U.S. Nuclear Regulatory Commission

Region I

Report No. 50-387/82-12

Docket No. 50-387

License No. CPPR-101 Priority - Category B-1

Licensee: Pennsylvania Power & Light
2 North Ninth Street
Allentown, PA 28202

Facility Name: Susquehanna Steam Electric Station

Inspection At: Berwick, PA

Inspection Conducted: April 12-22, 1982

Inspectors: _____ 6/29/82
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SUMMARY

The appraisal of the state of onsite Emergency Preparedness at the Susquehanna Steam Electric Station involved seven general areas:

- Administration of the Emergency Preparedness Program Development
- Emergency Organization
- Emergency Training
- Emergency Facilities and Equipment
- Procedures That Implement the Emergency Plan
- Coordination With Offsite Agencies
- Walk-Throughs of Emergency Duties

This appraisal was performed as part of a prelicensing requirement. The appraisal team reviewed selected procedures and representative records, inspected emergency facilities and equipment, observed work practices, and interviewed personnel. Major deficiencies (such as appropriate EALs to reflect projected doses based upon the potential for release which then correspond to prompt protective recommednations, the purchase and testing of pagers to ensure staff augmentation per Table B-1, NUREG-0654; reviewing and approving Emergency Preparedness Implementing Procedures, training emergency response personnel on designated implementing procedures, completing the installation of the Post-Accident Sampling System (PASS) system, and installing all required emergency equipment and supplies) are listed as Appendix A items, which will be corrected before fuel load. In addition to these major deficiencies, the team identified about 30 other areas that need improvement. The applicant has been asked to respond in writing to each of these items and to discuss a possible resolution for each concern. These resolutions will be inspected during a followup appraisal.

1.0 ADMINISTRATION OF EMERGENCY PLAN

1.1 Responsibility Assigned

The Manager of Nuclear Support, stationed at Corporate Headquarters in Allentown, was responsible for the overall coordination of all nuclear emergency planning activities. During the appraisal, a revised Nuclear Department Instruction (NDI) was issued (NDI-6.7.2, Rev. 1), titled "Susquehanna SES Nuclear Emergency Planning" which detailed the responsibilities for establishing and maintaining a state of emergency preparedness within the PP&L corporation. In addition to listing the emergency planning responsibilities of the Manager of Nuclear Support, the NDI also listed the responsibilities of the Plant Superintendent, the Manager of Nuclear Training, the Special Assistant to the President of Susquehanna, the Manager of Nuclear Administration, and the Manager of Nuclear Quality Assurance. The NDI, in Section 6.7, stated that the Plant Superintendent shall maintain, within his organization, one individual to coordinate all in-plant emergency planning activities in support of the establishment and maintenance of an acceptable level of emergency preparedness. According to plant management, this function was assigned as one of the prime responsibilities of the lead Shift Technical Advisor (STA), although it had not yet been documented in the STA job description or formally announced in writing to the plant staff. There was also a permanent onsite Supervisor of Nuclear Emergency Planning, who was on the corporate staff of the Manager of Nuclear Support. This was a full-time position and the responsibilities included liaison and interface activities between the corporate staff and the plant staff for emergency planning activities.

Based on these findings, this portion of the applicant's program is acceptable. However, the following items should be considered for improvement:

- Revise the job description of the lead STA to indicate that one of his prime responsibilities is to coordinate all in-plant emergency planning activities. (50-387/82-12-01)

- Notify the plant staff formally of the lead STA's responsibilities in emergency planning. (50-387/82-12-02)

1.2 Authority

As stated in Section 1.1 above, responsibilities for emergency planning had been assigned; overall responsibility rested with the Manager of Nuclear Support. The Nuclear Department Instruction (NDI) 6.7.2, which was signed by the Senior Vice President, Nuclear on April 13, 1982, gave the authority required to carry out these responsibilities. The NDI directed the Manager of Nuclear Support, to establish, within his organization, resources dedicated, on a full-time basis, to establish and maintain an acceptable level of emergency preparedness. The NDI also directed the Plant Superintendent to designate one individual within his organization to coordinate all in-plant emergency planning activities and to work in support of the establishment and maintenance of an acceptable level of preparedness.

In addition to the NDI, Appendix E of the Emergency Plan contained a Corporate Policy Statement, signed by the PP&L President, directing the SSES Emergency Director or his alternate to implement applicable portions of the SSES Emergency Plan to prevent or mitigate the consequences of emergencies at the Susquehanna Steam Electric Station. The policy statement gave the Emergency Director the authority to act on the behalf of PP&L in all matters concerning the emergency until such time as the scope, severity, and potential radiological consequences have been assessed, and the appropriate protective and corrective actions have been implemented.

Based upon these findings, this portion of the applicant's program is acceptable.

1.3 Coordination

Overall coordination of emergency planning matters was the responsibility of the corporate organizations and was accomplished by the Supervisor of Emergency Planning, who is stationed at the site. There was excellent cooperation between this individual and the lead Shift Technical Advisor who was responsible for emergency planning. The auditors interviewed representatives of offsite groups and were told that there was excellent cooperation and coordination between these groups and the applicant.

Based on these findings, this portion of the applicant's program is acceptable.

1.4 Selection and Qualification

The applicant had a Nuclear Department Instruction (NDI) procedure titled "Nuclear Department Qualification and Training"(NDI-QA-10.8.1) which gave the minimum acceptable level of qualifications and training required for personnel filling positions related to nuclear safety and emergency response, and provided a mechanism to ensure that the requirements are satisfied. Section 6.3 of the NDI specifically related to Emergency Organization Personnel and directed the administrative sections of the Nuclear Department to develop and maintain lists of personnel qualified for the various emergency positions. The NDI contained an attachment which described, in general terms, the minimum qualification and training requirements for many offsite and onsite plant organizational positions, including emergency response. A footnote in the attachment directed the Manager of Nuclear Training to maintain a list of specific courses which were required for each position, and further stated that NDI 4.1.2 contained a list of the training that PP&L considered appropriate for nuclear-related positions. The auditors also determined by speaking with the personnel involved that generally these individuals were qualified to perform their emergency planning and response functions.

Based on these findings, this portion of the applicant's program is acceptable.

2.0 EMERGENCY ORGANIZATION

2.1 Onsite Organization

The auditors verified that an onsite emergency response organization was defined and that there was reasonable assurance it could be implemented. This verification was accomplished by interviewing many of the personnel with assigned emergency duties as described in Chapter 5 and Figures 5.2, 5.3, 5.4, and 5.5 of the Emergency Plan to determine that they understood their duties and were capable of implementing them. During the initial or immediate phase of the emergency, the Shift Supervisor would assume the role of Emergency Director and would have full authority to act on behalf of PP&L. After classifying the emergency, the Shift Supervisor would contact the Plant Superintendent or his designated alternate who would report to the site to assume the role of Emergency Director. At the same time, support coordinators in areas of technical assessment, radiological assessment, and operational coordination would be contacted and instructed to report to the TSC together with their support staffs. This notification is done by the Security Control Center (SCC) using procedures described in EP-IP-018. Beepers (pagers) would be used by this SCC on off-normal hours to contact the on-call personnel. The applicant had not tested the beeper system because he was in the process of purchasing new ones (the original beepers were ineffective in many cases). The applicant stated the new beepers will be tested as soon as they are available and in place (see Section 5.4.1).

In addition to summoning personnel to the TSC, the applicant had provided a Recovery Organization to activate the EOF should this be necessary, and to activate the General Office Nuclear Emergency Support Center (GONESC) and the General Office Engineering Support Center (GOESC). The GONESC and the GOESC were located in the PP&L corporate offices in Allentown. The primary Recovery Manager in the EOF was the Vice President of Nuclear Operations whose normal duty station was in Allentown. Until he arrives at the EOF, his responsibilities were delegated to the Construction Site Superintendent (alternates were the Supervisor of Emergency Planning and the Emergency Training Specialist) who assumes the role of EOF Support Manager. This Support Manager had an Initial EOF organization to assist him consisting of an EOF Set-up Foreman, an Assistant EOF Support Manager, an Assistant Technical Support Manager, an Administrative Support Manager, an Interim Radiological Assessment Team, and Facility Log Keeper. With the exception of the Administrative Support Manager, the permanent EOF Managers are members of the corporate staff in Allentown and, in addition to the Recovery Manager, there was a Technical Support Manager, a Site Support Manager, and a Radiological Support Manager.

The EOF Support Manager and his staff would be contacted by the SCC, and the Recovery Manager would be contacted by the Power Dispatcher from the Power Control Center. The rest of the permanent EOF Management Staff would be contacted by a separate beeper system from the Lehigh Service Center in Allentown, and the offsite emergency monitoring teams would be called in by telephone from the Central Division Service Center in Hazleton. The applicant stated that the Lehigh Service Center beeper system was used routinely for summoning workers to repair storm damage and there have been no problems with it.

Because the only difference in the beeper system used for storm damage and the system used for an emergency at the SSES was the frequencies used in the beepers, the auditors believed the system was functional and acceptable. The auditors were concerned about the levels of management that stand as alternates for the EOF Support Manager. This position is a high-level decisionmaking position in the EOF and requires someone who can speak with authority for PP&L and commit its resources as necessary. According to Attachment 1 of NDI-QA-10.8.1, this individual (stated as Recovery Manager in the NDI) is the same as the management official in overall charge of Nuclear Power. Neither the Supervisor of Emergency Planning nor the Emergency Training Specialist satisfy these requirements.

Based on these findings, improvement in the following area is required to achieve an acceptable program:

- Revise the list of alternate EOF Support Managers to include personnel, at levels of management who meet the EOF Recovery Manager qualifications, and provide the required training to those individuals. (50-387/82-12-03)

In addition, the following item should be considered for improvement:

- Develop and implement a procedure to periodically check the activation of the beepers from the Lehigh Service Center for those personnel who would be responding to an emergency at the SSES. (50-387/82-12-04).

2.2 Augmentation of Onsite Emergency Organization

The applicant had made provisions for augmenting the onsite emergency organization with outside support from local service organizations, INPO, other utilities, Federal agencies, and consultants. In addition, as stated in Section 2.1, the applicant intends to augment his onsite staff with initial and long-term organizations in the TSC and the EOF. In a letter dated March 10, 1982, to the NRC, Mr. Norman Curtis of PP&L listed 22 personnel who would initially activate the EOF. Revision 6 to Table 5.2 of the Emergency Plan, dated 4/82, further expanded on staff augmentation. Although it appeared from this information that the staffing requirements of Table B.1 of NUREG-0654 can be met, the applicant had not tested the augmentation times because he was in the process of purchasing new pagers (see Section 5.4.1).

