Appendix A.1 to the PEP's identifies the individuals and alternates by emergency organization title, and by name who are assigned the individual and team leader positions. The appendix also identifies potential team members by name and area of expertise. The appendix identifies office and home phone numbers of each person. The management structure for each of the functional areas of emergency response is well-defined.

In an emergency situation, the Shift Operating Supervisor assumes the duties of the Site Emergency Coordinator until the arrival of the Plant General Manager or a designated alternate. The Site Emergency Coordinator has the authority and responsibility to initiate any emergency actions within the provisions of the Emergency Plan, including protective action recommendations to authorities responsible for coordinating offsite protective actions. A line of succession for the Site Emergency Coordinator position and other management positions in the emergency organization has been developed. The emergency organization is quite similar to the normal plant organization, i.e., individuals are assigned emergency response responsibilities commensurate with their normal areas of expertise and responsibility.

The interfaces between and among the onsite functional areas of emergency activity are clearly specified in the Plan and applicable PEP's. Discussions with licensee representatives indicated that the interfaces and respective areas of responsibility are understood by personnel in the emergency organization.

Based on the above findings, this area of the licensee's program appears to be acceptable.

2.2 Augmentation of Onsite Emergency Organization

The site emergency organization is augmented by personnel from the corporate staff located in Raleigh, N. C. These personnel provide for actuation of the Emergency Operations Facility and actuation of the Corporate Emergency Operations Center (at Raleigh). The augmented organization is described in the Emergency Plan and the Corporate Emergency Plan. The Emergency Plan identifies the key positions, functional descriptions and individuals and alternates, by title, who make up the EOF organization. The Plant Emergency Procedures (2.6 series) specifically delineate the duties and responsibilities of the key persons in the EOF organization. The Corporate Emergency Plan and associated implementing procedures identify the key positions, functional descriptions and individuals and alternates, by title, who make up the corporate EOC organization. The licensee's augmented emergency organization provides capability in all functional areas of emergency response. The functions to be performed by the individuals in the augmented organization are similar to the respective functions performed by these individuals in the licensee's normal organization. The augmented emergency organization is directed by the Emergency Response Manager, who has overall responsibility for the management of and recovery from the emergency. The licensee has provisions for continuous operation of the emergency organization for a protracted period. In reviewing the emergency plans, the auditor noted that modifications have been made to the augmented organization as reflected in Revision 2 to the Emergency Plan, but have not yet been incorporated into the Corporate Emergency Plan.

Based upon discussions with licensee representatives and observations of the recent emergency exercise, it appears that timely augmentation of the normal site (i.e., shift) organization can be accomplished and that the onsite emergency organization, augmented by the corporate emergency organization, would provide support in the requisite areas. The auditor reviewed the emergency plans and discussed the roles of and interfaces between the onsite and corporate emergency organizations with licensee management. It appears that the authority, responsibility and interfaces of these organizations are defined and understood by the key individuals.

Additional assistance in coping with emergencies would be provided by the NSSS vendor, contractors, and INPO. Support by local agencies/organizations for services such as medical, ambulance, firefighting and law enforcement has been arranged and letters of agreement are included in the Emergency Plan. A review of the Plan and discussions with licensee and these support groups verify that the agreements for support are established and understood (see Section 6.1).

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

Revise the Corporate Emergency Plan to be compatible with Revision 2 of the Emergency Plan pertaining to the augmented emergency response organization (50-324, 325/81-26-1).

3.0 EMERGENCY PLAN TRAINING/RETRAINING

3.1 Program Established

The status of the Emergency Plan training and retraining program was reviewed and discussed with licensee representatives, including the Nuclear Training Specialist. In general, the training requirements for the emergency response organization are contained in the Emergency Plan, Section 6.1.1. There is no other training program documentation nor implementing procedure that would provide for initial specialized and annual refresher training for those individuals who may be assigned to the onsite emergency organization. Employees that participated in the drills and exercises to date, have been trained for the drills and exercises. However, there is no program for training as required by 10 CFR 50 Appendix E, Item IV.F, Training.

Initial training materials for all designated emergency organization personnel and for non-essential personnel have been completed by Stafco Incorporated with assistance from licensee emergency preparedness and training personnel. Lesson plans and training outlines were developed by Stafco for the initial training and these have been turned over to the CP&L staff. Records of initial training for all groups of emergency personnel including offsite support groups were reviewed and appear to be complete; however, the mechanism to insure retraining of specific personnel is not yet in place.

The need for establishing a formal Emergency Plan training program had been recognized by licensee corporate and plant management but had yet to be accomplished.

Based on the above findings, the following deficiencies must be corrected to achieve an acceptable program:

Develop and approve a program to ensure that an adequate training and retraining program is established for all emergency response personnel and general employees (50-324, 325/81-26-2). The program should include:

Lesson plans and lesson outlines to include site specific information, references to appropriate Emergency Plan sections and implementing procedures.

A program to ensure that all individuals designated as part of the emergency organization receive periodic training pertinent to their assigned functional positions in the emergency organization.

A procedure to provide for periodic auditing and updating of the emergency training program by an independent source.

A procedure to ensure appropriate training and periodic retraining for all corporate personnel who are assigned to the augmented emergency response organization.

3.2 Program Implementation

Initial training in emergency preparedness has been provided to all site, corporate and non-licensee support organization personnel involved in the Brunswick emergency response organization. As reflected by the recent full-scale

emergency exercise conducted at Brunswick and as discussed in other sections of this report, the initial training effort has been adequate. However, there has not yet been a formal training and retraining program established (see Section 3.1).

Based on the above findings, the following deficiency must be corrected to achieve an acceptable program:

Implement an Emergency Plan training/retraining program (Section 3.1) (50-324, 325/81-26-3).

4.0 EMERGENCY FACILITIES AND EQUIPMENT

4.1 Emergency Facilities

4.1.1 Assessment Facilities

4.1.1.1 Control Room (CR)

There is one Control Room for both units located in the Control Building at the 50' elevation. The Control Room has a complete set of emergency plans and plant emergency procedures. Common readouts are readily available for appropriate area and process radiation monitors and nonradiological monitors. Meteorological parameters can be accessed from the plant computer. Communications are provided as described in the Plan and procedures.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.1.1.2 Technical Support Center (TSC)

The TSC is located outside the protected area in the Document Control Building. The TSC is not within a two-minute walk of the Control Room since one must pass through the security point and frisking stations. The distance between the TSC and Control Room precludes face to face interaction between personnel responsible for Control Room and TSC activities.

The TSC has adequate working space for all assigned personnel. All documents that may be needed during an emergency are located in the same building as the TSC and are accessible.

The TSC is not shielded and is not as radiologically habitable as the Control Room. The licensee plans to improve the ventilation system by adding charcoal and HEPA filters. In addition, radiation monitors (area and atmosphere) are to be installed to monitor the TSC's habitability.

The Emergency Plan states that a Data Acquisition System (DAS) which collects plant data and displays it on a CRT is planned for installation in the TSC.

There are provisions for dedicated and redundant individual voice communications between the TSC and the Control Room, EOF and NRC. The ENS telephone extension

is installed but not currently operable in the TSC. A ringdown system is set up as a communication link between the TSC and local government response agencies. Radio communication capability exists between the TSC and field monitoring teams.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following items should be considered for improvement:

The ENS telephone extension should be operable (50-324, 325/81-26-4).

Provisions should be made to allow personnel traveling from the TSC to the Control Room to do so in a timely manner (50-324, 325/81-26-5).

The TSC should be as habitable as the Control Room. Shielding should be added and HEPA and charcoal filters installed in the ventilation system (50-324, 325/81-26-6).

4.1.1.3 Operations Support Center (OSC)

The Emergency Plan states that the OSC is located in the Service Building. Discussions with licensee representatives indicated that the entire Service Building is designated as the OSC to avoid having to store all the emergency equipment in the lunch room, which is where OSC personnel assemble. The location of stored emergency equipment used in the OSC is not identified in the Plan or procedures.

The OSC is a reporting place for emergency support personnel and is a dispatching location of personnel supporting the emergency activities. The OSC is large enough to accommodate all assigned personnel. Primary and backup communication systems are provided to the TSC and Control Room. A backup OSC has not been designated; however, licensee representatives stated that a backup OSC is under consideration.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following areas should be considered for improvement:

Specific areas or rooms in the Service Building which are to be used for OSC purposes should be identified (50-324, 325/81-26-7).

A backup OSC (on-site or near-site) should be established (50-324, 325/81-26-8).

4.1.1.4 Emergency Operations Facility (EOF)

The near site EOF is located just outside the protected area in the Training Building. According to the Plan, the EOF is established to provide working space and communications for the Emergency Response Manager and his staff. The EOF is also the primary interface point for CP&L and off-site support personnel as well as coordination for off-site environmental assessment. In the event of a site evacuation, the Brunswick County EOC will serve as a backup EOF.

