

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report/License Nos.: 50-352/94-28; 50-353/94-28 / NPF-39; NPF-85.

Licensee: PECO Energy Company
P.O. Box 195
Wayne, PA 19087-0195

Facility Name: Limerick Generating Station

Inspection At: Limerick, Eagleville, Chesterbrook and West Chester,
PA

Inspection Conducted: November 28 - December 1, 1994

Inspectors: Wa Maier
W. Maier, Emergency Preparedness Specialist
D. Silk, Senior Emergency Preparedness Specialist
F. Laughlin, Emergency Preparedness Specialist

Approved by: B. Keimig
B. Keimig, Chief, Emergency Preparedness Section
Facilities Radiological Safety and Safeguards Branch

Areas Inspected: The inspectors conducted an announced inspection of the emergency preparedness (EP) program within the plant support functional area. They evaluated the impact of recent changes to the EP program on the effectiveness of the program and on-site response capability. Changes to the emergency plan and implementing procedures, on-site facilities, equipment and instrumentation, and personnel in the EP organization and the emergency response organization (ERO) were reviewed. The inspectors also reviewed the training program, the licensee's annual EP program review, the effectiveness of programmatic and management controls to correct identified deficiencies and prevent their reoccurrence, the adequacy of corrective actions taken for six open items identified in previous reports and interviewed qualified managers in the response organization.

Results: The on-site EP program was adequately administered to ensure a state of operational readiness. The changes to the emergency plan and implementing procedures that were reviewed did not reduce the effectiveness of the plan. Facility and equipment changes since the last inspection did not reduce on-site readiness capability. The inspectors concluded that: a stable emergency response organization existed; EP staffing levels were adequate to ensure satisfactory management of the EP program; the training program was effectively administered; and ERO personnel who were interviewed were knowledgeable of their responsibilities. A concern arose over the adequacy of observations of drills and exercises at Limerick and the documentation of those observations in the annual EP review. Nuclear quality assurance (NQA, management committed to address the concern. The inspectors also found that licensee controls were effective in correcting previously identified issues and five of the six open items reviewed were closed.

DETAILS

1.0 INDIVIDUALS CONTACTED

1.1 PRINCIPAL LICENSEE EMPLOYEES

* C. Adams	Director-Site Support Services
* R. Bickhart	LGS-NQA
* R. Bohner	LGS-Training
R. Boyce	Plant Manager-LGS
* R. Brown	LGS-Site EP Supervisor
J. Cotton	Director-NQA
D. Helwig	V. P.-LGS
* R. Kinard	Manager-EP
* A. MacAinsh	Station Support-EP
* J. McElwain	Superintendent-QV
W. McFarland	Director-Outage Management
* A. Parducci	LGS-Site EP
* G. Stewart	LGS-Experience Assessment
* R. Tindall	NQA-LQD

1.2 NRC EMPLOYEES

* N. Perry	Limerick SRI
* R. Keimig	Chief, EP Section

* Denotes those present at the exit meeting on December 1, 1994

The inspectors also interviewed other licensee personnel.

2.0 PURPOSE OF INSPECTION

This inspection was conducted to determine if changes made to the EP program at Limerick Generating Station since the last inspection resulted in a decrease in the overall state of emergency preparedness or on-site response capability at the station. This inspection was also conducted to verify that the on-site EP program at Limerick continues to meet licensee commitments and NRC requirements.

3.0 EMERGENCY PLAN AND IMPLEMENTING PROCEDURES

The inspectors reviewed the changes made to the PECO Nuclear Emergency Plan and the Emergency Response Procedures for Limerick Generating Station and the Corporate Emergency Response Procedures for the corporate EP organization. A list of these procedures is included in an attachment at the end of this report. The inspectors reviewed these changes to determine if they reduced the effectiveness of the plan from previous levels of preparedness or previous commitments. They concluded that the changes were enhancements to the plan and did not reduce any level of commitment by the licensee to emergency preparedness.