Based on these findings, improvement in the following area is required to achieve an acceptable program:

- Demonstrate by unannounced drills that the additional specified persons in the proposed staffing plan (Table B.1 of NUREG-0654) can be on site in about 30 or 60 minutes after initial notification. Records must be kept for these drills. (50-387/82-12-05)

3.0 TRAINING/RETRAINING

3.1 Program Established and Implemented

The applicant had documented the training program in a training manual and outlined it in Section 8.1 of the Emergency Plan. Qualification criteria for emergency response managers was outlined in procedure NDI 10.8.1. A matrix had been prepared which delineated the required training for each member of the emergency organization. The applicant indicated that an expanded matrix would be prepared, delineating the training required on each Emergency Plan Implementing Procedure for all emergency response personnel. The Emergency Plan specified the required emergency training for all unescorted personnel, for news media, and for State and local agencies to be performed annually.

The auditors reviewed lesson plans for each training category and determined that they included student objectives. Some included tests to demonstrate the individual's ability to perform emergency functions. The applicant indicated that the lesson plans would be expanded and additional tests would be prepared to evaluate emergency personnel, in addition to conducting walk-through drills.

In training personnel on changes to procedures the applicant relied on an individual's supervisor to request that training. Since the emergency organization can cross over normal organization lines, and an individual's supervisor may not be aware of that employee's emergency response role; some other mechanism needs to be established to ensure that training on procedure changes is performed.

The auditors reviewed training records for emergency response personnel and general employee training. Some required training, as identified in the training matrix, had not been completed.

Based on the above findings, improvement in the following area is required to achieve an acceptable program:

- Complete all required training for emergency response personnel in the applicable implementing procedures as shown in the training matrix. (50-387/82-12-06)

In addition, the following matters should be considered for improvement:

- Establish a mechanism for ensuring that all emergency response personnel are trained in changes to procedures. (50-387/82-12-07)

- Expand course outlines into complete lesson plans, including performance objectives and a means to test an individual's ability to perform his task. (50-387/82-12-08)

4.0 EMERGENCY FACILITIES AND EQUIPMENT

4.1 Emergency Facilities

4.1.1 Assessment Facilities

4.1.1.1 Control Room (CR)

Unit 1 and Unit 2 share a common control room and thus communications between the two units is available without the use of special equipment although a temporary wall exists now while Unit 2 is under construction. Direct communications to the TSC, EOF, and local offsite agencies was available, as was an extension of the NRC - ENS phone network. The two units relied on common instrumentation for monitoring meteorological, hydrological, and seismic conditions and for certain area radiation monitor (ARM) locations. The control room ventilation was equipped with HEPA and charcoal filters and the air intake was monitored for hazardous substances. The control room ventilation system automatically isolated and switched to recirculation upon receipt of signals from the intake radiation or chlorine monitors. Upon receipt of alarms from the air intake smoke detectors, the system would be isolated manually by the control room operators. Representatives of the plant indicated that, once the construction of the control room (Unit 2) was completed, a continuous air monitor (CAM) would be installed in the control room to monitor the atmosphere for particulates, radioiodines, and noble gases. There was an ARM in the control room with a range of 0.01 to 100 mR/hr.

The equipment specified in Enclosure 4 to Appendix D of the SSES Emergency Plan ("Typical Control Room Emergency Equipment") was not completely in place. The equipment that was available was stored in the OSC (Unit 2 Supervisor's Office). A dose projection kit, containing the site sector map, overlays and nomographs; and radiation survey instrumentation consisting of a telescoping GM instrument and an ion chamber survey instrument were not available in the control room. The latest formal copy of the Emergency Plan (Revision 5) was in the control room. Copies of the Emergency Plan Implementing Procedures had not been distributed, but the applicant's representatives indicated that these would be available once they had been formally approved.

Based on the above findings, improvement in the following area is required to achieve an acceptable program:

- Ensure that all equipment relied upon in the control room during emergencies be in place and available. (50-387/82-12-09)

4.1.1.2 Technical Support Center (TSC)

The TSC was located in the control room mezzanine overlooking the control room at the 741-foot elevation of the control structure. Travel between the TSC and the control room could safely be accomplished within 2 minutes. The TSC used the same ventilation system as the control room. The ventilation system used HEPA and charcoal filtration and could be automatically isolated and switched to a recirculating ventilation mode upon receipt of a high radiation

signal from the air intake monitors. The stairwells connecting the TSC and the control room were connected to the control structure ventilation system and were isolated by dampers that closed when the vent fans were shut down. The control room's continuous air monitor, once installed, will provide atmospheric monitoring for particulates, radioiodines, and noble gases for the control room and TSC. However, Section 2.6.1.3 of Appendix I of the Emergency Plan indicated that the TSC will be equipped with its own independent alarming portable monitor. The plan should be changed to reflect the as-built conditions. The TSC met the same shielding requirements as the control room and contained two area radiation monitors which displayed and alarmed locally. The TSC contained commercial and intraplant phone lines and dedicated phone lines to the control room, OSC, EOF, and local response agencies. There were extensions for the NRC's ENS and HPN phone networks and there were two commercial lines for NRC use. Radios were available for communicating with monitoring teams. Plant Technical Specifications, Operating Procedures, the Final Safety Analysis Report, drawings, schematics, and diagrams were available in the TSC. The latest formal copy of the Emergency Plan (Revision 5) was in the TSC. Copies of the Emergency Plan Implementing Procedures had not been distributed. Plant operating conditions and parameters were available on a display connected to the plant process computer.

Based on the above findings, this portion of the applicant's program is acceptable.

4.1.1.3 Operations Support Center (OSC)

The OSC, as stated in the SSES Emergency Plan was located on the 729-foot level of the control structure adjacent to and connecting with the Unit 2 control room. The room had a floor space area of about 340 sq. ft and served, under normal conditions, as office space for control room shift personnel. The OSC had separate access to a stairwell so that the OSC personnel were not required to enter the control room. The OSC, being connected to the control room, met the same criteria for habitability as the control room and TSC.

The exact staffing of the OSC was not provided in the SSES Emergency Plan or Implementing procedures. Applicant representatives indicated that on-shift HP and chemistry technicians, as well as those augmenting the on-shift technicians, would respond to the OSC. The size of the OSC would limit the number of individuals responding there.

The OSC was equipped with dedicated phones to the control room and TSC and with a plant phone extension.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- Provide an OSC with adequate space for assigned personnel that will not interfere with control room operations. (50-387/82-12-10)

4.1.1.4 Emergency Operations Facility (EOF)

The interim EOF was located in the applicant's Training Center approximately 2500 feet northeast of the control structure. The permanent EOF was under construction approximately 2500 feet southwest of the control structure. The backup EOF was located at the applicant's Service Center administration offices in Hazleton, Pa., approximately 13 miles southeast of the plant. The backup EOF had not been equipped at the time of the audit. The permanent EOF was not completed and therefore equipment was not installed. Applicant representatives indicated that the permanent EOF would be completed and equipped, except for the Emergency Response Computer System (ERCS), by July, 1982.

The Interim EOF did not meet the habitability criteria for shielding or ventilation of a permanent EOF as specified in NUREG-0696. It did provide adequate space and communications for the assigned personnel, and documentation, records, drawings and diagrams were maintained. Dose projection equipment and decision making aids were also available.

As stated on page 22-17 of Supplement 1 to the Susquehanna Safety Evaluation Report, the applicant has committed to complete the permanent emergency response facilities before October 1, 1982, or before fuel loading, whichever is later.

Based on the above findings, this portion of the applicant's program is acceptable.

4.1.1.5 Post-Accident Coolant Sampling and Analysis

The auditors visited the post-accident coolant sampling location and chemistry laboratory, and conducted interviews with plant chemistry personnel. The chemistry sampling hood was located on the 779-foot elevation of the reactor building. Sampling would require personnel access to the area and manual valve operation to obtain a coolant sample. The applicant estimated that for a NUREG-0578 source term, the exposure rate at 10 cm from the in-line coolant sample inside the sample room would be 137R/hr/gm at 1 hr post-accident. There were provisions to purge the system before sampling.

Chemistry personnel were instructed in the procedure to continuously monitor radiation levels and status of continuous air monitors and area radiation monitors while enroute and while taking the sample. If radiation levels exceed 1R/hr chemistry personnel were to cease work and leave the area. If access to the 779-foot elevation sample sink was not possible, coolant samples could be obtained from the PASS (post-accident sampling system) sample location on the 729-foot elevation of the turbine building as per procedures EPIP-043 and EPIP-047.

The PASS system consisted of the following components:

(1) a compartmentalized 2-inch lead-shielded upper portion for gas/atmosphere samples and 6-inch lead-shielded lower portion for liquid samples;

(2) sample station pump/valve control panel with meters indicating liquid flow, area and process radiation levels, and process conductivity, temperature and pressure; and

(3) valve isolation panel.

Inherent in the design of this system was continuous shielding of the sample from the time it was drawn to the time it was transported.

The chemistry laboratory was located on the 676-foot elevation of the turbine building. It has been estimated that the background dose rate for a NUREG-0578 source term would be less than 5 mr/hr, one hour after the accident, but there was a possibility that background radiation levels could be higher because releases from the reactor building, turbine building, and standby gas treatment system (SBGTS) vents, in the event of adverse meteorology, could enter in through the chem lab ventilation intakes. A similar problem was under evaluation for infiltration of exhaust from the diesel pump facility. Should the increase in background radiation interfere with isotopic analysis or should the chem lab area radiation monitor alarm, sample analysis would be done in the alternate counting lab located in the EOF. This alternate facility, however, was not completed and the counting equipment was not in place.

A contingency plan for offsite lab analysis had been initiated and arrangements were being negotiated with B&W in Lynchburg, Va. to analyze high-activity coolant samples for chloride content and with GE in Tennessee to analyze high-activity particulate, iodine, and noble gas samples; however, there were no letters of agreement or procedures addressing transportation of the samples offsite.

The chemistry lab was equipped with HEPA-filtered fume hoods (containing lead shielding), multichannel analyzers connected to germanium-lithium detectors, a gas chromatograph, pH meters, a gas-flow proportional counter, reagents, and an ample supply of bottles, pipettes, syringes, and such. There were remote handling tools and a lead cask designated for this sampling operation.