The EOF provides adequate space for assigned personnel. The Emergency Plan and Procedures as well as other needed documents are stored in the EOF. Status boards are available and an aerial map is posted.

Radiological survey equipment, protective supplies, and decontamination supplies are not stored in the EOF. Licensee representatives stated that all such supplies are located in the TSC which is adjacent to the EOF.

There are provisions for dedicated and redundant voice communications in the EOF to the TSC and other locations. The ENS telephone extension is installed but not currently operable.

The present EOF does not meet NUREG-0696 habitability requirements. The construction of a new EOF to be located between 10 and 20 miles from the TSC is being considered.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following items should be considered for improvement:

The ENS phone should be operable (50-324, 325/81-26-9).

Radiological equipment, decontamination supplies and emergency protective supplies should be stored in the EOF (50-324, 325/81-26-10).

Improvement of EOF habitability to meet NUREG-0696 criteria (50-324, 325/81-26-11).

4.1.1.5 Post-Accident Coolant Sampling and Analysis

The auditor interviewed the Environmental and Chemistry (E&C) Supervisor, the Project Specialist - E&C, the Counting Room Foreman, and an E&C Technician, concerning post-accident reactor coolant sampling and analysis. The licensee has performed a design and operational review of post-accident reactor coolant sampling. The CP&L staff has procured and is scheduled to complete the installation, during the 1982 refueling outages for Units 1 and 2, of a remote sampling system that will allow a post-accident reactor coolant sample to be taken. The system appears to be in accordance with NUREG-0737 guidelines and is "as low as reasonably achievable" (ALARA). This system will be located in an area called the "breezeway" on the 20 ft. elevation immediately adjacent to the Reactor Building.

Until installation of the sampling system is completed, the licensee plans to utilize the existing sampling points (sample panel located on the 50 ft. level of the Reactor Building). At this time, a post-accident primary coolant sample could be taken, but with the postulated high activity level of the coolant running through the sample lines, the technicians taking the sample would be exposed to very high levels of radiation.

The licensee's modification of the existing routine coolant sampling capability included the installation of an unshielded sample line extension which terminated at a partially shielded five gallon carboy located behind the sampling hood.

This sample line extension, which contained a rubber septum, would be connected (via rubber hose) to the outlet of the normal reactor coolant sample line. Attention had been given by the licensee to the containment of sample off-gases, however, the lack of shielding on the sample line extension, as well as other unshielded sample lines located in the immediate vicinity, significantly detracted from the usefulness of this station in an emergency situation entailing any degree of fuel melting. Furthermore, it is possible that during such an emergency situation, the Reactor Building itself may not be habitable, thus precluding an entry for sample collection. If an entry is possible, the licensee has a lead pig available to be used in transporting the 10 ml sample. Special handling tools were available for handling the highly radioactive sample.

The sampling area was monitored by a permanently installed area radiation monitor (ARM); the readout and alarm function for the unit was located in the Control Room. Health physics personnel will be involved in the preplanning of taking a post-accident sample, as well as providing continuous coverage (using a 0-1000 R/hr. instrument having an extendable probe) during the sample collection and analysis.

If the sample can be taken, sample measurement and analysis can be performed within 3 hours in the licensee's counting room (located in the Service Building and expected to be habitable). Backup counting capability is available via the licensee's mobile laboratory and other nearsite counting equipment (see Section 4.1.1.9).

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> Shielding of lines leading to the sample hood which are likely to contain high concentrations of radioactivity during an emergency, should be considered in order to maintain radiation exposures as low as reasonably achievable (50-324, 325/81-26-12).

4.1.1.6 Post-Accident Containment Air Sampling and Analysis

The auditor discussed post-accident containment air sampling and analysis with the individuals mentioned in Section 4.1.1.5. The interim post-accident containment atmosphere sampling capability is located on the 20 ft. elevation of the Reactor Building in the panel used for containment hydrogen and oxygen monitoring. A quick-disconnect fitting had been installed by the licensee to facilitate this sampling.

The interim containment air sampling system has no special shielding or other modification for accident situations other than the routine drywell continuous air monitor. No special provisions have been made for the collection of high level radioactive or particulate samples. In addition, the sample location may not be accessible during an emergency due to high radiation fields.

The CP&L staff has procured, as part of the post-accident sampling system discussed in Section 4.1.1.5, a containment sampling system which will permit the

analysis of noble gases, particulates, iodines and hydrogen in accordance with NUREG-0737 guidelines.

Discussion with licensee representatives indicated that a shielded container was available for use in transporting the sample. No remote handling tools were available for use in handling the sample.

The health physics personnel indicated that portable radiation monitoring would include use of a survey instrument having an extendable probe with a range up to 1000 R/hr. Appropriate protective clothing, dosimetry and respiratory equipment will be worn when samples are taken.

The post-accident containment air samples will be taken to the counting room for analysis. The counting room is expected to be usable following an accident, however, backup analytical capability is available via the licensee's mobile laboratory and other near-site counting equipment (see Section 4.1.1.9).

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> Provisions should be made such that a containment air sample can be taken under a full range of accident conditions. Shielding and/or modifications should be made such that radiation doses received by the personnel taking the samples are ALARA. In addition, consideration should be given to the handling and analysis of particulate and iodine samples from the drywell continuous air monitor (50-324, 325/81-26-13).

4.1.1.7 Post-Accident Gas and Particulate Effluent Sampling and Analysis

The auditor discussed post-accident gas and particulate effluent sampling and analysis with licensee representatives mentioned in Section 4.1.1.5. Aside from the addition of extended range noble gas (exposure rate) monitors on the plant stack and Turbine Building vents (see Section 4.2.1.2), the licensee has no special interim provisions for the collection and analysis of post-accident effluent samples. Presently installed radioiodine and particulate sampling capability for the plant stack and Turbine Building vents, the only release pathways which are likely to be operative following an accident, are presently being relied upon for accident monitoring as well. The licensee had apparently made no analysis, however, to determine whether the particulate filters and charcoal cartridges would contain sufficient activity to present significant handling and/or analysis problems.

According to licensee representatives, the airborne effluent monitoring system will be upgraded during the 1982 refueling outages for each unit. Monitoring systems capable of real-time monitoring of noble gas concentrations ranging from 1E-7 to 1E+5 uCi/cc and the collection of radioiodine and particulate samples is slated to be installed in a to be constructed shielded facility at the base of the stack, as well as near the Turbine Building vents. Particulate filters and charcoal/silver zeolite cartridges to be used for post-accident sample collection are located in a shielded housing with quick-disconnect fittings. The lack of real-time quantitative or semi-quantitative monitoring, however, may pose a

problem for sample analysis in that they may contain too much activity to be quantified (see Section 5.4.2.7).

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> A mechanism (monitoring device or administrative control) should be established to permit post-accident collection of particulate filters and charcoal/silver zeolite cartridges from the stack and Turbine Building vents prior to the accumulation of activity levels which are difficult, if not impossible, to quantify via gamma spectroscopy (50-324, 325/81-26-14).

4.1.1.8 Post-Accident Liquid Effluent Sampling and Analysis

The auditor discussed post-accident liquid effluent sampling and analysis capability with the licensee representatives mentioned in Section 4.1.1.5. No special facility modifications have been undertaken for post-accident liquid effluent sampling. Licensee representatives indicated that the Radwaste Building would be accessible following an accident and that post-accident radioactivity concentrations in the radwaste system would not be high enough to preclude the collection and handling of radwaste samples. Sample analyses would be performed in the Counting Room, with backup analytical capability as mentioned previously in Sections 4.1.1.5 and 4.1.1.6.

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> The need for special sampling equipment and sample station shielding should be reviewed in more detail to determine whether any improvements are needed in present liquid radwaste/effluent sampling capability (50-324, 325/81-26-15).

4.1.1.9 Off-site Laboratory Facilities

Off-site laboratory support is provided by the Harris Energy & Environmental Center (HEEC) in New Hill, N. C. HEEC will provide a mobile laboratory to be used for analysis of environmental samples and in-plant samples in the event the plant counting room becomes uninhabitable. The mobile lab will also be equipped to read TLD's. In addition, laboratory facilities are available at the HEEC and will be utilized during an accident. The HEEC is approximately a 3 hour drive from the Brunswick site. It is estimated that the mobile lab could be transported and be operational within 6 hours after being requested. The mobile lab would be set up next to the EOF.

Instrumentation in the mobile lab and the HEEC is dedicated for HEEC use (i.e., it is not taken from onsite facilities during emergencies).

Based on the above findings, the licensee's program appears to be acceptable.