The inspectors also reviewed the methodology used by the licensee for determining if these changes constituted decrease in effectiveness of the plan. They reviewed the checklists used for this purpose in

selected procedure revisions that occurred in recent months. The inspectors found the checklists to be complete and performed with adequate safety perspective. The inspectors identified no concerns with the validity of the effectiveness review methodology.

The inspectors performed a spot check of controlled copies of procedures and emergency plans located at the various emergency response facilities. The procedures and plans were complete and up to date.

3.1 EMERGENCY ACTION LEVEL REVISION

The inspectors reviewed a portion of Revision 5 to ERP-101, "Classification of Emergencies". They reviewed the change that was made to the Emergency Action Level (EAL) matrix for classification of radiological releases. They specifically reviewed the change made to the threshold dose rate value for declaring an unusual event for an airborne gaseous release.

The licensee changed the EAL value for declaring an unusual event in response to two incidents where a normal plant evolution resulted in release dose rates exceeding the threshold value for declaration of an unusual event. The licensee modified the EAL by raising the threshold value for an unusual event to twice the previous value.

The licensee based the change in threshold dose rate on the value used in NUMARC/NESP-007, "Methodology for Development of Emergency Action Levels". The NRC endorsed NUMARC/NESP-007 in Revision 3 of Regulatory Guide 1.101. The licensee has developed a new EAL scheme based on NUMARC/NESP-007 that will be submitted to the NRC for approval in the near future.

The inspectors concluded that the new EAL for airborne gaseous releases was consistent with the approved NUMARC/NESP-007 methodology. They determined that no reduction in safety was involved in the adoption of the new threshold value.

4.0 EMERGENCY FACILITIES, EQUIPMENT, INSTRUMENTATION, AND SUPPLIES

The inspectors toured the Control Room, Operational Support Center (OSC) and Technical Support Center (TSC) to assess operational readiness. These facilities conformed to their descriptions in emergency response procedures (ERPs) and contained up-to-date copies of those ERPs.

The inspectors noted that the OSC contained fewer chairs than indicated on the facility inventory list. They also noted that there was a steady flow of plant personnel into this facility who used it as a convenient place to sit. Licensee EP staff stated that this frequently occurred since the OSC is on the turbine deck, is unlocked, and easily accessible. The inspector concluded that this was not a safety concern but could pose a cleanliness problem. The OSC will soon be moved to the new health physics office, which is projected for completion in early

1995. Its readiness will be evaluated after the move. The on-site ERFs were kept in a generally good state of operational readiness.

The inspectors selected some emergency response facility surveillances and routine test results from the last year. They reviewed them for completeness and accuracy, and to determine the effectiveness of licensee controls in correcting deficiencies. No problems were identified.

4.1 NUCLEAR EMERGENCY RESPONSE ORGANIZATION COMMUNICATION SYSTEM (NEROCS)

The licensee implemented a new automated callout system, the Nuclear Emergency Response Organization Communication System (NEROCS), in August 1993 that performs ERO callout by pager activation.

Each NEROCS pager has two codes, one each for group and individual paging capability. The NEROCS first attempts a group page, followed by individual pages if ERO positions are not filled in a specified time. NEROCS attempts to reach individuals by telephone if no response is obtained by pager activation.

During the licensee's November exercise, the group page for the Limerick and EOF groups did not function properly, and neither did the follow-up individual page for people in the EOF group. Nevertheless, the licensee filled all positions in a timely manner through word-of-mouth and commercial telephone notifications.

The inspectors were concerned, however, that the performance of the pagers during the exercise showed that the system was not able to perform its intended function. They were concerned that if an actual activation was required outside of normal working hours, notifications would not be completed since the group and individual page functions failed to work properly. They were not sure that the licensee could account for the cause of each failure.

The licensee was aware of the failure of the group page function immediately after it occurred. They attributed it to a problem with the page system that was under the cognizance of the contracted paging service. Investigations were continuing after the inspection to determine the nature of the group page failure.

The licensee was not aware, however, of the cause of the failure of the individual page function until prompted by the inspectors' questions. The licensee eventually discovered that the individual page function in NEROCS was not configured properly for several groups. This condition had existed for at least two months. The inspectors believed that an inadequate self-assessment was done by the licensee of the individual page function failure.