Based on the above findings, this portion of the applicants' program is acceptable, but the following matter should be considered for improvement:

- Obtain letters of agreement from B&W and GE pertaining to offsite counting capabilities. (50-387/82-12-11)

4.1.1.6 Post-Accident Containment Air Sampling and Analysis

The PASS sample location was located on the 729-foot elevation of the turbine building. Sampling would require personnel access to the area and manual valve operation to obtain a gas sample. The applicant estimated that for a NUREG-0578 source term the exposure rates from the inline containment air sample at 1 hour post-accident would be 12R/hr and 0.3R/hr at 0 feet and 3 feet respectively, from the sample point.

The PASS system had not been completely installed, tested, and calibrated and therefore chemistry technicians had not been trained on this system.

Section 4.1.1.5 discusses the chemistry lab setup, equipment, alternate lab setups, personnel precautions in taking samples, and so forth.

Based on the above findings, improvement in the following area is required to achieve an acceptable program.

- o Complete the installation, testing, and calibration of the PASS system and the training of chemistry technicians. (50-387/82-12-12)

4.1.1.7 Post-Accident Gas and Particulate Effluent Sampling and Analysis

Five detection units were located on the reactor building 818-foot level used to monitor iodines, particulates, and noble gases released through the reactor, turbine and SBGTS vents. Each unit had the capability to send data to the central control terminal or store data. The accessibility to the area depended on the amount of core damage. The Chemistry Supervisor indicated that plans were being formulated to either move the PING (particulate, iodine, and noble gas) sampling systems or run sample lines from the respective sample points to the PASS location.

The laboratory and related equipment were discussed in Section 4.1.1.5 as were the arrangements for offsite laboratory capabilities. Findings concerning the PASS system, data dissemination, and offsite lab facilities are the same as in the previous sections.

Based on the above findings, this portion of the applicant's program is acceptable but the following matter should be considered for improvement:

- o Finalize plans and procedure to move the PING system or run sample lines from the respective sample points to the PASS sample location. (50-387/82-12-13)

4.1.1.8 Post-Accident Liquid Effluent Sampling and Analysis

The auditors visited the effluent sampling location. Normal and post-accident liquid effluent samples would be collected from the blowdown line composite sampler located in the sewage treatment plant. The grab samples would then be taken to the radiochemistry laboratory for isotopic analysis. The results, including volume and duration of release, would then be reported to the Radiation Protection Coordinator.

The laboratory and related equipment were discussed in Section 4.1.1.5.

The sewage treatment plant composite sampler had not been completely installed and tested.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- o Complete the installation, testing, and calibration of the liquid effluent composite sampler. (50-387/82-12-14)

4.1.1.9 Offsite Laboratory Facilities

The applicant had reserved space in the incomplete permanent EOF for an offsite radiochemistry laboratory. No equipment had been installed in the laboratory, but applicant representatives indicated that it was to be equipped with: (1) a HEPA-filtered fume hood, (2) a multichannel analyzer with one germanium -lithium (Ge(Li)) semiconductor detector, (3) a gas chromatograph, (4) pH meters, (5) lead shielding, and (6) all reagents and equipment necessary for a plant wet chemistry lab. There were no plans for installing equipment to determine gross alpha, or beta activity, but applicant representatives indicated that a gas-flow proportional counter could be moved from the plant chemistry lab, if necessary.

The applicant had letters of agreement with Radiation Management Corporation and the Peach Bottom Nuclear Power Plant for providing laboratory facilities in an emergency.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- o Specify the priority for use of the offsite laboratory facilities and the means for transporting samples to the labs. (50-387/82-12-15)

- o Install equipment in the offsite laboratory for measuring gross alpha and beta activity. (50-387/82-12-16)

4.1.2 Protective Facility

4.1.2.1 Assembly/Reassembly Areas

There were ten assembly/reassembly areas on site and one alternate area. Their locations were specified in EP-IP-007 "Personnel Assembly and Accountability." There were two offsite assembly areas designated in EP-IP-021 "Site Emergency Evacuation," one located at the Riverlands Information Center and the other at the permanent EOF. For each assembly area there was a designated assembly area leader who is responsible for performing a roll-call in his assembly area. The results of this roll-call were then reported to security via telephone. Each area had a plaque fastened to the wall which identified the assembly area and listed the phone numbers to be called to report accountability results to security. A box was fastened to the wall of each assembly area containing a roster of all personnel who were to report to that area. During a tour of these facilities there was some question as to how current the personnel listings were, and the box in one area did not contain a roster.

Attachment D of EP-IP-007 contained a set of action steps to be performed by Assembly Area Leaders during an accountability exercise but a copy was not kept in the box with the personnel roster.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- o Include Attachment D "Action Steps for Designated Assembly Area Leaders" in the assembly area box containing the personnel roster. (50-387/82-12-17)

- o Ensure that all rosters for assembly areas are current and present. (50-387/82-12-18)

4.1.2.2 Medical Treatment Facilities

The auditors examined the applicant's medical treatment facilities. The emergency plan stated that treatment facilities were located near the access control area and near the machine shop. The facility near the access control area was currently being used as a storage room for Health Physics and Chemistry and the facility near the machine shop was partially stocked. Discussions with the applicant indicated that neither of these areas were planned for use as first aid treatment facilities in the future and that they would shortly be used for other purposes. It was further indicated that the primary on-site first aid facility was the Bechtel first aid station. This was a fully equipped industrial first aid station with an ambulance and an on-duty nurse, but was not equipped to handle a radioactively contaminated injury. Most of the in-plant first aid kits and stretchers were located as specified in the plan with the exception of those in areas where construction was still going on.

The emergency plan specified that first aid kits are checked periodically in accordance with station procedures. Draft procedure NSI 3.2, Attachment F provided an inventory listing of "Radiation Emergency On-Site First Aid Equipment", however, it did not specify a location for the equipment and it was not clear where this equipment would be available. Further, this procedure referred to inventorying first aid kits in accordance with "First Aid Procedures," but these procedures were not found.

Based on the above findings, improvement in the following area is required to achieve an acceptable program.

- o Ensure all medical equipment, supplies, and facilities are located as specified in the emergency plan. (50-387/82-12-19)

In addition to the above findings, the following matter should be considered for improvement:

- o Establish an approved procedure to inventory and locate all emergency medical equipment. (50-387/82-12-20)

4.1.2.3 Decontamination Facilities

The auditors toured the on-site personnel decontamination facilities which were located as follows: Elevation 676' of the control structure at the control point; two locations in the reactor building on elevation 719'; elevation 818' on the refueling floor; elevation 645' in the radwaste building; and elevation 691' in the radwaste building. These facilities all contained a shower stall and a sink for washdown. The drains in these areas were connected with the liquid radwaste control system in the radwaste building. Vehicle decontamination was provided at the north gatehouse at the inspection pit. An offsite decontamination facility was provided at the permanent EOF. This facility consisted of a shower stall and sink for washdown and a separate holding tank for liquid waste.

At the time of the audit, only the facility located at the access point near the HP office was fully operational and stocked with supplies. The supplies included chemical decontaminants (potassium permanganate, sodium bisulfate, mild soap, hand cream), disposable clothing, RM-14 frisker with extra probe and cable, and various appropriate decontamination materials as specified in Appendix D, Enclosure 1 of the Emergency Plan. Not found in the decontamination kit were copies of the decontamination procedures, copies of Form HP-TP-624-1 "Personnel Contamination Report," or an invertory listing of supplies and equipment.

Discussions with the applicant indicated that several of the facilities had not yet received a final construction inspection and had not yet been turned over to PP&L. In addition, the large number of construction personnel still in the plant made it difficult to maintain supplies of decontamination materials at these locations.

Based on the above findings, improvement in the following area is required to achieve an acceptable program:

- Ensure that all decontamination facilities are complete and functional, including decontamination supplies as per the Emergency Plan and Implementing Procedures. (50-387/82-12-21)

4.1.3 Expanded Support Facilities

The auditors reviewed, with the Corporate Emergency Planning Coordinator, the provisions for expanded support facilities. It was indicated that the permanent EOF had the capability for parking up to five emergency response monitoring vans and supplying utilities and communications hookups for them. In addition, space for more trailers could be provided on site in the maintenance laydown area near the permanent EOF. This capacity for supporting five vans was also referenced in Appendix I of the Emergency Plan under "Architecture for the EOF."

Based on the above findings, this portion of the applicant's program is acceptable.

4.1.4 News Centers

The auditors examined the Emergency News Center which would be located at the Berwick YMCA, approximately 5 miles from the plant. It could accommodate approximately 500 media representatives and had been provided with telephones, video jacks, information kits, and audio-visual aids. Upon activation of the Center, additional equipment, such as copiers, telecopiers, and typewriters, would be provided from the Susquehanna Energy Information Center and the Special Office of the President in Berwick.

Based on these findings, this portion of the applicant's program is acceptable.

4.2 Emergency Equipment

4.2.1.1 Emergency Kits and Emergency Survey Instrumentation

The auditors reviewed the emergency kits and survey instrumentation which were shown to them by members of the applicant's staff. The applicant's emergency plan calls for prepositioned supplies and instrumentation in several locations. Of the specified emergency kits and equipment the following were in place and complete; Health Physics Van Radiation Emergency Monitoring Equipment; Radiation Emergency Off-Site Monitoring Equipment Kits; Berwick Hospital Radiation Emergency Equipment and Supplies; Ambulance Radiation Emergency Equipment Kit; Geisinger Medical Center Radiation Emergency Equipment and Supplies; Damage Control Equipment; Fire Brigade Team Equipment. Because of the construction schedule and/or security considerations, the following kits, supplies and instruments were either not in place or incomplete; Control Room Emergency Equipment Kit; TSC Radiation Emergency Kit; decontamination area supplies and equipment (with the exception of one complete kit located at the Control Access Area); Emergency Team Assembly Area Equipment; Station Assembly Area Equipment; Off-site Emergency Assembly Area Equipment; Radiation Emergency On-site First Aid Equipment. Approved inventory lists had not been developed for some of the kits.

High-range dosimetry and instruments with beta-gamma detection capability were available in the appropriate kits. Ludlum Model 2218 dual channel analyzers were available for environmental monitoring; and had the capability of detecting radioiodine concentrations in air of 1E-07 µCi/cc using silver zeolite cartridges. Eberline RO-2 portable ion chambers were used to measure whole-body dose rates in-plant and off-site. Health Physics instruments were calibrated quarterly by a vendor and maintained and repaired by the I&C Shop. Calibration records were maintained by the I&C Section.