4.1.2 Protective Facilities

4.1.2.1 Assembly/Reassembly Areas

When an area evacuation is called for, assembly areas will be designated over the P.A. system selected as appropriate for the situation. For a site evacuation the Plant Emergency Procedure (PEP-3.8.2) on Accountability designates the parking areas outside the training building and the construction area as the assembly areas. The assembly locations are used exclusively for accountability. Monitoring and decontamination is to be conducted as people are exiting to the assembly area. After accountability, personnel who may be required for Emergency Response would go to the OSC. Any equipment necessary for use in the assembly area would be obtained at its regular location. If conditions so required, an alternate assembly area, such as the training building, may be designated.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.1.2.2 Medical Treatment Facilities

The Medical Treatment/First Aid Room is located in the Health Physics area of the Service Building. It is easily accessible. First-aid equipment and supplies are available. A telephone and plant paging telephone are available. The decontamination room is nearby. If decontamination is necessary, it could be done in the decontamination room or in the Medical Treatment room. The drain from the shower runs to the Radwaste Building. Survey instruments and emergency dosimetry is available from the decon room and the dosimetry office across the hall. Procedures for medical treatment and decontamination are also available from Health Physics. This facility is maintained under the control of the Radiation Control Supervisor.

Stocks of Potassium Iodide are maintained at the Dosimetry office and with the TSC supplies in the Document Control Building. The Project Specialist - Radiation Control maintains the stocks. Control and administration of this drug would be in accordance with Plant Emergency Procedure 3.8.3.

This area was evaluated by inspection of the facility and discussion with the Radiation Control Supervisor.

Based on the above findings, this portion of the licensee's program appears to be acceptable.

4.1.2.3 Decontamination Facilities

The Decontamination Room is located in the Health Physics area of the Service Building. The facility is maintained under the control of the Radiation Control Supervisor. Two showers, five sinks and required supplies and equipment are available. The sinks and showers drain to the Radwaste Building. Fifty-five-gallon drums are available in each shower room and near the sinks for solid radwaste. Stocks of replacement clothing are maintained in the nearby Maintenance Building. A locked cabinet is maintained in the Decontamination Room for items of personal clothing that are required to be kept for decontamination.

Provisions are made for decontamination at the assembly/reassembly areas. Decontamination supplies and equipment are stocked in the Document Control Building (TSC) and in the Visitor's Center. Monitoring and decontamination are specified in plant procedures, (Section 5.4.3.4). Decontamination procedures are available in the Health Physics area for use in the Decontamination Room but are not provided in the Decontamination Kits at the TSC or Visitor's Center.

This area was evaluated by inspection of the facilities and discussion with the Radiation Control Supervisor.

Based on the above findings, this portion of the licensee's program appears to be acceptable; however, the following item is recommended for improvement:

> Copies of decontamination procedures should be provided with the decontamination kits at the TSC and Visitor's Center (50-324,325/81-26-16).

4.1.3 Expanded Support Facilities

The licensee has office space available for the expanded corporate contractor and non-licensee augmentation personnel that would be required for the emergency preparedness program. These offices are within the plant communications system described in Appendix A of the Plan and in PEP 3.1.2, "Communications Activities."

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.1.4 News Center

Provisions have been made for a news media center. As stated in the Emergency Plan, the center is comprised of temporary trailers located behind the near-site Visitor's Center. The licensee has arranged for use of the Hilton Hotel in Wilmington (about 30 miles distance) should the media needs exceed the capacity of the primary media center or should it become uninhabitable. The licensee is planning to build an EOF greater than 10 miles from the site which will include the permanent media center.

The licensee has provided for telephone service, electric supply to carry added TV load, copying equipment, P.A. system, audio-visual equipment and security at both the current primary and alternate media centers. The auditors noted that the size of the current primary media center is marginally adequate.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.2 Emergency Equipment

4.2.1 Assessment Equipment

4.2.1.1 Emergency Kits and Emergency Survey Instrumentation

The licensee maintains pre-positioned supplies and survey instruments for emergency use as specified in attachments to Procedure RC&T-0600. An inventory was conducted of the kits. The kits were located where specified and inventories were correct.

Xetex 302 and PIC-6A instruments are provided for the Reentry teams. The TLD system was recently changed and TLD finger rings are not yet in stock (though on order). If extremity monitoring is required, a TLD would be removed from its holder and taped to the extremity.

Field Environmental Monitoring Teams use Procedures RC&T-3215 and RC&T-3217 to estimate airborne iodine and particulate concentrations. Examination of the graphs show that specified minimum concentrations can be detected and measured. PIC-6A, RM-14, E-400, and E-520 instruments are available for the Environmental Monitoring Teams.

Contents of emergency kits are, in general, adequate. There is only one Environmental Monitoring Team Kit (in the Visitor's Center), but at least two teams would probably be deployed. Respiratory protection and protective clothing is not provided for the Environmental Monitoring Teams; the Environmental Foreman indicated that the mode of operation of the teams does not require respiratory protection. The auditor considers that lack of respiratory protection limits team operation and leaves them without a desired margin of safety. A copy of the inventory is not maintained in the emergency kit as required by PEP 4.2, Section 3.5.

Keys for each environmental monitoring point are carried by team members routinely and not required in emergency kits.

In-plant capability for detection of airborne iodine in the presence of noble gases is provided through the use of silver zeolite cartridges, which are available in emergency kits and in the Health Physics area of the Service Building.

Monthly operational checks are done in accordance with attachments to Procedure RC&T-0600. Calibration is done in accordance with RC&T Procedures for each instrument. Instrument calibration stickers were checked and records were checked for individual instruments in the emergency kits. Instruments are operationally checked daily and each calibration procedure makes provisions for removing faulty instruments from service.

Based on the above findings, this portion of the licensee's program appears to be acceptable; however, the following are recommended for improvement:

The necessary number of Emergency Environmental Monitoring Teams should be designated and a complete emergency kit set aside for each (50-324, 325/81-26-17).

Respiratory protection and protective clothing should be provided for each Emergency Environmental Monitoring Team (50-324, 325/81-26-18).

A copy of the emergency kit inventory should be maintained in each kit as required by PEP 4.2 (50-324, 325/81-26-19).

4.2.1.2 Area and Process Radiation Monitors

The auditor discussed area and process radiation monitors with licensee representatives. Area and Process Radiation Monitors are described in the Emergency Plan in Section 5.7. The Radiation Monitoring System is divided into four subsystems and is described in the Plan. If radiation levels should increase above the preset level, an alarm is initiated in the Control Room. Ranges and locations of the monitors are listed in the Plan.

Calibrations, detector efficiencies and source checks are performed according to Technical Specifications requirements. Calibrations are performed in accordance with Periodic Test Procedures. A sample of check and calibration procedures was reviewed.

Process and area monitors readouts to be used for accident classification dose assessment were observed in the Control Room. Monitors and meters are accessible to Control Room personnel and have appropriate alarm indicators.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.2.1.3 Non-Radiation Process Monitors

The auditor observed that the non-radiation process monitors described in the Plan as being necessary for emergency detection, classification and assessment (such as reactor coolant system pressure and temperature, liquid levels in the reactors and the suppression chambers, containment pressure and temperature, containment hydrogen and oxygen, flow rates, fire detection and steam leak detection instrumentation), had readouts located in the Control Room area and were operable. The seismic monitors for Units 1 and 2 had annunciators in the Control Rooms with monitoring equipment located in each reactor building. The auditor reviewed Periodic Test Procedures PT 25.2, PT 26.1P and PT 26.1PC relative to the functional checks and channel checks of the seismic equipment and discussed the instrumentation with CP&L technical staff.

The auditor reviewed EI 29, "Plant Shutdown from Outside Control Room", and observed the instrumentation and controls for the Post-LOCA remote shutdown of the reactor coolant systems at the remote shutdown station panels. The auditor also inspected the facilities and equipment related to the monitoring of the toxic gases used for water and waste treatment.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.2.1.4 Meteorological Instrumentation

Pursuant to the criteria in Regulatory Guides 1.23 and 1.97 and NUREG's -0654, -0696, and -0737, the auditor reviewed the current meteorological measurements

program. Meteorological measurements from a 105 m tower located about 500 m north of the reactor complex provide the basic parameters (i.e., wind speed, wind direction, and atmospheric stability) required by the emergency plan and procedures. Because accidental releases of radioactive material to the atmosphere may occur through a 105 m stack or through vents and building penetrations near ground level, wind speed and wind direction measurements are made at the 105 m and 10 m levels. Atmospheric stability is defined by the measurement of vertical temperature gradient between the 10 m and 105 m levels. At the time of the inspection, all instruments were operable and had been recently calibrated. Through remote interrogation by the plant computer, meteorological data from the onsite tower is available and readouts of the basic meteorological parameters are available in the control rooms for both plant units on a teletype which displays 15 minute averages of wind speed and wind direction at the 105 m and 10 m levels and a stability class once per hour. The most recent 15 minute averaged data are also available at any time by a simple coding of the computer. If the teletypes in the control rooms are not operable, meteorological data from the onsite tower can be accessed from another location in the reactor building.