The configuration problem with the individual page function was corrected before the end of the inspection. The inspectors were satisfied, after learning of the various contingency features of the

NEROCS system, that a satisfactory activation of the ERO would occur given any single failure of the NEROCS system. They identified no remaining concerns or questions about the operability of the system, once the group page failure identified above is corrected.

5.0 ORGANIZATION AND MANAGEMENT CONTROL

The inspectors interviewed station management, two county emergency management directors, the Corporate EP Manager (CEPM), and the Limerick Site EP Supervisor (SEPS) to determine if changes to either the corporate or site EP organizations caused any adverse effect on the EP program. They reviewed EP Department, corporate, and ERO staffing levels to assess the quality of EP organization and management control.

The Limerick SEPS reported through the Director, Site Support Services (DSSS) to the Station Vice President. The SEPS stated that he met together with these two managers approximately bi-monthly to discuss EP issues. Both managers hold positions in the ERO. He also stated that he attended the plant manager's morning meeting once a week to review upcoming EP events and distribute the on-call ERO roster. Additionally, the SEPS met with the DSSS twice a month and talked with him on the phone almost daily. The inspectors concluded that management involvement in EP was excellent.

The site EP staff is stable at four members, with a good mix of expertise. One staff member will retire in December, 1994. He will be replaced by a person who is SRO-certified and was previously a non-licensed operator. The incoming person has an extensive health physics background and presently is the EP trainer. The inspector concluded that the new EP staff member had excellent background for this position.

The corporate EP group was also stable, with one exception. The Site Support Supervisor left the group to take a different position in the company. She will be replaced by the present off-site supervisor. That position was downgraded to a coordinator, and initially will be vacant. The CEPM stated that this position will be filled and not cut.

The CEPM reports to the Manager, Support Services in the corporate office. He visits the site approximately once a month. The EP Council, including the Limerick and Peach Bottom site supervisors, the CEPM, and training representatives meet bi-monthly to discuss EP issues, with meeting minutes distributed to station and corporate management. The corporate group is exercising effective oversight for both stations.

The ERO remained three-deep in every position, with management positions four-deep. The licensee completed a major reorganization of EOF dose assessment responders. That group was formerly staffed by corporate people, with one group on call for emergencies.

Now dose assessment teams are staffed mainly by site personnel, with two teams on-call, one for each site. These four-person teams are presently

four-deep, but will drop to three-deep in January 1995 after losses from company downsizing efforts.

The inspector concluded that the use of site personnel as dose assessment responders was a good initiative since they are most familiar with day-to-day site operations. The reduction in dose assessment teams, though notable, did not represent a significant reduction in response capability. The technical group was also affected by company downsizing, but that group had no specialized response duties apart from normal engineering work. The inspector assessed the ERO as capable of performing its emergency function.

The inspectors interviewed two of three risk county emergency management directors to assess the quality of their working relationship with the licensee. Both stated that they were satisfied with the level of licensee involvement in terms of economic support, training provided, and responsiveness to county EP issues. The inspector concluded that the licensee was maintaining excellent working relationships with both of these risk counties.

Based on the above review, this area was effectively implemented and continued to be a strength.

6.0 TRAINING

The inspectors reviewed various licensee documents and interviewed individuals holding various positions in the ERO to determine the adequacy of emergency preparedness training.

The inspectors reviewed EP lesson plans and determined that all had received the appropriate reviews and approvals as specified by the EP Course Plan. The inspectors reviewed a PIMS (Plant Information Management System) printout for ERO members. The printout contained positions, training subjects, dates and qualification status. The inspectors randomly selected several individuals from the PIMS printout and verified that they had received the required training as specified in the Course Plan. The inspectors scanned the PIMS printout and verified that the system had correctly marked individual qualification status as either current, within a 60-day grace period, or expired. The inspectors considered the licensee's PIMS system to be an effective way to track ERO member qualification.