Based on these findings, improvement in the following area is required to achieve an acceptable program:

- Ensure that all kits and supplies are complete and in their designated locations. (50-387/82-12-22)

4.2.1.2 Area and Process Radiation Monitors

Area and process radiation monitors that were specified in the SSES Emergency Plan were in place and were undergoing preoperational testing. Recording devices and annuciators for these monitors were in the control room as was the display for the plant process computer which provided individual readouts of the parameters measured by the various instruments. The individual meter displays were located in two relay rooms near the control room. Monitors that were common for both units (seismic, hydrological, meteorological, and ARMS) were located so that both units had access to the readouts.

Written procedures were available for routine checks, maintenance, and calibration of instruments.

Based on the above findings, this portion of the applicant's program is acceptable.

4.2.1.3 Non-Radiation Process Monitors

The SSES Emergency Plan did not contain a listing of the non-radiation process monitors that would be relied upon for emergency detection, classification, and assessment. The auditors noted that control room readouts were in place for such parameters as reactor coolant pressure, temperature and level, drywell pressure and temperature, flow rates, and equipment status and lineup. Pre-operational testing was being performed on the control room instrumentation. Seismic, hydrological, and meteorological instrumentation readouts were in the control room and were shared by both units.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- Include a listing in the Emergency Plan of the non-radiation process monitors that would be relied upon for emergency detection, classification and assessment. (50-387/82-12-23)

4.2.1.4 Meteorological Instrumentation

The bases for the review of the licensee's meteorological measurements program included Regulatory Guides 1.23 and 1.97, and the criteria set forth in NUREG-0654, 0696, and 0737. In addition, the information in the June 1981 upgraded meteorology system documentation and the April 1982 Emergency Preparedness Implementation Procedures EPIP-008 and 009 were reviewed.

A primary 91 meter onsite meteorological tower provided observations of wind speed and wind direction as well as a measure of atmospheric stability for use in dose calculation. In addition, a 10m backup tower had been installed onsite. Both towers had a backup power supply and could telemeter the meteorological measurements to the control room, Technical Support Center (TSC) and the Emergency Operations Facility (EOF). The primary tower was situated in close proximity, (approximately 2000-ft.) east of the two 540-ft. natural draft cooling towers which may have some effect on wind measurements and effluent transport for some wind directions.

The backup tower was somewhat removed from the immediate cooling tower influences and should provide adequate meteorology information if the primary tower is unavailable.

Equipment calibration was scheduled at six-month intervals, although if measurements indicated problems, the calibration and maintenance was done as needed. The maintenance was done by a PP&L electronics technician on site.

The reviewer noted that the strip chart recorders in the control room for the primary and backup towers did not have charts in them due to a temporary supply problem. There were no strip chart recorders in the primary tower instrument shelter to display the status of the tower instruments.

The data was placed directly on an electronic digitizer and magnetic tape with no capability to observe the strip charts at the instrumentation shelter. Strip charts at the instrument shelter might aid in performing routine calibration and trouble shooting of the meteorological instrumentation. Notice of severe weather phenomena was transmitted to the control room by the Pennsylania Power and Light (PP&L) load dispatcher who is supplied with warnings by National Warning System (NAWAS) and the National Weather Service (NWS) forecast office in Philadelphia.

The dose calculation model was automated to incorporate the onsite measurements and the effects of the river valley topography on plume transport. Overlays were available and also incorporated plume modification as a function of direction from the plant.

Based on the above findings, this portion of the applicants program appears to be acceptable. However, the following matters should be considered for improvement:

- Assure availability of strip charts on recorders in the control room. (50-387/82-12-24).

- Consider the possible effects of the cooling towers on the transport of gaseous effluents offsite and factor into any dose assessment model. (50-387/32-12-25)

4.2.2 Protective Equipment

4.2.2.1 Respiratory Protection

The applicant had approximately 300 respirators on site and approximately 1500 additional respirators on order. Particulate and radioiodine canisters were available for the respirators. There were approximately 40 self-contained breathing apparatuses (SCBAs) and 100 spare air cylinders. Applicant representatives indicated that an air compressor/cascade cylinder filling system was being purchased that would be able to refill cylinders at an average rate of about 10 per hour. The location for installing the filling system had not been determined. The applicant also had a contract with a local company to provide expanded cylinder refilling capability.

Based on these findings this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- o Establish a location for the air cylinder filling system that is accessible under emergency conditions. (50-387-82-12-26)

4.2.2.2 Protective Clothing

The applicant had approximately 3000 sets of protective clothing in the applicant's warehouse in Berwick, Pa. and approximately another 3000 on order. Applicant representatives indicated that supplies of these would be placed in the emergency kits and that several hundred sets would be available at the EOF and the rest would be located in at least three other locations within the plant. Applicant representatives indicated that these supplies would be in position approximately 1 month before fuel load.

Based on the above findings, improvement in the following area is required to achieve an acceptable program:

- o Establish onsite supplies of protective clothing that will be accessible under emergency conditions. (50-387/82-12-27)

4.2.3 Emergency Communications Equipment

The auditors reviewed the onsite and offsite communications equipment as specified in the applicant's Emergency Plan and held discussions with the applicant's personnel. The applicant stated that the offsite sirens, to be activated by the risk counties as notification to the population within the 10-mile EPZ in the process of installation. The completion date, including testing, was June 1982.

Alarms were available for notifying plant personnel about fire, assembly, and evacuation. "Hear here" boxes were located in high noise areas throughout the plant.

Communications equipment was located as specified in the Emergency Plan, including redundant backup capabilities. A procedure to operationally check the communications equipment on a routine basis was being reviewed.

Based on these findings, improvement in the following area is required to achieve an acceptable program:

- o Complete installation and testing of the public prompt notification system. (50-387/82-12-28)

4.2.4 Damage Control/Corrective Action and Maintenance Equipment and Supplies

The auditors held discussions with members of the applicant's staff and determined that the applicant had made provisions for onsite damage control by providing a kit containing tools and devices for maintenance functions. This kit was located near the health physics control point.

Based on these findings, this portion of the applicant's program is acceptable.

4.2.5 Reserve Emergency Supplies and Equipment

The applicant relied on onsite inventories to augment and replenish emergency equipment and supplies. Sufficient reserves of equipment (survey instruments, dosimeters, protective clothing, respirators, valves, piping, and so forth) were maintained or on order to accommodate emergency response functions. Interviews with plant personnel indicated a system was in place to catalog and inventory supplies and equipment to ensure minimum stock levels.

Based on these findings, this portion of the applicant's program is acceptable.

4.2.6 Transportation

The auditors discussed the transportation requirements with the Personnel and Administrative Supervisor who would become the Administrative Coordinator during an emergency. One of the responsibilities of the Administrative Coordinator was to provide transportation for the various teams. EP-IP-002 directed this individual to provide vehicles to the EOF, but did not indicate where they obtained, although the Administrative Coordinator knew this.

The auditors were given a draft copy of a new EP-IP to be titled "Availability and Maintenance of Vehicles Assigned to the Emergency Organization." The procedure described where the vehicles were located and how they can be obtained. Although it was not included in the draft that the auditors obtained, the Administrative Coordinator stated that most of the vehicles were 4-wheel drive.

Based on these findings, this portion of the applicant's program is acceptable.

5.0 EMERGENCY IMPLEMENTING PROCEDURES

5.1 General Content and Format

The Emergency Preparedness Implementing Procedures (EPIPs) followed the general format of (1) purpose, (2) scope, (3) references, (4) definitions, (5) responsibilities, (6) instructions. The "Responsibilities" section stated the responsibilities of the personnel to which the procedure applied. The "Instructions" section referenced the particular attachment to the procedure that the stated individual should follow. Although the information was generally accurate, it appeared to the auditors that both of these sections could be presented in a tabular form to make it much easier to read and to use.

The procedures were generally developed along functional lines (by task or by facility) and each individual who had a responsibility or a role in the procedure was then listed in the "Responsibilities" and "Instructions" sections with specific action steps listed in the attachments. This method makes it difficult for any one individual or emergency manager to quickly ascertain what his responsibilities are. He must go through each procedure to extract his responsibilities and "action steps." Cross-referencing was a problem. It appeared to the auditors that a mechanism should be used to describe respon-

sibilities by emergency management position, or at least to provide a cross-referencing scheme so that when an emergency manager arrives at his duty station he would have readily available a means to immediately determine all of his responsibilities. The auditors discussed this with several members of management and learned that such a cross-referencing matrix which was not intended to become an integrated part of the procedures had been generated and provided during the full-scale exercise. Most people who used the procedures voiced some concern about cross-referencing and would like to be able to recognize their responsibilities more quickly. The Administrative Coordinator, who had prepared the original indexing matrix, agreed that such a matrix would be useful.

In addition to the EPIPs, the auditors reviewed specific departmental procedures which were issued and used as part of the plant operating procedures and which were referenced in certain EPIPs. There were, for example, Nuclear Support Instructions, Nuclear Department Instructions, Chemistry Procedures, Emergency Operating Procedures, and Health Physics Procedures. Such procedures were issued and controlled by the individual department heads.

At the time of the appraisal, EPIPs were still in draft form and had not received management review. The applicant indicated that the procedures would be finalized and approved following incorporation of appraisal recommendations.

Based on these findings, improvement in the following area is required to achieve an acceptable program:

- Complete all EPIPs including management review and approval. (50-387/82-12-29)

In addition, the following items should be considered for improvement:

- Provide a cross-referencing matrix or other such mechanism by which primary emergency response personnel can ascertain all of their emergency responsibilities. (50-387/82-12-30)

- Tabulate the "Responsibilities" and "Instructions" sections of the EPIPs to eliminate repetition and improve readability. (50-387/82-12-37)

5.2 Emergency, Alarm, and Abnormal Occurrence Procedures

The Emergency Operating Procedures developed pursuant to Regulatory Guide Rev. 1.33 did not contain specific references to emergency preparedness implementing procedures. The applicant indicated that the operating personnel would be aware of when to implement the Emergency Plan from their training in the EOPs. The auditors determined that the above personnel were generally aware of their responsibilities but to assure this, the classification procedure, EP-I-001, should be referenced in the EOPs.

Based on these findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- Include a reference to EPIP-001 in the appropriate Emergency Operating Procedures. (50-387/82-12-32)

5.3 Implementing Instructions

The auditors reviewed the Emergency Plan Implementing Instructions which were contained in EP-IP-001, EP-IP-002, and EP-IP-033. The auditors determined that a separate Implementing Instruction was prepared for each class of emergency. Implementing Instructions were written for use by the Emergency Director and outlined the tasks that he must perform; however, his responsibility for providing the initial protective action recommendations to offsite agencies was not clearly indicated. Also the Implementing Instructions did not clearly orchestrate the implementation of other more specific procedures.