Plant personnel check the meteorological measurements program daily, and a meteorologist at the corporate offices checks the reasonableness of the data each day. Calibration of the meteorological sensors is performed by corporate personnel at 6 month intervals, although electronic checks and calibrations are performed every 6 weeks. Written calibration procedures are maintained at the corporate offices, and a record of operability checks and maintenance activities is kept onsite. Maintenance of the sensors and electronics is performed as needed by corporate personnel, generally within 48 - 72 hours after a problem is identified. Data recovery for the primary system has been in excess of 95%.

Information on severe weather phenomena is to be provided by meteorologists at the corporate offices, but no written procedures for this function are available. Meteorologists are not on duty 24 hours each day and are not routinely available on weekends. The ability and availability of meteorologists at the corporate offices to provide information on severe weather phenomena for use by plant personnel should be described in detail, with specific information on the ability to do more than relay information from the National Weather Service and the capability to provide information outside of normal duty hours.

If the primary meteorological system is not operable, current plant emergency procedures do not contain provisions for obtaining representative real-time meteorological information for use in dose projections or decisions for protective actions. As described in PEP 3.4.1, if data from the onsite meteorological system are not available, wind speed and atmospheric stability are to be inferred from visual observations and wind direction is not even considered. The Emergency Plan, however, states that a backup source of representative meteorological data is available at the National Weather Service station at Wilmington, N. C.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following items are to be considered for improvement:

The provisions for obtaining a backup source of representative meteorological information should reflect access to real-time information with specific procedures for obtaining and utilizing the information and routine checks of communication (50-324, 325/81-26-20).

Provide for severe weather information to be available to the Control Room 24 hours per day (50-324, 325/81-26-21).

4.2.2 Protective Equipment

4.2.2.1 Respiratory Protection

Self-contained breathing apparatus (SCBA) units are reserved for emergency use as part of the Control Room Emergency Kit and the two Reentry Team Emergency Kits located at the Visitor's Center. In addition, there are 38 SCBA's onsite with 10 extra air bottles available.

The air bottles are currently refilled by a cascade system located in the Service Building. An alternate refilling system is available in the Fire Equipment Building.

The auditor believes that, in the unlikely event of both onsite refilling facilities becoming unusable due to high radiation levels, assistance could be obtained from other licensee installations before the on site air supplies are exhausted.

This area was evaluated by inspection of facilities and equipment and discussion with the Radiation Control Foreman.

Based on the above findings, this portion of the licensee's program appears to be acceptable.

4.2.2.2 Protective Clothing

Approximately 110 sets of protective clothing are reserved for emergency use. The locations are as specified in the attachments to Procedure RC&T-0600. Stocks were verified by inventories of the Emergency Kits.

The kits are located so that it is reasonably certain that the clothing would be accessible under emergency conditions. Protective clothing could also be obtained from regular in-plant stock and from storage facilities onsite.

Based on the above findings, this portion of the licensee's program appears to be acceptable.

4.2.3 Emergency Communications Equipment

Emergency communications are discussed in PEP 3.1.2, "Communications Activities" and PEP 3.1.3, "Use of Communications Equipment." The auditors reviewed these procedures and held discussions with licensee representatives concerning emergency communications in the Control Room, TSC, OSC and EOF. During an

emergency, the following communication systems are available for use: plant page system, PBX telephone system, radio transceivers, emergency radio system, emergency phone system and the corporate emergency communications network.

TSC telephones are stored in the TSC and plugged into terminals which are pulled down from ceiling panels. A similar system is used in the EOF. The applicable ceiling panels are marked with thumbtacks for easy location of the telephone terminals.

Provisions have been made to routinely check the operability of emergency communications equipment.

Dedicated ringdown telephone lines are provided to the two counties within the plume exposure EPZ. There are also communication lines to the State Highway Patrol in Raleigh, N. C. and the Sheriff's offices in Wilmington, N. C. and Bolivia, N. C. There is 24 hour per day capability to notify the NRC, state and local authorities.

Information on plant emergency alarms is presented during the General Employee Training. The three alarms are Fire, Local Evacuation and Site Evacuation. There are areas where the Evacuation Alarms cannot be heard. These areas are posted and security will notify personnel in the areas upon activation of the alarms.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.2.4 Damage Control/Corrective Action and Maintenance Equipment and Supplies

The Emergency Plan provides for personnel and material for damage control, corrective action, and maintenance. Emergency procedures PEP-2.6.2, "Emergency Repair Director," and PEP-2.6.11, "Damage Control Team Leader," are used during an emergency. Normal maintenance and repair, equipment and personnel are to be used and both appear to be adequate. Existing maintenance supplies were reviewed and are considered adequate.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.2.5 Reserve Emergency Supplies and Equipment

Adequate quantities of reserve supplies and equipment appeared to be available on-site. An inventory is conducted weekly identifying these items in service, under repair, in stock, and unlocated. There are predetermined minimum stock levels on all items to initiate procurement action. As necessary, additional supplies may be obtained from other CP&L facilities.

Based on the above findings, this area of the licensee's program appears to be acceptable.

4.2.6 Transportation

No vehicles are exclusively set aside for supporting emergency needs. Company vehicles are made available to the Environmental Monitoring Leader in the event of an emergency and several of these vehicles are equipped with four-wheel drive. One four-wheel drive vehicle is normally designated for environmental monitoring. Ambulances, if needed, are to be provided by the Southport Volunteer Rescue Squad. If necessary, a helicopter from the National Guard or small planes from the Civil Air Patrol are available through agreements with the State.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.0 EMERGENCY IMPLEMENTING PROCEDURES

5.1 General Content and Format

The Plant Emergency Procedures (PEP's) were developed specifically for implementing the Emergency Plan.

The PEP's are organized in four sections. The first describes immediate actions in the event of an emergency. The specific emergency action levels (EAL's) are listed and individual procedures identify the applicable actions for an Unusual Event, Alert, Site Area Emergency and General Emergency. The second section details the responsibilities and appropriate actions of key emergency personnel. The third describes various responsibilities and actions of the emergency response organization. The fourth includes administrative procedures and reference information applicable to emergency planning.

The auditors reviewed the procedures which implement the Emergency Plan with respect to their content and format and discussed the procedures with licensee representatives. Overall, these procedures were found to be adequate regarding the assigned responsibility for each area, prerequisites and conditions modifying specified actions, references to related procedures and guidelines for specific actions to be taken relative to the emergency action levels and accident classification. Except for those specific comments noted in the following sections, the procedures are considered adequate as to form and content.

5.2 Emergency, Alarm and Abnormal Occurrence Procedures

The Plan and the station emergency operating procedures were reviewed relative to the areas of abnormal and emergency operations and these items were discussed with licensee representatives.

The Plant Emergency Procedures (PEP) have been developed for emergency and abnormal conditions which define the steps the station operators are to take in order to mitigate or respond to the emergency situations. These procedures have been developed which implement the Plan (Section 2, "Emergency Classification," Section 4, "Emergency Measures," and Section 5, "Emergency Facilities and Equipment"). Procedures provide for the emergency detect on (i.e., EAL recognition, PEP-2.1, "Initial Actions"), and classification of the emergency situa-

tion (PEP-2.2, "Unusual Event", PEP-2.3, "Alert", PEP-2.4, "Site Emergency", PEP-2.5, "General Emergency"). In the event of an emergency, plant operators and supervisors utilize emergency procedures in operation of the plant and the Shift Supervisor utilizes the PEP-2.1 through 2.5 series of procedures in accomplishing the station response to the emergency. Corrective actions to mitigate the circumstances of various levels and types of emergencies are given in the plant's Emergency Instructions (EI), tabulated as Table 4.3-1 in the Plan. References to the PEP's and the EI's are noted throughout this report.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.3 Implementing Instructions

The Plan implementing procedures PEP-2.2, 2.3, 2.4, 2.5, provide a procedure for each class of emergency specified in the Plan, Sections 2 and 4. These procedures identify the various emergency action levels (EAL's) associated with each class of emergency and specify the actions to be considered or implemented for each emergency class. The procedures are written for use by the Site Emergency Coordinator and orchestrate the implementation of additional, more specific procedures which have been developed to implement the Plan. The Plan, Section 3, identifies and clearly defines the scope of authority and responsibility vested in the Site Emergency Coordinator as well as the duties and responsibilities of other members of the emergency response organization.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.4 Implementing Procedures