The inspectors reviewed the licensed operator requalification training (LORT) scenario bank to assess the amount of dynamic EAL training that licensed operators received. The inspectors found that the scenarios contained an adequate distribution of Unusual Events, Alerts and Site Area Emergency EALs. However, they found no scenario containing a General Emergency EAL. They reviewed the lesson plan for the Emergency Director, which includes the senior licensed operators in the control room, who would initially assume the role and responsibilities of the Emergency Director (ED) during an emergency. The inspectors determined

that EDs received sufficient training and testing on the General Emergency EALS.

The inspectors reviewed the licensee's critiques of two practice drills, the current year's dress rehearsal exercise, and the preliminary critique for the current year's annual exercise. They determined that the critiques were thorough and sufficiently self-critical to provide good feedback to the ERO members and EP group to make the drills and exercises worthwhile training evolutions.

6.1 ERO MEMBER INTERVIEWS

The inspectors interviewed two operations assistants, one TSC emergency director communicator, two station emergency directors, and one corporate emergency response manager to assess their knowledge of their ERO duties. All individuals were adequately familiar with their duties and responsibilities.

Some of the individuals interviewed exhibited minor weaknesses in their knowledge. The TSC communicator was not familiar with the location of a callout document. One of the EDs mistakenly believed the responsibility for event classification was transferred to the EOF after its activation. The EP staff corrected this ED's misconception before the end of the inspection. The inspectors concluded that these weaknesses would not go unnoticed or uncorrected by other personnel manning the TSC during an emergency. The inspectors were satisfied with the level of knowledge of the interviewees.

7.0 INDEPENDENT AND INTERNAL REVIEWS AND AUDITS

The inspectors reviewed the 1993 and 1994 Nuclear Quality Assurance (NQA) audits of the EP program. They determined that the audits had been distributed to the appropriate level of licensee management and had been provided to the off-site agencies.

A review of the audit reports revealed that the necessary topics were addressed except that there were no evaluations of the adequacy of drills and exercises required by 10 CFR Part 50.54(t). The inspectors observed that Section 6.3.1 of the emergency plan, describing the annual audit, essentially paraphrases 10 CFR 50.54(t) but does not include evaluation of drills and exercises. The inspectors reviewed the Master Audit Plan (MAP) used by the NQA Group for EP audits and determined that the evaluation of drills and exercises was not included as a specific item in the audit plan. The NQA group, however, did observe drills and exercises despite this lack of a formal requirement and used a detailed NQA Surveillance Instruction for guidance.

The inspectors were informed by NQA personnel that a conscious decision was made to shift emphasis from observation of Limerick drills and exercises to Peach Bottom drills and exercises in 1994. The inspectors initially found no documentation of NQA observation of drills or exercises at Limerick. After further probing and interviewing, they

were presented with records of three NQA surveillances of EP drills at Limerick. They later determined through interviews that NQA personnel had observed other drills, exercises and associated critiques at Limerick.

During the interviews with NQA personnel, some individuals in NQA expressed the opinion that observing drills or exercises at either Limerick or Peach Bottom satisfied the requirements of 10 CFR 50.54(t) for both sites. They based this opinion on the fact that the sites share a common emergency plan, a common EOF and Emergency News Center, and common response personnel for the off-site facilities.

The inspectors stated that this approach was erroneous. They explained that even though both sites share some common EP characteristics, site-specific assessment is necessary at both sites since they maintain separate on-site ERFs and EP staffs. These site-specific facilities must be assessed for both sites and the performance of ERO personnel responding to them must be assessed at each site.

The NQA group was performing assessment of some Limerick drills. The inspectors found that the licensee was adequately observing the activities at both sites, although not adequately documenting those observations. The licensee agreed with the inspectors' conclusion that the EP activities at both sites needed to be explicitly observed and documented to formulate an accurate assessment of the entire corporate EP program.

To address these issues, the licensee committed to 1) revise their MAP to include the observation of EP related drills and exercises as an essential element, 2) ensure that observations of EP drills and exercises are documented in independent surveillance reports instead of providing input to the drill critique report, and 3) include a drill/exercise assessment section in the annual NQA 50.54(t) report. The NRC considered these commitments to be acceptable actions to ensure that the results of future evaluations of Limerick drills and exercises would be independent and adequately documented.