The auditors determined, based on review of the EALS and Implementing Instructions, that provisions had not been incorporated for classifying emergencies and recommending protective actions to offsite agencies for accident situations which did not involve ongoing releases of radioactivity (that is, the EALS and the Implementing Instructions were deficient for those situations in which no releases had occurred, but plant conditions as indicated on available control room instrumentation (containment radiation levels, containment pressure and temperature, safety systems operability or inoperability, and so on) were deteriorating so that radioactive releases were imminent). In accordance with NUREG-0737, II.F.1, attachment 3, and NUREG-0654, I.2 and I.3, the relationship between containment monitor readings (indicating degree of core degradation) and offsite projected dose rates should be established for expedient use by control room personnel during an accident situation.

Furthermore, based on a review of the Emergency Plan and IPIP-001, the following NUREG-0654 example initiating conditions were not addressed.

Unusual Events 13b: add an EAL for low water level

Alert 17c&d: include wind velocity values

Site Area Emergency 12: added another "or" condition (any other indication that a transient has occurred or is in progress)

General Emergency under loss of Shutdown Cooling Capability on p. 39 of 49: Supply the time frame for this second "and" condition.

The EALs in the Emergency Plan were not synchronized with EALs in EPIP-001. The Emergency Plan should be revised accordingly to reflect the revision of EPIP-001.

Based on the above finding, improvements in the following areas are required to achieve an acceptable program:

- Revise the Implementing Instructions to clearly indicate to the Emergency Director his responsibility for making the initial offsite protective action recommendations. (50-387/82-12-33)

- Develop EALs corresponding to the PAGs cited in EP-IP-033 for use by the Emergency Director incorporating the relationship between containment monitor readings and offsite projected dose rates. (50-387/82-12-34)

- Provide for making protective action recommendations based on current and projected plant status as evidenced from control room instrumentation prior to an imminent release. (50-387/82-12-35)

- Revise the Emergency Plan to reflect the revision of EPIP-001. (50-387/82-12-36)

5.4 Implementing Procedures

5.4.1 Notifications

Implementing Procedure EP-IP-002 contained instructions for notifying onsite and offsite organizations in the event of an emergency. Based on the classification of the event, certain actions would be performed and certain notifications would be made. The procedure provided authentication schemes and certain emergency response phone numbers, and described the means for contacting major response agencies. The procedure also indicated that a pager system would be used for off-hours shift augmentation; however, this system was not fully operational and had not been tested, and duty rosters had not been generated. EP-IP-002 also failed to indicate any protective action recommendations to be made in the initial notification to offsite agencies.

Based on the above findings, improvements in the following areas are required to achieve an acceptable program:

- Complete the purchase, testing, and distribution of the pagers which will be used for staff augmentation. (50-387/82-12-37)

- Prepare initial offsite notification messages to include protective action recommendations which are based on current and projected plant conditions (that is, core inventory as well as radiological dose projections). (50-387/82-12-38)

5.4.2 Assessment Actions

The auditors reviewed Emergency Plan Implementing Procedures EP-IP-009, "Emergency Off-site Dose Calculation," and EP-IP-033, "Dose Assessment and Protective Actions," observed the operation of the RADDOSE computer code on the plant process computer, and discussed dose assessment procedures with applicant representatives.

The applicant's assessment program relied on three levels of computational ability. These levels, in the order of preference of their usage were: (1) the code RADDOSE on the plant process computer; (2) the programs MET 1 and MET 2 on hand-held microcomputers, and (3) hand calculation using a site map with dose isopleth overlays.

At the time of the audit, all information concerning meteorology and source term data was entered into the program RADDOSE from the computer keyboard. Applicant representatives indicated that work was proceeding on establishing automatic input of meteorology data and radioactive release rate information from the plant vent monitors.

The program incorporated site-specific information concerning topography and meteorology in calculating offsite doses. The program provided projections of radioiodine concentrations, dose rates, whole-body and thyroid doses, and the time remaining until protective action guides were exceeded for each of sixteen sectors surrounding the plant at specified distances from the plant. RADDOSE had the capability of providing real-time information at a frequency of at least once every ten minutes, or of being used in a "study case" mode for predicting future conditions. Given specific field measurements of dose rate and radioiodine concentrations RADDOSE could back-calculate releases rates and use those rates for projecting offsite doses. However, neither the HP or operations staff had been trained in RADDOSE.

If RADDOSE were unavailable, the applicant would rely on a backup system of microcomputers and map overlays. The microcomputers, with the programs MET 1 and MET 2, could calculate centerline dose rates and radioiodine concentrations of a plume out to ten miles from the plant. The microcomputers could also use field measurements at the plume centerline to back-calculate release rates of noble gases and iodines. Thirty-six map overlays, depecting isopleths for various wind directions and atmospheric stability classes, were available for visually displaying the plume pathway and for manually calculating dose rates and radioiodine concentrations.

The applicant had installed two containment high radiation monitors for each reactor which would measure containment dose rates. No provisions were made for using the readings from these instruments to predict the source term within the containment structure. Applicant representatives indicated that the containment source term would be determined by means of the containment atmosphere monitor and by containment air sampling. This, however, was not reflected in the dose assessment procedures. Furthermore, neither the HP or staff operations staff had been trained in the relationship of µCi/cc I131 equivalent corresponding to the degree of core degradation which in turn would trigger a given offsite recommendation.

The applicant had made provision for trending release data and for supplying initial and updated data to offsite agencies.

Based on the above findings, improvement in the following area is required to achieve an acceptable program:

- See Section 5.3 for the outstanding items identified as necessary for the overall procedure review.

5.4.2.1 Offsite Radiological Surveys

The auditors reviewed EP-IP-013 "Off-Site Emergency Monitoring Teams," examined the offsite monitoring team kits at the Interim EOF, and discussed the offsite monitoring program with applicant representatives.

The Procedure EP-IP-013 specified the methods and equipment to be used by the offsite monitoring teams to perform radiological surveys. The data sheet for EP-IP-013 provided a means for team members to record: the date, time and

location of each survey; the identity of the team members; the instruments used, by serial number; instrument mode (window closed); air sampler flow rates and sampling times; background total counts and counting times; and sample total counts and counting times.

Particulate filters and silver zeolite cartridges were to be individually labeled and returned with the original data sheets to the Offsite Team Coordinator (OTC). Teams were to communicate with the OTC by radio. Radiation protection guidelines were provided for the teams.

The EP-IP did not provide instructions for the teams to make open window readings with the dose rate instruments to differentiate between the beta and gamma components of a radiation field. The formula for calculating the concentration of radioiodine on the Off-Site Monitoring Team Data Sheet (EP-IP-013, Attachment B) appeared to be incorrect. The EP-IP called for teams to check the response of the dual channel analyzers, before use, with check sources supplied in the monitoring kits, but the only check sources contained in the kits were cesium-137, which appeared to be inappropriate for the intended purpose because of the difference between the source's gamma energy and that which the analyzer was set up to measure.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- Identify the source of radios for the offsite monitoring teams. (50-387/82-12-39)

- Provide instruction to offsite monitoring teams to make measurements of the beta and gamma components of radiation fields. (50-387/82-12-40)

- Correct the formula for the offsite monitoring teams to calculate radioiodine concentrations. (50-387/82-12-41)

- Provide an appropriate means for offsite monitoring teams to check the responses of their instruments. (50-387/82-12-42)

5.4.2.2 Onsite (Out-of-plant) Radiological Surveys

The auditors reviewed EP-IP-012 "On-site Emergency Monitoring," examined the onsite HP van and discussed the onsite monitoring program with applicant representatives.

The procedure EP-IP-012 specified the methods and equipment to be used by the onsite monitoring teams to perform radiological surveys. The data sheet for EP-IP-012 provided a means for team members to record: the date, time and location of each survey; the identity of the team members; the instruments used, by serial number; the instrument mode (window closed); air sampler flow rates and sampling times; background total counts and counting times; and total sample counts and counting times.

Particulate filters and silver zeolite cartridges were to be individually labeled and returned with the data sheets to the HP Office. Radiation protection guidelines were provided for the team members, but these did not reflect previous exposure that the individuals may have received. The EP-IP did not provide for the teams to make open window readings with the dose rate instruments to differentiate between the beta and gamma components of a radiation field. The formula for calculating the concentration of radioiodine on the On-Site Monitoring Team Data Sheet (EP-IP-012, Attachment H) appeared to be incorrect (it was also different from the formula provided on the Off-Site Monitoring Team Data Sheet). The EP-IP called for the On-Site Emergency Monitor to obtain the onsite HP van box from the Health Physics Emergency Equipment Room, but the auditors observed that all the necessary equipment was already present in the HP van. The On-Site Emergency Monitor was to check the response of the dual channel analyzer with a check source supplied in the van, but the check source supplied appeared to be inappropriate because of the difference between the source's gamma energy and that which the analyzer was set up to measure.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- Verify that protection guidelines for the onsite emergency monitor reflect previous exposure. (50-387/82-12-43)

- Provide instruction to the onsite emergency monitor to make measurements of the beta and gamma components of radiation fields. (50-387/82-12-44)

- Correct the formula used by the onsite emergency monitor to calculate radioiodine concentrations. (50-387/82-12-45)

- Provide an appropriate means for the onsite emergency monitor to check the response of the instruments. (50-387/82-12-46)

5.4.2.3 In-Plant Radiological Surveys

The auditors reviewed EP-IP-010 "In-plant Emergency Monitoring" and discussed in-plant monitoring with applicant representatives.

The procedure EP-IP-010 specified the methods and equipment to be used by the in-plant monitoring teams for radiological surveys, but did not specify where the equipment would be located. The data sheet for EP-IP-010 (SUSQ SES AREA SURVEY MAP) did not provide individual space for dose rate reading or sampling times.

Particulate filters and silver zeolite cartridges were to be individually labeled and returned with the data sheets to the HP Office for analysis. No analysis was to be performed in the survey area.

The in-plant monitoring teams were to communicate by radio to provide survey results to the OSC Coordinator. Radiation protection guidance was provided.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

o Provide a data sheet for the in-plant monitoring team that reflects all the information that is to be gathered. (50-387/82-12-47)

5.4.2.4 Post-Accident Primary Coolant Sampling

The auditors reviewed EPIP-034 (Reactor Building Sample Station Emergency Sampling) and discussed the operation of the reactor coolant post-accident sampling system with SSES chemistry personnel.