5.4.1 Notifications

The auditor reviewed applicable sections of the Emergency Plan and implementing procedures: PEP 2.2, "Emergency Control - Unusual Event"; PEP 2.3, "Emergency Control - Alert"; PEP 2.4, "Emergency Control - Site Emergency"; PEP 2.5, "Emergency Control - General Emergency"; PEP 3.1, "Communications Procedures"; PEP 3.2, "Augmentation and Mobilization Procedures". For each class of emergency there is specified a list of individuals and agencies/organizations to notify. Immediate notifications are the responsibility of the Site Emergency Coordinator in conjunction with a designated Emergency Communicator and are incorporated in the "Actions" section of the emergency procedures. The equipment to be used and the phone numbers for the mandatory contacts are included in the emergency procedures. Alarms, announcements, and pre-formatted messages are used for initial notifications. Authentication of the initial notifications to State and local agencies is accomplished by the respective agency.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.4.2 Assessment Actions

The Emergency Plan, Section 5.7, and Plant Emergency Procedures 2.1, 3.4, 3.5 and 3.6 were reviewed and the area of accident assessment was discussed with licensee representatives. PEP-2.1 is the overall procedure which provides prompt classification of an accident, based on parameters readily available in the Control Room. PEP-3.4.1, "Initial Dose Projections", provides a method for determining initial dose projections from readily available data. This procedure will be carried out in the Control Room under the direction of the Interim Site Emergency Coordinator. PEP-3.4.2, "Whole Body Dose Projections", is a procedure to be used for manual calculations of whole body dose subsequent to PEP-3.4.1. This procedure is intended to provide realistic assessment of doses at any point in the EPZ. PEP-3.4.3 is used for thyroid dose projections in the EPZ. The auditors noted that improvements should be made to the dose assessment procedures.

PEP-3.4.5, "Automation of Dose Projection Procedures", describes the use of a computer which automates many of the calculations performed in PEP-3.4.2 and PEP-3.4.3. The computer program uses the same calculation methods as the aforementioned procedures. Inputs to the program include source term, time-after-shutdown, release height, stability class and wind velocity. The program can also generate and plot isopleths. If an X,Y plotter is not available, data can be printed and used to manually plot isopleths.

PEP-3.6.1, "Release Estimates Based Upon Stack/Vent Readings", is used to determine the source term in the dose projection procedures. This procedure will be performed in conjunction with the initial dose projections; however, once the EOF is activated, the individuals performing dose projection calculations will not perform PEP-3.6.1, but rely on source term information received from the TSC.

Dose projection information will be provided to the TSC or EOF, when activated. Action levels and protective action guides used for off-site recommendations are provided in PEP-2.1.

PEP-3.5.1, "Confirmation of Initial Off-Site Dose Projections", is used to confirm or modify dose projections for offsite protective actions. The Environmental Monitoring Teams will make surveys at or near the site boundary as directed. The actual environmental measurements will be compared to initial dose projections (PEP-3.4.1).

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

Upgrade/improve the PEP dose assessment procedures (50-324, 325/81-26-22).

PEP-3.4.1, an additional note should be added in Section 3.5 indicating that the Dose Projection for Thyroid uses 15% of the monitor based source term.

The procedures should contain provisions for revising dose projections based on updated meteorological information and determination of affected areas and protective measures.

- PEP-3.4.2, Exhibit 3.4.2-6, requires calculation of sigma-y and sigma-z values for "G" stability class. These calculations should be performed before an accident situation occurs and incorporated into Exhibit 3.4.2-6.

5.4.2.1 Offsite Radiological Surveys

The auditor discussed offsite radiological surveys with licensee representatives and reviewed procedures related to environmental monitoring.

Initial offsite surveys will be made by an environmental monitoring team dispatched from the plant. Three additional teams will be sent from the Harris Energy and Environmental Center along with the mobile lab. PEP-3.5.1, "Confirmation of Initial Offsite Dose Projections," addresses the purpose of the initial surveys and actions to be taken by the team. Survey gear to be used is addressed; however, the specific instrumentation is not identified nor is the location of the stored equipment. Discussions with a licensee representative indicated that emergency equipment is stored at the Visitor's Center (refer to Section 5.5.1). In addition, PEP-3.5.1, does not address the use of silver zeolite cartridges in the air sampler.

RC&T-3215, "Field Estimate of Airborne I-131 Concentration", and RC&T-3217, "Field Estimate of Airborne Particulate Concentration", are procedures utilized by the environmental monitoring teams while in the field. RC&T-3215 does address the use of silver zeolite filters in the air samplers. Equipment and apparatus to be used for field estimation of I-131 and particulate concentrations are adequately identified.

PEP-3.5.2, "Expanded Environmental Monitoring", addresses the placement and collection of environmental samplers in the event of an accidental release of radioactive material from the plant. As directed by the Radiological Control Director (the Radiological Control Manager if the EOF is activated), all routine air particulate and charcoal filters and all routine TLD's will be removed and changed. Location of these samples are included in RC&T-3110, "Emergency Environmental Monitoring".

PEP-3.5.3, "Plume Tracking by Actual Measurement", is to be implemented during a Site or General Emergency where projected off-site exposures approach or exceed the levels associated with the PAG's.

Provisions are made for labelling environmental samples and air samples. Samples are taken to the HEEC mobile lab for analysis. All data obtained by the monitoring teams is radioed back to the TSC (EOF when activated) and recorded. Formal log sheets are not kept by the teams; however, discussions indicated that teams would record data.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following items should be considered for improvement.

PEP's-3.5 should be improved (50-324, 325/81-26-23):

PEP-3.5.1 should address the use of silver zeolite cartridges in taking air samples.

PEP-3.5.2 should identify the specific instrumentation to be used by the teams and the storage locations.

5.4.2.2 Onsite (Out-of-Plant) Radiological Surveys

The out-of-plant radiological surveys are performed by the in-plant survey teams within the protected area and outside the protected area at the TSC, EOF and Visitor's Center. Procedures used for on-site (out-of-plant) surveys are the same as those used for in-plant surveys (Section 5.4.2.3 of this report).

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the item identified in Section 5.4.2.3 should be considered for improvement.

5.4.2.3 In-Plant Radiological Surveys

Onsite radiological surveys are performed according to PEP-3.3.1, "In-plant Monitoring and Surveys." This procedure addresses, in general terms, direct radiation measurements and air sampling during an Alert, Site Emergency or General Emergency. The procedure does not address specific monitoring details but refers to "plant procedures for routine operations." Reference should be made in PEP-3.3.1 to the RC&T procedures that would most often be utilized for in-plant surveys during accident conditions.

PEP-3.3.2, "Onsite Monitoring and Surveys," is to be implemented when radioactivity is released or suspected to be released into the atmosphere. This procedure provides more detail than PEP-3.3.1; however, specific procedures to be used for surveys are not referenced.

The in-plant surveys will be performed, documented and reported by a plant Monitoring Team as directed by the Radiological Control Director and the Plant Monitoring Team Leader.

The procedures reference PEP-3.7.1, "Emergency Work Permits and Exposure Control," to minimize personnel radiation exposure. High range dosimetry would be issued as deemed necessary.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

The RC&T procedures to be used for in-plant surveys should be referenced in PEP-3.3.1 and PEP-3.3.2 (50-324, 325/81-26-24).

5.4.2.4 Postaccident Primary Coolant Sampling

The licensee has established procedures relevant to primary coolant sampling PEP-3.3.3, "Collection of Very High Level Radioactive Samples," and RC&T-1500, "Collection and Preparation Procedure for Reactor Water After a Fuel Element

Accident." The auditors reviewed these procedures and held discussions with Environmental and Chemistry staff personnel.

Procedure PEP 3.3.3 contains detailed generic guidance relevant to all types of postaccident sampling. It serves to remind emergency response personnel of key tasks which need to be performed, including assembly of information on inplant radiation levels, route planning, team composition, precautions for sample collection, and proper labelling of samples. It contains a generic counting data sheet.

Procedure RC&T-1500 contains detailed instructions and precautions relative to the actual collection of a primary coolant sample. The procedure lists specific equipment required for sample collection, as well as providing valve lineups and instructions for the temporary installation of jumpers to override the containment isolation signal.

The procedure also provides for sufficient dilutions to permit counting of the sample with existing GeLi Spectrometer techniques (contained in Procedure RC&T-2201 and referenced in Procedure RC&T-1500).

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> The relationship between PEP 3.3.3 and RC&T 1500 should be more clearly identified in each procedure (e.g., cross-referenced) (50-324, 325/81-26-25).

5.4.2.5 Post-Accident Primary Coolant Sample Analysis

Procedure PEP 3.3.4, "Analysis of Very High Level Samples," prescribes generic guidance relative to special handling/analysis techniques for high activity samples; however, the specific method used for analysis of post-accident samples is not identified.