Despite the minimal documentation and misunderstanding by the licensee, the inspectors determined that the intent of 10 CFR 50.54(t) had been met and the licensee's overall performance in this area was satisfactory.

8.0 EFFECTIVENESS OF LICENSEE CONTROLS

The inspectors reviewed licensee corrective actions for previously identified NRC findings and self-assessment for EP-related events that occurred since the last inspection. They reviewed these items to determine the effectiveness of licensee programs to identify, resolve and prevent problems that have a potential impact on plant safety. They also interviewed senior site management to determine if problems were being elevated to appropriate levels of review.

The inspectors concluded that the licensee's programs were effective in providing adequate oversight and control of potential safety issues. There was one recurring problem with the failure to accurately diagnose and classify events involving radiological releases. This recurrence was, however, unique and not indicative of a breakdown in corrective actions programs. The root cause determinations for this and other problems were thorough and self-critical.

The inspectors determined through their interviews with site management that these managers were being told of the serious issues involving EP and that they were interested in preventing recurrence of problems. Site management expressed concern for some areas that were not yet problems but had the potential for becoming so. The inspectors were satisfied that the senior managers were supportive of a proactive approach to resolving EP issues.

9.0 LICENSEE RESOLUTION OF PREVIOUS NRC FINDINGS

9.1 (CLOSED) IFI 50-352,353/93-11-01

The licensee's draft common Nuclear Emergency Plan (NEP) for the Limerick and Peach Bottom sites was submitted for NRC review on March 18, 1993. Staff review concluded that the draft NEP did not decrease the effectiveness of the individual site plans and continued to meet the standards of 10 CFR 50.47(b) and the requirements of 10 CFR 50 Appendix E. The inspectors reviewed the final common NEP and changes thereto during this inspection with the same conclusions, so this item was closed.

9.2 (CLOSED) IFI 50-352,353/93-11-02

The licensee eliminated the requirement for periodic review of ERPs at fixed intervals. They instead adopted an initiative program to rely on continuing programs (drills, training, etc.) to provide the necessary feedback to maintain procedures current. The specifics for this program had not been developed at the time of the last program inspection at Limerick.

The inspector interviewed the site EP supervisor (SEPS) about this item. The SEPS showed the inspector a detailed matrix for each ERP, showing the changes made as a result of the new system. The system was developed by the SEPS and was planned for presentation to other site groups for their consideration of adopting it. The inspector considered this system to be an adequate review of the affected ERPs and closed the item.

9.3 (CLOSED) IFI 50-352,353/93-11-03

During the last inspection, the inspector noted that the surveillance procedure checking TSC ventilation operability did not specify a lower limit of differential pressure (DP) across system filters. This omission prevented the identification of filter failure when performing

the surveillance. The licensee revised the procedure to alert the technician to evaluate the physical condition of any filter that exhibits a zero DP, indicative of filter failure. This revision adequately addressed inspector concerns and the item was closed.

9.4 (CLOSED) IFI 50-352,353/93-19-01

The inspectors raised a concern during their observation of the last full-participation exercise that the position of Assistant Emergency Director in the TSC had no formal recognition in procedures, although the individual filling this position was actively responding to the emergency. The inspectors felt that the licensee should evaluate whether there was a need to formalize that position in the ERO.

The licensee informed the inspectors during this inspection that the position was used to add depth to the ERO, but it was not necessary to rely on that individual for emergency response. The licensee did not include the requirement to callout a specific Assistant ED to respond to emergencies, but instead provided for an Assistant ED by specifying the callout and response of two ED-qualified individuals if that many were available.

The resident inspectors observed the performance of the Assistant ED during the annual emergency exercise. This exercise took place the week before this inspection. The residents noted that the individual acting as the Assistant ED was not engaged in more activities than could be covered by other individuals in the same facility. They felt that the use of an Assistant ED was an enhancement of station response at the TSC but not an essential part of a satisfactory response.

The inspectors believed that, based on the approach to the use of this position adopted by the licensee, the item should be closed.

9.5 (UPDATE) 50-352,353/93-19-02

This item was opened during the last full-participation exercise in September, 1993 because the licensee did not correctly evaluate the need to take protective actions for an erroneously reported airborne iodine concentration.