The procedure listed the steps required to take a liquid sample from the primary sample sink, the equipment needed, and the precautions to be followed during the sampling process.

The procedure specified the maximum sample size/dose rate obtainable and the dose rate dictating when a sample should be transported in a lead cask. EPIP-034, however, did not note where the lead cask was stored. During the walk-through (See section 7.2.3) the lead cask was not at the sample location.

As stated in Section 4.1.1.5, should high radiation levels preclude obtaining a sample from the 779 foot sample sink, jet pump or RHR liquid samples can be obtained from the PASS sampling location as per procedures EPIPs-043 and 047.

Based on the above findings, this portion of the applicants' program is acceptable, but the following matter should be considered for improvement:

o Include in EPIP-034 the storage location(s) for lead transport cask(s). (50-387/ 82-12-48)

5.4.2.5 Post-Accident Primary Coolant Analysis

The auditors reviewed the analytical procedures in EPIP-034 used to evaluate post-accident reactor coolant samples.

The procedure discussed the penultimate steps required to prepare (dilute) the sample based on dose rate before performing an isotopic analysis. EPIP-034 however, did not address steps required to perform pH, boron, or chloride analyses.

The following procedures addressed laboratory safety, laboratory techniques, counting room techniques, sampling methods and sample control, and laboratory emergency preparation:

CH-GI-001 through CH-GI-004, AD-00-443, and EPIP-042.

EPIP-042 did not address when to use the alternate counting facility in the EOF. Various counting geometries for the different sampling containers had been identified, but the respective calibration curves were not generated.

There was a chemistry lab emergency instruction manual which explained how to determine sample activity based on dose rate assuming full power core equilibrium and a 1-hr shutdown measurement. Iodine-131 dose equivalent conversion was also discussed. However, the procedures did not specify that the results were to be reported to the technical engineering group in the TSC.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- o Revise EPIP-034 to address the reporting of data to the Technical Engineering Group in the TSC. (50-387/82-12-49)

- o Revise EPIP-034 to include instructions for boron, chloride, and pH analysis. (50-387/82-12-50)

- o Specify in EPIP-042, the radiation levels that would trigger using the alternate counting facility in the EOF. (50-387/82-12-51)

- o Generate all the various counting geometry calibration curves that will be used in MCA analysis. (50-387/82-12-52)

5.4.2.6 Post-Accident Containment Air Sampling

The auditors reviewed EPIP-045 (PASS 10-ml Gas Sample), EPIP-047 (PASS Large Liquid/Dissolved Gas Sample) and EPIP-046 (PASS Iodine/Particulate Sample) and discussed pertinent procedural issues with SSES chemistry personnel in order to ascertain the applicant's conformance with NUREG-0737, Item II.B.3.

These procedures provided a schematic of the PASS sample valve locations, listed the steps required to obtain a drywell, suppression pool, and/or a secondary containment gas sample and particulate/iodine sample and stated the precautions to be followed and protective equipment needed during the sampling process. Possible dose rates 1 hour after a major accident were discussed in Section 4.1.1.6.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- o See Section 5.4.2.7 for the items identified per the overall procedural review.

5.4.2.7 Post-Accident Containment Air Sample Analysis

The auditors reviewed available procedures and held discussions with chemistry personnel to evaluate the applicant's conformation with NUREG-0737, Item II.B.3, which specifies that the applicant be able to sample and analyze the containment air for iodines, particulates, and noble gases within 3 hours after an accident without incurring a radiation exposure to any individual in excess of 10 CFR 20 limits.

EPIP-045 and -047 explicitly outline dilution procedures for isotopic analysis. However, these procedures do not contain instructions for performing gas chromotography analysis or precautions on the flamability of hydrogen and a possibility for a radiation hazard. Section A.1.3, Attachment A of EPIP-047 referenced a deleted procedure, EPIP-040, and should reference EPIP-033.

EPIP-046 stated that for an iodine sample, the cartridge is purged in line before transport to the chemistry laboratory. Once in the chem lab, the cartridge retainer is placed in the fumehood and disassembled (that is, the particulate filter is placed in a plastic petri dish and the cartridge is wrapped in plastic film) before isotopic analyses is performed.

EPIPs-045, -046, and -047 did not specify that the results are reported to the technical engineering group in the TSC.

Based on the above findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- o Revise procedures EPIP-045 and -047 to include instructions for gas chromatographic analysis. (50-387/82-12-53)
- o Revise procedures EPIP-045, -046, and -047 to reference the reporting of data to the technical engineering group in the TSC. (50-387/82-12-54)
- o Revise Section A.1.3, Attachment A of EPIP-047 to reference EPIP-033. (50-387/82-12-55)

5.4.2.8 Post-Accident Gaseous and Particulate Effluent Sampling

The auditors reviewed EPIP-035 (Emergency Vent Monitor Sampling) against NUREG-0737, Item II.F.1, to verify the applicant's ability to sample high activity effluents during emergency situations.

EPIP-035 listed sampling equipment and protective devices/clothing that would be needed, instructed chemistry personnel to be cognizant of continuous air monitor and area radiation monitor readings enroute to the sampling station and area radiation monitor readings on the 818' elevation, and instructed chemistry personnel to retreat if a given dose rate were exceeded.

EPIP-035 provided a checklist for obtaining the charcoal/particulate sample and installing the vent monitor grab sample apparatus to the fixed airborne area monitor. The procedure specified the contact dose rate criteria for transporting a sample to the chem lab.

Should the 818' elevation become inaccessible, PASS Iodine/Particulate samples can be obtained, as mentioned in Section 4.1.1.7.

Based on the above findings, this portion of applicant's program is acceptable.

5.4.2.9 Post-Accident Gaseous and Particulate Effluent Sample Analysis

The auditors reviewed EPIP-035 (Emergency Vent Monitor Sampling) and discussed the applicant's capability to perform vent effluent sample analyses with SSES chemistry personnel. EPIP-035 delineated how to prepare the PING system samples for analysis (i.e., purging the iodine cartridge, diluting the gas grab sample, etc. prior to doing an isotopic analysis).

Based on the above findings, this portion of the applicant's program is acceptable.

5.4.2.10 Liquid Effluent Sampling

The auditors reviewed EPIP-044 (Emergency Environmental Sampling), CH-RC-037 (Liquid Radwaste Discharge Analysis), SC-69-001 (Liquid Radwaste Sampling and Pre-Release Analysis), and CH-IC-011 (Liquid Radwaste Process Monitor Radiological Calibration) and discussed the subject with SSES chemistry personnel.

Section B.1.0 of EPIP-044 briefly instructed chemistry personnel where to take the sample, the type of data needed to analyze the sample, and where to report the results. More detailed specifics for performing an isotopic analysis were given in the other chemistry procedures listed above.

The laboratory and related equipment were discussed in Section 4.1.1.5.

Based on the above findings, this portion of the applicant's program is acceptable.

5.4.2.11 Liquid Effluent Sample Analysis

The auditors held discussions with chemistry personnel to evaluate the applicant's provisions for performing liquid effluent analysis under emergency conditions.

As previously stated, EPIP-044 did not address sample analysis. Sample preparation, counting, data management, and criteria for release and further analysis were specified in the aforementioned procedures.

Chemistry lab preparation for emergency sample analysis was addresed in EPIP-042 which was supplemented by additional CH-GI series procedures dealing with handling radioactive samples.

Based on the above findings, this portion of the applicant's program is acceptable.

5.4.2.12 Radiological and Environmental Monitoring Program (REMP)

The auditors reviewed EP-IP-044, "Emergency Environmental Sampling," observed the equipment and facilities at the applicant's Biology Laboratory, and discussed the REMP with applicant representatives.

Procedure EP-IP-044 called for the direction of the Emergency REMP to come from the Radiological Support Manager at the EOF. The performance of sampling operations was to be done by Environmental Samplers from the applicant's Biology Laboratory. The EP-IP provided instructions for the REMP-Environmental Samplers, but did not give specific steps in collecting samples of milk, food products and vegetation, and iodine and air particulates. These operations were to be performed in accordance with Procedure RMC-T46, Radiation Management Corporation's Procedure for Environmental Sampling. The EP-IP contained numerous typographical errors in the sections providing instructions to the Environmental Samplers as exemplified by step E.1.3 of EP-IP-044 where the Environmental Sampler was to collect samples "as directed by the ENVIRONMENTAL SAMPLER." Direction should have come from the RADATION SUPPORT MANAGER.

In step D.1.5 of EP-IP-044, the instruction was given that "the ENVIRONMENTAL SAMPLER will...recommend to Danville Water Authority,...in concurrence with the RADIATION SUPPORT MANAGER, any protective action which should be taken by Danville." Recommendations to local authorities are to come from the Emergency Director or Recovery Manager, not the Environmental Samplers.

The EP-IP did not provide instructions for the Environmental Samplers with regards to radiation protection. There were no provisions for the Environmental Samplers to obtain dosimetry, monitoring instruments or radios with which to communicate to the Radiation Support Manager.

Based on the above findings, this portion of the applicant's program is acceptable, bu the following matters should be considered for improvement

- Specify, in the Emergency Procedures, the locations of all equipment for the REMP Sampling Teams and the means for acquiring such. (50-387/82-12-56)

- Clarify the REMP procedures so that the authorities and responsibilities of all individuals are correct and that instructions are clear and unambiguous. (50-387/82-12-57)

5.4.3 Protective Actions

5.4.3.1 Radiation Protection During Emergencies

The auditors reviewed the following procedures having to do with radiation protection during emergencies:

EP-IP-033 Dose Assessment and Protective Actions
HP-AD-602 Personnel Contamination and Injury Reports
HP-TP-620 Health Physics Surveillance
HP-TP-217 Exposure Records
AD-00-705 Access Control and Radiation Work Permit System
AD-00-720 Contamination Control
AD-00-725 Respiratory Protection Program
AD-00-735 External Dosimetry Program

These procedures provided guidance in assessing radiation doses, determining protective actions, establishing limits for emergency exposures, maintaining exposure records, establishing positive access controls, preventing further exposures, bioassay and respiratory protection, and instructions to emergency workers. In addition, the procedures described how and by whom health physics functions will be performed. It was noted that action levels and recommendations for the use of Potassium Iodide (kI) were omitted from the current EP-IP's.