As indicated in Section 5.4.2.4, radioactivity analyses are to be performed by the licensee on samples which have been sufficiently diluted to be handled as a "normal" sample. Procedure RC&T-1500 outlines sample preparation steps prior to performing chloride and boron analyses via routine procedures. The auditor noted that 5.0 and 1.0 ml aliquots would be taken of the original, undiluted reactor coolant sample for the performance of chloride and boron analyses, respectively, (steps 7.4 and 7.5 of the procedure). Steps 7.4 and 7.5 fail to remind the individual handling the sample that the concentration of activity in these aliquots, according to information obtained from the licensee, might be as high as 2.8 Ci/ml. Licensee representatives indicated that these analyses could be performed within 1-2 hours of sample collection.

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

Precautionary notes and other appropriate conditions should be added to Procedure RC&T 1500 relative to sample preparation and handling for chloride and boron analyses (50-324, 325/81-26-26).

5.4.2.6 Post-Accident Containment Air Sampling

The licensee has established procedures relevant to containment air sampling: PEP-3.3.3, "Collection of Very High Level Radioactive Samples," RC&T-0150, "Normal and Emergency Sampling of the Drywell CAC Monitors," and RC&T-1501, "Collection of Drywell and Torus Samples Under Emergency Conditions." The auditors reviewed these procedures and held discussions with Environmental and Chemistry staff personnel.

Procedure 3.3.3, discussed previously in Section 5.4.2.4, contains guidance generally applicable to all types of post-accident sampling. Procedure RC&T-0150 contains guidance relative to the collection of particulate and radioiodine samples from containment. While the latter procedure contains guidance relative to Reactor Building entry and traversing high ambient radiation fields, it does not address the high radiation levels which are likely to be associated with the particulate filter and charcoal cartridge.

Procedure RC&T-1501 contains guidance relative to the collection of a sample from containment for noble gas, hydrogen, oxygen, and nitrogen analyses, as well as precautions relative to accessing the sample collection point. The procedure calls for labelling the sample collection apparatus with time, date, and location, however, reference is made only to the "gas sample collection apparatus". As a result, confusion could potentially result relative to the specific apparatus to be used.

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

Procedure RC&T-0150 should recognize that postaccident particulate and radioiodine samples from containment may contain significant quantities of radioactivity such that they present a handling problem (50-324, 325/81-26-27).

5.4.2.7 Post-Accident Containment Air Sample Analysis

The procedures referenced in Section 5.4.2.6 presume that the sample aliquots are small enough to permit analysis as a routine sample. Certain generic problems with regard to the analysis of high level samples are contained in Procedure PEP 3.3.4; however, the analysis of high level particulate filters and charcoal cartridges did not appear to be addressed in sufficient detail. Because aliquots are difficult to take from these samples (particularly charcoal or silver zeolite cartridges), the range of counting geometries will place a definite upper limit on the activity which can be quantified. Discussions with licensee representatives indicated that present sample-to-detector distances for which calibration data existed ranged from 0-10 cm. The auditor discussed the need for greater distances with the licensee.

Hydrogen, nitrogen, and oxygen analyses were performed by gas chromatography; the auditor noted no major problems in this area. Existing equipment was in the process of being upgraded.

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> Greater sample-to-detector distances (as much beyond 10 cm as possible), should be developed for counting high level charcoal/silver zeolite cartridges and particulate filters via gamma spectroscopy (50-324, 325/81-26-28).

5.4.2.8 Stack Effluent Sampling

5.4.2.9 Stack Effluent Sample Analysis

5.4.2.10 Liquid Effluent Sampling

5.4.2.11 Liquid Effluent Sample Analysis

The licensee has no special post-accident radioactive effluent sampling or analysis procedures. The routine effluent sampling and analysis program is described in Procedure RC&T-2000, "Radioactive Airborne Effluent Release and Reports," and RC&T-2010, "Radioactive Liquid Effluent Releases and Reports." Sampling and Analysis is addressed in general terms in PEP 3.3.3 and PEP 3.3.4 as previously discussed.

At this time, the licensee has made no procedural provisions for sample and analysis of potentially high radioactive particulate filters and charcoal cartridges taken from the stack during emergency situations.

Licensee representatives indicated that the lack of specific post-accident liquid effluent sampling and analysis procedures would not pose a problem since the processing of highly radioactive liquids would more likely be required during a recovery phase following an accident. Procedures would be generated for specific situations when needed.

Based on the above findings, the licensee's program appears to be acceptable; however, the following item should be considered for improvement:

> A procedure should be established for post-accident collection of particulate filters and charcoal/silver zeolite cartridges from the stack (50-324, 325/81-26-29).

5.4.2.12 Radiological and Environmental Monitoring Program

The auditor inspected the fixed laboratory facilities and the mobile laboratory at the Harris Energy and Environmental facility and discussed environmental radiation monitoring during an emergency with licensee representatives. The emergency environmental program consists of air, water, milk, vegetation and food sampling and direct radiation measurements utilizing TLD dosimeters. Fixed

stations are located around the Brunswick facility which contain continuous air samplers with charcoal filters and TLD dosimeters. Milk samples are taken from a local cow and a dairy farm. Potable water supplies from the Southport Water System, the Oak Island Golf Course, Fort Caswell Baptist Assembly, Plant Well No. 1 and the Visitor's Center are collected the day following a release. Surface water samples are also taken. Vegetation and food crops are collected when available. The environmental monitoring teams will collect samples as directed and deliver the samples for analysis to the Harris Energy and Environmental Center (HEEC) mobile lab. The Radiological Control Manager at HEEC is responsible for directing the field monitoring program.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.4.3 Protective Actions

5.4.3.1 Radiation Protection During Emergencies

The auditor reviewed the applicable Plant Emergency Procedures (PEP) and the corresponding RC&T Procedures. The overall implementation of the emergency radiation protection program is accomplished by implementation of PEP-2.1, "Initial Emergency Actions," and PEP-2.6.4, "Radiological Control Director." RC&T procedures are referenced by PEP's. The PEP indicates the applicability of the RC&T procedure and adds any special requirements applicable under emergency conditions.

All significant areas are covered by the PEP's. Personnel dosimetry, exposure records, instructions to emergency workers, and provisions for limiting exposure are controlled under PEP-3.7.1. PEP-3.7.2 also covers personnel dosimetry. Dose assessment is performed in accordance with PEP's in the 3.4 series, and positive access controls are specified in PEP 3.8.4. Instructions to RC&T emergency teams are specified in PEP's 2.6.6, 2.6.7, 2.6.8,and 3.3.1. Special controls implemented for emergency conditions are specified in the appropriate PEP as are provisions for changing and unusual conditions.

The respiratory protection program is described in RC&T-0220. Availability of respiratory protection in Emergency Kits is shown in the RC&T-0600 Appendices, and requirements under emergency conditions are specified in PEP 3.7.3.

Health Physics functions and priorities are specified in PEP's 2.6.4, 2.6.6, 2.6.7, 2.6.8, and 2.6.19.

Based on the above findings, this portion of the licensee's program appears to be acceptable.

5.4.3.2 Evacuation of Owner Controlled Areas

Section 4.4.2.2 of the Emergency Plan and Plant Emergency Procedure (PEP) 3.8.1, provide for evacuation of areas within the site and evacuation of the entire site at the discretion of the Emergency Coordinator. Conditions for initiating evacuations are described in PEP's 2.2 - 2.5.

Evacuation routes are not designated in the plan or procedure; these would be announced over the P.A. system. The procedure specifies the assembly area for a site evacuation and requires an announcement of any alternate assembly areas for an area evacuation.

Oral announcements to be made on evacuation routes, alternate assembly areas, or other special instruction will be determined as required. No specific messages have been planned.

Reference is made in the evacuation procedure to the Personnel Accountability procedure but not to a personnel monitoring/decontamination procedure. The Personnel Protection and Decontamination Team Leader is designated as being responsible for monitoring the evacuation area and evacuees.

Plant Emergency Alarms and Announcements, accountability procedures, search and rescue procedures, and security procedures combine to provide a means to verify that all individuals within the exclusion area have been warned of emergency conditions and have followed instructions.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following items should be considered for improvement:

Provide for informing personnel of recommended evacuation routes from plant areas in emergency conditions (50-324, 325/81-26-30).

Specify the assembly areas for a site evacuation in PEP 3.8.1 (50-324, 325/81-26-31).