The licensee took some programmatic actions to address this deficiency. During this inspection, the inspectors verified the completion of these actions. The licensee revised the training lesson plan for the Field Survey Group to re-emphasize the importance for protective actions and added a note to the Dose Assessment Status Board in the EOF to notify management for airborne iodine concentrations that exceeded the General Emergency trigger level.

The resident inspectors who observed the annual EP exercise the week before this inspection did not observe any exercise performance that reflected the item had been corrected. This was due to the fact that

the scenario for the exercise did not provide for iodine concentrations to exceed the trigger levels.

The inspectors left this item open until the next full-participation exercise, when it will be evaluated in a performance-based inspection to determine if the corrective actions were sufficient to prevent recurrence of the deficiency.

9.6 (CLOSED) IFI 50-352,353/93-19-03

The inspectors identified an error in the computer dose model that called for a protective action recommendation (PAR) of sheltering for the general population when off-site dose rates were high enough to warrant a PAR of evacuation.

The licensee upgraded the computer dose model to eliminate the specific PAR that is recommended. It now states simply that a PAR is required when off-site dose rates exceed the General Emergency threshold. The PAR procedure was also revised to ensure that an evacuation is recommended for any General Emergency declared due to off-site dose rates.

The inspectors verified the completion of these actions and considered the issue to be corrected. This item is closed.

10.0 EXIT INTERVIEW

The inspectors held an exit interview with the licensee personnel identified in paragraph 1.1 to present their preliminary findings. The meeting was held in the Site Management Building at Limerick on Thursday, December 1, 1994. The inspectors discussed their findings and observations and their understanding of a licensee commitment. There were no questions regarding either the findings or the commitment at the end of the interview.

Attachment 1

List of the Emergency Plan and Implementing Procedures Reviewed

Procedure Number	Procedure Title	Revision(s) Reviewed
Emergency Plan Section 1	Scope and Applicability	1
Emergency Plan Section 3	Organizational Control of Emergencies	1
Emergency Plan Section 4	Emergency Actions	1
Emergency Plan Section 5	Facilities and Equipment	1,2
Emergency Plan Appendix E-1	Emergency Supplies and Equipment	2,3
Emergency Plan Appendix F	Emergency Communications Plan	1
ERP-101	Classification of Emergencies	3
ERP-106	Written Summary Notification	1,2
ERP-110	Emergency Notification	6-11
ERP-120	Station Evacuations	2,3
ERP-140	Staffing Augmentation	4,5
ERP-200	Emergency Director Response	3,4
ERP-200-1 App	Emergency Notification Message Form	4
ERP-230	OSC Coordinator	1,2
ERP-300	TSC/MCR Dose Assessment Team	5-11
ERP-340	Field Survey Group	3,4
ERP-350	Radioactive Liquid Release	3
ERP-360	Adjustment of WRGM Conversion Factors	1
ERP-370	Use of RMMS for Dose Assessment	1

Procedure Number	Procedure Title	Revision(s) Reviewed
ERP-400	Chem Sampling & Analysis Team	4-7
ERP-500	Security Team	4-9
ERP-600	Personnel Safety Team	4-7
ERP-620	Plant Survey Group	1,2
ERP-630	Vehicle & Evacuee Control Group	2
ERP-640	ERF Habitability	1-5
ERP-650	Entry for Emergency Repair & Ops	2-4
ERP-660	Distribution of Thyroid Blocking Tablets	3
ERP-700	Technical Support Team	5-8
ERP-800	Damage Repair Team	4-8
ERP-C-1000	EOF Activation/Deactivation	1,2
ERP-C-1100	EOF Staff Augmentation	3
ERP-C-1200	Emergency Response Manager	3
ERP-C-1210	Asst Emergency Response Manager	1
ERP-C-1300	EOF Dose Assessment Team Ldr.	3
ERP-C-1310	EOF Dose Assessment Group	2
ERP-C-1320	EOF Field Survey Group Leader	2
ERP-C-1900	Recovery Phase Implementation	1