Based on these findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement.

o Include in the EP-IPs action levels and recommendations for the use of Potassium Iodide. (50-387/82-12-58)

5.4.3.2 Evacuation of Owner Controlled Areas

The auditors reviewed Emergency Plan Sections 6.4.1.1, 6.4.1.2, 6.4.1.3 and EP-IP's-021 and -007 which dealt with evacuation of owner controlled areas. Table 6.3 in the Emergency Plan gave criteria for controlled zone/site evacuation by plant conditions. Locations for eleven in-plant assembly areas were specified as well as two remote assembly areas off-site. The procedure for local/site evacuation contained references to personnel accountability and to personnel and vehicle decontamination procedures. The procedure for accountability contained a prepared message to be read over the plant PA system to direct essential and non-essential personnel to the correct assembly points. EP-IP-021 also contained a tabular listing of all essential plant personnel by assembly area and job function. Security was responsible for coordinating site evacuation, compiling a list of all essential personnel remaining on site and maintaining continuous accountability. Primary and secondary evacuation routes were not marked for easy visibility. Neither the plan nor the EP-IP's mentioned the interface between site evacuation and the evacuation of the construction personnel at Unit 2.

Based on these findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

o Clearly mark primary and secondary evacuation routes. (50-387/82-12-59)

o Include as an action step in EP-IP-021 to notify construction personnel at Unit 2 of a site evacuation and confirmation that their evacuation procedure has been implemented. Further include an action step that ensures that the Emergency Director is notified when the Unit 2 evacuation is completed. (50-387/82-12-60)

5.4.3.3 Personnel Accountability

The auditors reviewed emergency procedure EP-IP-007, "Personnel Assembly and Accountability." Discussions were also held with security personnel and the site Supervisor of Security. The procedure required completion of accounting within 30 minutes. Accountability would be performed at the eleven site

assembly areas. Each site assembly area had a designated assembly area leader who was responsible for taking a roll call and determining if any personnel are missing. The Security organization had the responsibility to cross check the assembly area roll calls and the computer print-out to locate individuals reported as missing. Upon completion of this cross check, Security would notify the Emergency Director of the results of the accountability. If personnel were not located, the Emergency Director would implement EP-IP-006, "Search/ Rescue/First Aid." Once initial accountability had been established and non-essential personnel had been evacuated continuous accountability would be maintained using the plant computer system and inplant team monitoring procedures. Attachment A of EPIP-007, included an action step for the Emergency Director to determine habitability of all assembly areas. However, it failed to make any reference to how this would be accomplished. Neither the plan nor the procedures mentioned the interface between Unit 1 personnel assembly/accountability and the procedures used to perform personnel assembly/ accountability of the construction personnel at Unit 2.

Based on these findings, this portion of the applicants' program is acceptable, but the following matter should be considered for improvement:

- Include in action step A.1.3, of Attachment A to EP-IP-007, a reference as to how habitability of the assembly areas would be established. (50-387/82-12-61)

- Include in EP-IP-007 action steps that ensure that Personnel Assembly/ Accountability procedures have been initiated for the construction personnel at Unit 2 when the Emergency Director orders a site assembly/accountability, and that the Emergency Director is notified of the results of the Unit 2 assembly/accountability upon completion. (50-387/82-12-62)

5.4.3.4 Personnel Monitoring and Decontamination

The auditors reviewed the following procedures to verify that the applicant had established provisions for monitoring and decontaminating individuals and equipment leaving restricted areas and at assembly/reassembly areas:

EP-IP-014	Personnel and Vehicle Contamination Surveys
AD-00-720	Contamination Control
HP-AD-620	Personnel Contamination and Injury Reports
HP-TP-204	Maintaining Contaminated Area Control Point
HP-TP-610	Removable Contamination Surveys
HP-TP-624	Personnel Decontamination
HP-TP-642	Area Decontamination
HP-TY-005	Temporary Bioassay Program

The emergency plan stated that personnel evacuated from the site would be monitored at the portal monitors positioned at the north gate house, with additional monitoring being provided by a HP technician using a frisker (RM-14/HP-210). Appropriate Anti-Cs (anti-contamination clothing) would be distributed to persons identified as contaminated, and they would be properly transported to the most available decontamination facility. Contamination

levels requiring decontamination actions were specified in EP-IP-014 and references were made to the standard procedures to be followed for decontamination. The presence of nasal contamination was used as a trigger for considering the Internal Dosimetry Program.

The routine monitoring and decontamination procedures provided a means to record names of contaminated victims, a place to record the results of any decontamination efforts, and sketches to facilitate description of the affected body areas. Neither EP-IP-014 nor its referenced procedures described a method for providing collected data to the organizational element responsible for radiation protection during an emergency.

Based on these findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- Include in EP-IP-014 action steps that ensure the collected data reaches the organizational element responsible for radiation protection during an emergency. (50-387/82-12-63)

5.4.3.5 Onsite First Aid/Search and Rescue

The auditors reviewed EP-IP-006 Search/Rescue/First Aid and observed a medical emergency drill involving Geisinger Medical Center. The procedures gave radiation protection guidance and addressed methods for recovery, transporting and handling injured personnel who may also be contaminated, although no provisions were included in the procedure for handling a contaminated injury in the onsite first aid station. The drill demonstrated the applicant's ability to administer first aid to a seriously injured and contamined individual. Geisinger Medical Center demonstrated its ability to move a seriously injured victim using its Life Flight helicopter, as well as its procedures and facilities for handling a highly contaminated patient. Agreements were also established with Berwick Hospital and local ambulance companies for treating and transporting less serious injuries.

Based on the above findings, this portion of the applicants' program is acceptable, but the following matter should be considered for improvement:

- Revise procedure EP-IP-006 to address the problem of treating a contaminated injury victim onsite. (50-387/82-12-64)

5.4.4 Security During Emergencies

The auditors reviewed security procedures EP-IP-007, Personnel Assembly and Accountability, EP-IP-015, Emergency Access, EP-IP-021, Site Emergency Evacuation, EP-IP-011, Security Contingency and AD-00-800 Security Section Activities. The contents of these procedures were discussed with the site Supervisor of Security. Procedure AD-00-800 had been approved by PORC and procedures EP-IP-007, 011, 015, 021 had not been submitted to PORC. The role of the security force during an emergency is to provide a timely and accurate accountability of all on-site personnel upon request of the Emergency Director and to maintain security during a Local Area Evacuation or a Controlled Zone

Evacuation. During a site evacuation, Security advises local police, assists at Remote Assembly Areas, advises assembly area leaders of evacuation instructions, identifies names of essential personnel remaining, and assures that all notifications have been made. In addition, the security force ensures expeditious entrance and exit to and from the site for emergency assistance (e.g., fire, rescue, ambulance, law enforcement). Security also provides a listing of personnel remaining within the plant's protected area by use of a computer listing and badge control.

Based on these findings, this portion of the applicants' program is acceptable.

5.4.5 Repair/Corrective Actions

The auditors reviewed procedures EPIP-016 (Damage Control) and determined that it addressed the purpose, scope, and responsibilities for damage control, including radiological protection of team members.

Based on these findings, this portion of the applicant's program is acceptable.

5.4.6 Recovery

The auditors reviewed procedures EP-IP-027 (Activation of Restoration Organization) and EP-IP-028 (Downgrade and Termination) and determined that these procedures specified the individuals responsible for downgrading an emergency at the various levels of activation. Once the EOF was activated the Recovery Manager was the individual responsible to downgrade and terminate the emergency. The Vice President - Nuclear Operations was responsible to establish the Restoration Organization.

Conditions were established for termination based on the plant being in a stable condition with no potential for inadvertent off-site releases of radioactivity. Provisions were included for notifications to offsite agencies and internal management prior to establishing the Restoration Organization.

Based on these findings, this portion of the applicant's program is acceptable.

5.4.7 Public Information

The auditors reviewed a draft copy of the Public Information Emergency Procedures and held discussions with the Special Assistant to the President. The procedures identified the personnel involved in and locations for news dissemination, including interim provisions prior to establishment of the news center. Provisions were addressed for the flow of information from the plant to the media and to respond to public inquiries separate from the news media.

However, the EPIP did not explicitly identify the company spokesperson. The Public Information Manager was listed as the chief company spokesperson, implying that there were others. The EP-IP did not designate a line of succession if the Special Assistant to the President or his alternate not were available.

The sources of information to be used by the spokesperson were not clearly specified. Initially information would come from the TSC and EOF; however, neither titles nor names were identified for individuals providing information.

Logistics for coordinating information among spokespersons for various organizations were in place, but procedures were not complete. News Announcements would go to other agencies in the MOC, but other coordination with FEMA, NRC and other Federal Agencies was not defined.

Based on the above findings, this portion of the program is acceptable, but the following matters should be considered for improvement:

- o Approve and implement draft procedures for public information during an emergency. (50-387/82-12-65)
- o Train the appropriate personnel in this procedure. (50-387/82-12-66)
- o Identify the company spokesperson(s) and designate a line of succession. (50-387/82-12-67)
- o Specify the sources of information to the used and identify by name, or title, individuals providing the information. (50-387/82-12-68)
- o Outline procedures for coordinating information flow among the spokespersons for outside organizations. (50-387/82-12-69)

5.5 Supplementary Procedures

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

The auditors reviewed Draft Procedure NSI 3.2, "Inventory, Inspection, Operational Equipment and Supplies," and Appendix D of the Emergency Plan, "Equipment Information Listings." The plan specified that the Manager-Nuclear Support was responsible for planning and scheduling quarterly inventory and inspection of designated emergency equipment and supplies. At the time of the appraisal, all survey instruments were calibrated and repaired by a vendor, and all calibration and repair records were maintained by the I&C section. Procedure NSI 3.2 defined the various inventories of emergency equipment, division of responsibilities, methods and frequency of inventories. The auditors noted that the procedure did not specify the locations of the kits listed nor did the inventory lists provide a place for operability checks of instruments kept in the kits. It was further noted that NSI 3.2 did not provide for all emergency kits, supplies and equipment listed in Appendix D of the Emergency Plan or referred to in the EP-IP's, such as; Control Room Emergency Equipment, Station Assembly Area Emergency Equipment, EOF Emergency Equipment and Supplies, Geisinger Medical Center Emergency Equipment and Supplies, Fire Brigade Emergency Equipment, Search and Rescue Kits, Off-site Assembly Area Equipment, and OSC emergency equipment.