5.4.3.3 Personnel Accountability

The Emergency Plan (Section 4.4.2.2) and procedure (PEP-3.8.2) provide for accountability of all individuals on site or identification of missing individuals within 30 minutes from declaration of an emergency. The procedure is to be implemented upon declaration of a building evacuation or site evacuation. When personnel are directed to evacuate, they report to their respective supervisor who, in turn, reports to the Emergency Security Team Leader. Accountability is carried out by both a computer compilation and by manual check at the assembly areas. To determine those individuals who are missing, the list of people remaining in the plant is to be compared with the list of people who report to the Control Room and OSC for emergency response duties. There is no specified procedure, however, for transmitting the names of the people who should be on site for emergency response to the Emergency Security Team Leader. Both the Plan and procedure refer to the search and rescue procedure for determining the location of any missing persons. Continuous accountability is expected to be accomplished by use of computer readouts based on key card controlled access to key plant areas.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.4.3.4 Personnel Monitoring and Decontamination

Monitoring of all individuals leaving restricted areas or other areas known or suspected to be contaminated is required by Procedure RC&T-0110 and Procedure RC&T-0600. Emergency monitoring at the reassembly area (Visitor's Center) is also provided for in RC&T-0600. Monitoring of personnel and vehicles leaving the assembly area is required by PEP 3.8.4. Contamination action levels are specified in RC&T-0110.

Procedure RC&T-0110 provides for recording names of individuals surveyed and applicable survey information. Decontamination is performed in accordance with Procedure RC&T-0210 and pertinent information is recorded on Appendix B to the procedure. Both procedures RC&T-0110 and RC&T-0210 make provisions for dissemination of the records generated.

The auditor evaluated this area by a review of the procedures and through discussions with the Radiation Control Supervisor.

Based on the above findings, this portion of the licensee's program appears to be acceptable.

5.4.3.5 Onsite First-Aid/Rescue

The medical treatment and assistance plan including criteria for use of off site medical facilities is discussed in Appendix E to the Plan. Plant Emergency Procedure (PEP) 3.9.6 specifies procedures for handling injured/contaminated personnel. PEP 3.9.2 is referenced to describe administrative procedures and records required for first aid or medical care; PEP 3.9.5 is referenced to describe decontamination of injured personnel; and PEP 3.9.3 is referenced to describe transporting of contaminated injured personnel. Radiation protection guidance for the search team is provided in PEP 3.9.6 and Procedure RC&T-0610. Procedure RC&T-0610 describes emergency medical treatment of contaminated patients and includes procedures for handling the patient at the hospital and the prevention of contamination spread. The auditor reviewed these procedures and discussed this area with licensee representatives.

Appendix E of the Plan specifies the availability of medical assistance from three general practitioners in the Southport area. Appendix B of the Plan (Letters of Agreement) and PEP Appendix A.3 list only one physician. Discussion with licensee representatives indicates that an agreement is being negotiated with another general practitioner. The auditor considers that it is advisable to have an agreement with more than one physician.

Based on the above findings, this portion of the licensee's program appears to be acceptable; however, the following is recommended for improvement;

> Agreements should be made for medical assistance with more than one general practitioner. (50-324, 325/81-26-32)

5.4.4 Security During Emergency

Security measures to be placed in effect during emergencies are specified in the following station security instruction (SI) and emergency procedures: SI.18,

"Emergency Plan Support," PEP-2.6.10, "Emergency Security Team Leader," PEP-2.6.12, "Evacuation Assembly Area Leader," PEP-3.8.1, "Evacuation," PEP-3.8.2, "Personnel Accountability," and PEP-3.8.4, "Access Control."

The auditor reviewed these procedures and discussed this area of the program with licensee representatives. The procedures have been developed in accordance with the requirements of Appendix C to 10 CFR, Part 73 and complement the Plan. Security Instruction 18 sets forth the actions to be taken by the plant Security Organization in support of the Plant Emergency Procedures.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.4.5 Repair/Corrective Actions

The auditor reviewed applicable sections of the Emergency Plan and implementing procedures: PEP 2.6.2, "Emergency Repair Director" and PEP 2.6.11, "Damage Control Team Leader." Responsibilities and actions to be performed in repair/corrective actions are detailed in the procedures and references to appropriate exposure control procedures are included.

Based on the above findings, this portion of the licensee's program appears to be acceptable.

5.4.6 Recovery

The auditor reviewed Section 7.0 of the Emergency Plan and applicable sections of the Corporate Emergency Plan and discussed recovery organization and operations with licensee management. The Emergency Response Manager would determine that the recovery phase is to be entered and would actuate the Recovery Organization. The recovery effort provides for evaluation of both onsite and offsite conditions and consequences. The Emergency Plan describes the transition from the emergency organization to the recovery organization, specifies the key positions in the recovery organization, and describes the licensee's preplanning to effect recovery from an emergency. The specific Recovery Organization is described in the Emergency Plan and Corporate Emergency Plan, with individuals and alternates identified, by title, to fill the key positions.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.4.7 Public Information

The auditor reviewed the applicable Plant Emergency Procedures and Corporate Emergency Plan Implementing Procedures pertaining to public information and held discussions with corporate communications management. During this review, the following observations were made:

Existing public information procedures identify media outlets, but do not sufficiently address information liaison with the State and with Federal

agencies. Licensee management committed to revising procedures to fully address State and Federal organizations involved in news dissemination.

Methods for internal dissemination of information to various locations is specified.

Provisions exist for dissemination of information to the news media prior to establishment of the licensee's news center.

The licensee spokesman and an alternate are identified and the sources of information to be used are specified.

For rumor control, the licensee has identified a special telephone number, manned 24 hours per day, for use by the public. The licensee should additionally address how rumors will be handled and rumor control coordinated with State and Federal organizations.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following should be considered for improvement:

Improve information procedures to identify information liaison with State and Federal organizations (50-324, 325/81-26-33).

Improve provisions for rumor control (50-324, 325/81-26-34).

5.5 Supplementary Procedures

5.5.1 Inventory, Operational Check and Calibration of Emergency Equipment, Facilities and Supplies

The auditor reviewed RC&T-0600, conducted inventories of the emergency kits in accordance with the appendices to the procedure, and discussed the program with the Radiation Control Foreman (Dosimetry/Instrument).

The procedure provides a specific listing of emergency equipment and specifies type and location of kits. The procedure specifies that inventory is conducted semi-annually, operational checks are performed monthly, and that only calibrated instruments will be used for emergency kits. Calibration frequencies are specified in the calibration procedure for each type of instrument. The responsibility for performance of the emergency equipment readiness checks and correcting deficiencies is assigned to the Radiation Control Group.

Limits are specified in Section 2.1 of the procedure as "greater than" specific values. It is not clear whether this is an upper or lower limit. Section 8.6 refers to limits. It is not clear whether these are the same as limits in Section 2.1.

Section 8.8.2 of the procedure states that the RC Foreman will ask for four volunteers for the reentry team. Personnel should be evaluated and team members selected prior to an emergency.

The appendices of RC&T-0600 may not be up to date. For example, it was noted that the Environmental Monitoring Kit contents in Appendix G listed a hot plate and did not list silver zeolite cartridges. According to the RC&T Technician assisting in the inventory, the hot plate had been removed from the kit. Silver zeolite cartridges are necessary to the Environmental Monitoring Team's function and were available in the kit.

Based on the above findings, this portion of the licensee's program appears to be acceptable; however, the following should be considered for improvement:

Procedure RC&T-0600 should be reviewed and the limits in Section 2.1 should be expressed more clearly and the limits referenced in Section 8.6 should be clarified. The appendices of RC&T-0600 should be reviewed to ensure that the information is current. (50-324, 325/81-26-35).

Personnel should be evaluated and preselected for the Reentry Teams prior to an emergency (50-324, 325/81-26-36).

5.5.2 Drills and Exercises

Drills and exercises are described in Section 6.1.2 of the Plan. The auditor reviewed the records of the EP coordinator for the exercises for 1979, 1980 and 1981 and the evacuation drill conducted with the State on December 6 - 8, 1979. Drills with the Southport Fire Department and Dosher Memorial Hospital have been conducted since the plant was licensed. Drills have also been conducted within the plant (communication, medical, in-plant radiation protection, radiological, and fire), as required by the Plan and procedure. The records for the drills and exercises (noted above), document that appropriate scenarios, et.al., were used. Observer comments were evaluated and summarized. A listing of action items were assigned for specific actions. The corrective actions were incorporated into subsequent exercises and/or revisions to procedures or facilities. There was no formal documentation of the corrective actions taken. These items should be incorporated into the plant listing of open actions required by the various plant functional organizations.

The licensee's responses to actual events that have been classified as unusual events have not been considered a substitute for required drills or exercises. The licensee recognizes a need for scenarios, observers/controllers, critiques and records for required drills or exercises. The frequencies for conducting drills and exercises and the need for conducting events during the backshifts are recognized.

News media coverage has been accommodated during the events involving off site agencies.

The Plan specifies the type and frequency of drills and exercises. However, a program to plan, conduct and evaluate these drills and exercises has not been developed (see Section 3.1).

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following should be considered for improvement:

Develop a program to implement the commitment for drills and exercises (50-324, 325/81-26-37).

Document corrective actions resulting from drills and exercises (50-324, 325/81-26-38).