Based on the above findings, this portion of the program is acceptable, but the following matter should be considered for improvement:

- Revise NSI-3.2 or develop other procedures to require all emergency equipment and supplies specified in the EP-IP's and Emergency Plan be inventoried, inspected, operationally tested, and calibrated. (50-387/82-12-70)

5.5.2 Drills and Exercises

The auditors reviewed records of past drills and interviewed the Supervisor, Emergency Planning, who was responsible for coordinating all drills and exercises. The applicant had a procedure, in draft form, which covered conducting, and evaluating drills. The records review indicated that the applicant prepared the scenarios with input from the staff and was committed to allocate the necessary resources to conduct them. The comment sheets, used to evaluate drills/exercises, contained statements on observed deficiencies and suggestions for improvements. The auditors did not find evidence, however, of a current system for tracking and resolving identified deficiencies.

Based on these findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- Include privisions in the drill evaluation procedure for resolving identified deficiencies. (50-387/82-12-71)

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

The auditors reviewed procedures NDI-QA-1.2.2 (Susquehanna SES Records Management System), NDI-QA-10.8.1 (Nuclear Department Qualification and Training), and NDI-6.7.2 (Susquehanna SES Nuclear Emergency Planning) and held discussions with applicant personnel.

Procedure NDI-QA-10.8.1 specified the individual responsible for reviewing telephone numbers of on-call individuals although no frequency was specified. Procedure NDI-6.7.2 required a review and update of the Emergency Plan, and the applicant indicated that a procedure would be drafted for this function.

Based on these findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- Modify section 5.7 of NDI-QA-10.8.1 to include the frequency required for updating contact lists. (50-387/82-12-72)

- Modify section 5.1 of NDI-6.7.2 to include the frequency required for review and update of the Emergency Plan and Implementing Procedures. (50-387/82-12-73)

5.5.4 Audits of Emergency Preparedness

Procedure NDI-QA-10.8.1 specified the Manager, Nuclear Quality Assurance, to perform an annual audit of personnel lists to assure availability of adequate staffing. Procedure NDI 6.7.2 specified that the same individual was to perform audits of the Emergency Plan and its Implementing Procedures, although no frequency was specified. The applicant indicated that a checklist was under development to aid in performing this function.

Based on these findings, this portion of the applicant's program is acceptable, but the following matter should be considered for improvement:

- Prepare a procedure for auditing the Emergency Plan and Implementing Procedures, including frequency and areas to be evaluated. (50-387/82-12-74)

6.0 COORDINATION WITH OFFSITE GROUPS

6.1 Offsite Agencies

The auditors contacted responsible individuals within the following organizations to verify that there was an understanding of responsibilities and roles in response to an emergency at the applicant's facility and that these understandings were consistent with the agreements and applicant's procedures and the expectations of both parties: Pennsylvania Emergency Management Agency; Pennsylvania Department of Environmental Resources, Bureau of Radiological Health; Columbia County Emergency Management Agency; Luzerne County Civil Defense; Nescopeck Ambulance Association; Salem Township Fire Co., No. 1; and Berwick Hospital.

The auditors verified that the applicant had contacted the appropriate organizations for the purposes of training, drills, and exercises. All parties contacted spoke favorably about the cooperation between the applicant and their respective organizations.

The auditors verified that all letters of agreement were included in the emergency plan and the applicant indicated that these were in the process of being updated.

Based on these findings, this portion of the licensee's program is acceptable.

6.2 General Public

The auditors held discussions with the Special Assistant to the President (PP&L) and reviewed the public information printed in area newspapers before the exercise (March 18, 1982). The information included incident classifications, public notification methods and instructions, radiation effects, and methods of self-protection such as the sheltering and evacuation. The auditors stated that a contact, including phone number, should be provided in this presentation so that the public is provided with a means to obtain additional information.

The applicant indicated that two brochures had been prepared, in conjunction with the Pennsylvania Emergency Management Agency, and would be disseminated to the public shortly. The applicant also stated that a lecture series was being presented, covering four topics (emergency planning, radiation, alternative energy, nuclear plant operation) on selected dates. The auditors attended one of these meetings.

Based on these findings, this portion of the applicant's program is acceptable, but the following matters should be considered for improvement:

- Complete and distribute to the general public, the brochure covering emergency information. (50-387/82-12-75)

- Provide in any information package for the public, a contact person, including telephone number, for acquiring additional information. (50-387/82-12-76)

6.3 News Media

The auditors held discussions with the Special Assistant to the President concerning the program to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency. The applicant stated that meetings with the news media have been held quarterly and seminars were periodically scheduled.

Based on these findings, this portion of the applicant's program is acceptable.

7.0 DRILLS, EXERCISES, AND WALK-THROUGHS

7.1 Program Implementation

While the auditors were on site, the applicant conducted a medical drill with the Geisinger Medical Clinic. The applicant had prepared a scenario and informed the auditors that the primary purpose of the drill was to train the Geisinger Medical Clinic Emergency Room personnel. An agreement had recently been established between PP&L and Geisinger for emergency backup medical support.

The injury simulated in the drill was of such severity that a helicopter had to be called from the Geisinger Clinic bringing a doctor and a nurse. Upon arriving at the site, the doctor and nurse donned anticontamination clothing and entered the radwaste building where the simulated injury had taken place (the patient had injured his back and could not be moved by the first aid team). After being treated by the physician, the patient was transferred by ambulance to the waiting helicopter and flown to the Clinic.

There were two minor problems in the response at the site. One was a slight delay in getting the ambulance to the injured party because the security personnel were using radios with a different frequency than that being used by the first aid team. Secondly, the ambulance departed for the helicopter immediately after the patient was loaded, leaving the doctor and nurse at the scene. This was the Bechtel SSES ambulance simulating an offsite ambulance.

A significant problem occurred when the helicopter communicated to the clinic while enroute and did not preface the message with "this is a drill." This caused some concern at other hospitals which were monitoring the radio frequency and as a result the applicant had to call several hospitals and offsite support agencies and announce that it was, indeed, a drill.

Based on these findings, this portion of the applicant's program is acceptable.

7.2 Walk-Through Observations

7.2.1 Emergency Detection (EAL Recognition) and Emergency Classification

The auditors performed walk-throughs with personnel qualified as Emergency Directors (ED) on each shift. In each case, the CR personnel were presented with the following situations:

(1) 2200 hrs, minimum shift complement

(2) ECCS had been initiated

(3) reactor H^2O level: -50" but as yet no indication of fuel damage

(4) reactor coolant system leak rate: greater than 50 gpm

(5) containment monitor reading: 100+ R

(6) drywell pressure: 15 psig and increasing

(7) H_2O level continues to drop even though all procedures to rectify the situation have been followed

(8) containment does not isolate

Initially a set of the EPIPs were not in the control room. Upon obtaining a copy, each Shift Supervisor walked through the appropriate Emergency Operating Procedures and classified the event. However, once the event was classified each ED hesitated about what constituted the next step. When asked the relationship between containment monitor readings and EALS (that is, various degrees of core degradations), they weren't sure. When asked what offsite recommendations would be made and the basis for these recommendations, they could not make the transition from EPIP-001 to EPIP-033 and were not aware of that procedure; that is, they had not been trained in EPIP-033 or to consider offsite recommendations and dose/projections based on in-core status prior to a release even though Section 5.0 of the Emergency Plan states that the ED will perform initial dose projections and will make resulting recommendations regarding offsite protective actions.

The CR operators indicated that they found it difficult to make the transition from one EP-IP to another.

The findings and observations summarized above were evaluated as part of the findings in Section 5.3.

7.2.3 Notifications

During EAL recognition/classification walk-throughs, control room personnel were asked to demonstrate offsite notifications. They proceeded to walk through EPIP-002 (Emergency Management Notifications). This procedure lists certain actions based on classification and time of day. When asked to respond to the off-normal hours section, the control room personnel indicated that they had not been drilled to perform notifications other than during regular duty hours.

From the control room, the auditors phoned PEMA during normal duty hours and after hours. Upon explaining the purpose of the call, the auditors asked to discuss the sequence of events after they are notified for a given emergency to inform the local residents and the time frame in which these events would occur. PEMA representatives indicated that the notification process down to the local level should take about 30 minutes to complete. The PEMA notification scheme is contained in Appendix 3 of PEMA's plan.

The auditors also contacted the Luzerne and Columbia County Civil Defense directors. These individuals indicated that they had received training and were familiar with the Susquehanna site plan and EAL/classification scheme. They also indicated that they had received training via PEMA/FEMA instruction in radiation concepts, radiation monitoring, decontamination, and so forth. These individuals felt that they were adequately trained and equipped to respond to a radiological emergency.

The auditors visited the Luzerne Co. Civil Defense (CD) Center, toured the facility, reviewed their plan and procedures, and discussed initial notification/response procedures with Luzerne personnel. The auditors found the procedures adequate and noted a concerted effort on the part of the LCCD Assistant Director to continually train his personnel and to train response personnel in the local townships.

The findings and observations summarized above were evaluated as part of the findings in Sections 5.4.1 and 6.1.

7.2.4 Post-Accident Primary Coolant Sampling and Analysis

Two EPIP-trained chemistry technicians were presented with a scenario similar to the one given in Section 7.2.2 with an ARM-11 reading of 75 mr/hr. These individuals (per EPIP-034) were briefed on the accident situation and existing radiological data. They then proceeded to execute the remaining procedural directives and continually monitored radiation levels while enroute as well as during sample acquisition. However, provisions for providing a sampling bottle and shielding for sample transport had been overlooked. A lead cask will be located in the sample room once the plant is completely operational.

Findings and observations were evaluated and reported in Sections 4.1.1.5, 5.4.2.4, and 5.4.2.5.

8.0 KEY INDIVIDUALS CONTACTED DURING THE APPRAISAL

B. D. Kenyon	UP - Nuclear Operations - PP&L
H.W. Keiser	Supt. SSES - PP&L
F. T. Eisenhuth	Senior Compliance Engineer - PP&L
J. M. Minneman	Nuclear Operations Engineer - PP&L
W. W. Williams	Licensing Engineer - PP&L
P. Henrikson	Manager Nuclear Licensing
P. E. Taylor	Lead Shift Technical Advisor
R. C. Yoder	Radiological Group Supervisor
D. W. Miller	Radiological & Environmental Services Supervisor
C. R. Wike	Supervisor - Nuclear Emergency Planning
M. R. Buring	Health Physics Supervisor
W. H. Lowthert	Supervisor Technical Training
S. R. Walter	Technical Instructor
C. J. Roszkowski	Emergency Preparedness Specialist
D. L. Hogan	Health Physics Specialist
J. Rizzo	Eng. II - NPC
R. Stotler	Supervisor of Security
J. V. Edwards	Personnel & Administrative Supervisor