5.5.3 Review, Revision, and Distribution of Emergency Plan and Procedures

The auditor reviewed Section 6.2.1 of the Emergency Plan, Plant Emergency Procedure 4.1, and discussed the document control system with licensee representatives. The Plan and procedures are controlled documents for distribution purposes. Section 6.2.1 of the Plan requires that the Plan and implementing procedures be reviewed annually and emergency phone and personnel listings be updated at least quarterly.

Assigned copies of the Plan/procedures with unique numbers are provided to personnel indicated on an approved distribution list. Signature verification of receipt is required; however, there is no specified action to be taken when the verification does not arrive at Document control in a reasonable amount of time.

The responsibility for the quarterly review and update of the emergency call lists is not formally delineated. Phone numbers that are on the monthly communications check are correct, but there is no assurance that other numbers on the call lists are actually current and correct.

The responsibility for the annual review and update of the Emergency Plan and procedures is delineated in the Plan, but this review is not identified in the applicable procedure, PEP 4.1, Rev. 2. The auditor noted that the required review had been included in Revision 1 of PEP 4.1.

Based on the above findings, this area of the licensee's program appears to be acceptable.

5.5.4 Audit of Emergency Preparedness

The auditor reviewed Section 6.2.2 of the Emergency Plan and discussed the area of audits with licensee representatives. The Emergency Plan states that independent audits will be performed every year by the Emergency Preparedness Unit of the Corporate Technical Services Department and the Corporate Quality Assurance Department. No specific procedures have been developed for assuring performance of these audits or for acting on the results of these audits. Although an audit has not yet occurred, it has not been a year since the required implementation date for Emergency Plan/Procedures. Presently, audits are to include discussions with personnel and inspection of equipment but not observation of drills or exercises.

Based on the above findings, this area of the licensee's program appears to be acceptable.

6.0 COORDINATION WITH OFFSITE GROUPS

6.1 Offsite Agencies

The auditor discussed offsite support agencies with licensee representatives and reviewed the current support agreement letters contained in Appendix B of the Plan. Training has been provided for all offsite support groups who may be called on to assist in an emergency. All offsite groups responding to the site will be accompanied by CP&L escorts while inside the protected area boundary.

On October 20, 1981, the inspector and the plant Emergency Planning Specialist visited the Dosher Memorial Hospital, Southport Rescue Squad, and the Southport Fire Department in Southport to discuss emergency response to an accident at Brunswick with representatives of those agencies. The individuals contacted at each of the above agencies were cognizant of their expected role in an emergency at the Brunswick site, had been provided training relative to their respective roles, and were satisfied that adequate communications concerning emergency response between their organizations and CP&L have been provided.

It is noted that CP&L has not yet negotiated a written agreement with the Southport Fire Department (SFD) although training has been provided to SFD by site personnel and SFD has responded to fires on site and has participated in the annual EP exercises. Written agreements with the Boiling Springs Fire Department, Yaupon Beach Fire Department and the Military Ocean Terminal, Sunny Point (U. S. Department of the Army), are current and would be utilized if the SFD was not available for assisting the plant fire brigade. The lack of a formal agreement with SFD for assistance does not appear to be significant.

Based on the above findings, this area of the licensee's program appears to be acceptable.

6.2 General Public

The licensee has provided for dissemination of emergency planning information to the public within the plume exposure pathway EPZ through the mailing of a brochure to households and placement of the brochure at public locations, motels, and places of business. The emergency information brochure identifies how the public will be notified and what the public's actions should be in the event of an emergency. The brochure also contains understandable information about radiation and identifies points of contact for additional information. The emergency action information disseminated to the public has been coordinated with State and local organizations. Procedure PEP-4.5 provides for periodic dissemination of emergency information to the public, but does not specify that the dissemination will be on an annual basis as specified in the Emergency Plan.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following should be considered for improvement:

> Revise PEP-4.5 to clarify that updated dissemination of information to the public is accomplished annually as specified in the Plan (50-324, 325/81-26-39).

6.3 News Media

The licensee's program for education and preparation of the news media in regard to a nuclear emergency was reviewed and discussed with the licensee's corporate communications management. The licensee's information procedures do not specify a program for familiarizing the news media with emergency plans, points of contact, space allocated for media use, information on radiation and plant operations and accidents. Such a program, however, was conducted in conjunction with the recent full-scale emergency exercise.

Based on the above findings, this area of the licensee's program appears to be acceptable; however, the following is recommended for improvement:

Revise information procedures to identify a program for familiarization of the news media (50-324, 325/81-26-40).

7.0 DRILLS, EXERCISES AND WALK-THROUGHS

7.1 Program Implementation

The auditor reviewed the records of drills and exercises conducted by the licensee and discussed this area with licensee emergency preparedness personnel. The conduct of the drills and exercises and the coordination with non-licensee organizations was adequate. A program to implement the commitment for future drills and exercises should be developed and the method for resolving identified improvement items should be improved (see Section 5.5.2).

7.2 Walk-Through Observations

The auditors conducted walk-through operations in the areas of emergency detection and classification, notifications, dose calculations, and protective action decisionmaking with shift operations personnel. Walk-through operations with licensee representatives were conducted in the areas of offsite dose calculations, postaccident sampling, and offsite environmental sampling and analysis.

In general, the personnel contacted during this part of the appraisal were found to be knowledgeable and interested in their respective areas. They discussed and demonstrated their areas of responsibility in a professional manner.

One area of walk-through operations, dose assessment, was found to be deficient. Three individuals designated to perform dose assessment were given a high-range stack monitor reading, a stack flow, a meteorological stability index, and a wind speed. They were requested to calculate the whole body dose rate at the plant boundary, the whole body dose rate at an extrapolated distance outside the plant boundary, and a thyroid dose at the plant boundary for a 30 minute release. The applicable procedure utilized was PEP-3.4.1. All three individuals had difficulty in calculating the source term, and one individual had difficulty selecting the dose conversion factor. One individual, requested to provide an extrapolated dose rate outside the plant boundary, was not aware of that part of the procedure. All individuals incorrectly calculated the source term used to determine the thyroid dose.

Based on the above findings, the following deficiency must be corrected to achieve an acceptable program:

Provide the capability to perform initial dose projections/assessment in the event of an emergency (50-324, 325/81-26-41).

8.0 Persons Contacted

8.1 Licensee Personnel

CP&L Corporate

B. J. Furr	Vice President, Nuclear Operations
*R. C. Black, Jr.	Director of Emergency Preparedness
W. F. Trolenberg	Project Specialist, Emergency Preparedness

CP&L Harris Energy Emergency Center (New Hill, N. C.)

B. H. Webster	Manager, Environmental and Radiation Control
R. L. Shearin	Environmental
B. W. Stephenson	Environmental
J. F. Terry	Health Physics
D. H. Edwards	Environmental Laboratory

CP&L Site

*C. R. Dietz	General Manager
R. E. Morgan	Manager - Plant Operations
W. M. Tucker	Manager - Technical Support
*G. J. Oliver	Manager - Environmental and Radiation Control
*J. A. Padgett	Assistant to General Manager
*R. Indelicato	Senior Specialist Emergency Preparedness
*E. Norwood	Senior Specialist Training
R. Porterfield	Specialist Fire Protection
W. Hatcher	Security Specialist
L. Tripp	Radiation Control Supervisor
R. Queener	Project Specialist - Radiation Control
S. Thorndyke	Training Supervisor
R. Pasteur	Environmental and Chemistry Supervisor
C. Robertson	Project Specialist - Environmental and Chemistry
N. Stalnaker	Environmental and Chemistry Specialist
P. Sneed	Radiation Control Specialist
A. Hegler	Shift Operating Supervisor
T. McNeill	Shift Operating Supervisor
J. Lichty	Shift Operating Supervisor
W. Triplett	Administration Supervisor
M. Kesmodel	Document Control Supervisor
J. Dimmette	Mechanical Maintenance Supervisor
J. Harrelson	Planner Analyst

J. Henderson	Radiation Control Foreman
R. Tart	Shift Foreman
C. Briney	Shift Foreman
J. Kaham	Counting Foreman
A. Caylor	Environmental Foreman
D. Boan	Radiation Control Foreman
S. York	Radwaste Foreman
R. Creech	I & C Foreman

In addition to the above persons, operations personnel, technicians and craftspersons were contacted.

8.2 Other Organizations

D. Ledgett	Chief, Southport Rescue Squad
H. Aldridge	Chief, Southport Fire Department
M. Hart	In-service Training Coordinator- Dosher Memorial Hospital

8.3 NRC

*D. Johnson	Senior Resident Inspector
*L. Garner	Resident Inspector
*G. R. Jenkins	Section Chief, Emergency Preparedness Section, RII

*Attended exit meeting.