U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No.	90-13 90-12
Docket No.	50-352 50-353
License No.	NPF-39 NPF-85
Licensee:	Philadelphia Electric Company Correspondence Control Desk P.O. Box 195 Wayne, Pa 19087-0195
Facility Name:	Limerick Generating Station, Units 1 and 2
Inspection Period:	March 6 - April 9, 1990
Inspectors:	T. J. Kenny, Senior Resident Inspector L. L. Scholl, Resident Inspector M. G. Evans, Resident Inspector G. C. Smith, Senior Physical Security Inspector

Approved by: Lawrence T. Doerflein 5/7/90

Lawrence T. Doerflein, Chief, Date
Reactor Projects Section 2B

Summary: Routine inspections by the resident inspectors consisting of (a) plant tours, (b) observations of maintenance and surveillance testing, (c) review of LERs and periodic reports, (d) review of operational events, (e) system walkdowns and (f) record retention and document control.

During this inspection period:

- A violation was identified for inadequate document control. Additional discrepancies in the areas of record retention and document control, including inadequate corrective action in response to Quality Assurance audit findings were identified (section 10).

- An evaluation of PECo's Self Assessment Capability was performed (section 12).

DETAILS

1.0 Persons Contacted

Within this report period, interviews and discussions were conducted with members of PECo management and staff as necessary to support inspection activity.

2.0 Operational Safety Verification

The inspectors conducted routine entries into the protected areas of the plant, including the control room, reactor enclosure, fuel floor, and drywell (when access is possible). During the inspection, discussions were held with operators, health physics (HP) and instrument and control (I&C) technicians, mechanics, security personnel, supervisors and plant management. The inspections were conducted in accordance with NRC Inspection Procedure 71707 and affirmed PECo's commitments and compliance with 10 CFR, Technical Specifications, License Conditions and Administrative Procedures.

2.1 Inspector Comments and Findings (71707)

At the start of the inspection period both Units were operating at 100% power.

On March 8, the Unit 2 High Pressure Coolant Injection (HPCI) system was declared inoperable because the air line to the HPCI turbine steam supply drain valve (HV-055-2F028) broke at its fitting, causing the valve to close. Emergency repairs were made and the system declared operable within five hours. The cause of the event was most likely accidental contact of the air line by maintenance personnel working in the area. The NRC was notified via the ENS.

On March 9, the 'B' shunt trip breaker on the Unit 2 Reactor Protection System (RPS) Uninterruptable Power Supply (UPS) tripped on underfrequency, causing the loss of the '2B' RPS UPS power supply. Loss of this power supply caused various isolations including, drywell chilled water, reactor enclosure cooling water to the recirculation pumps and the reactor water cleanup system. The RPS UPS breakers were reclosed and all isolations were reset within one hour. It is believed that the breaker trip occurred when a maintenance worker accidently bumped the RPS panel containing the underfrequency relay while changing a light bulb in the static inverter room. The NRC was notified via the ENS.

On March 12, the Unit 2 HPCI system initiated, without injection, and various sample lines isolated when valving in a reactor vessel

pressure instrument following a calibration and functional test. Valving the instrument back in resulted in a pressure spike on a reference leg common to a number of level transmitters and caused a spurious channel 'B' low low level signal. The HPCI system started but the injection valves did not open due to the spurious signal. The HPCI pump ran for a few minutes on minimum flow until secured by the operators. There is a caution in the procedure for valving these instruments back in slowly. The I&C technicians attempted to do this, however, the pressure spike was still received. To improve performance in this area, PECo plans to discuss the importance of supervisory involvement when valving instrumentation with I&C personnel and procedures will be revised to include an additional sign-off step alerting the shift supervisor of the potential for instrument transients due to valve manipulations. The NRC was notified via the ENS.

On March 14, the required firewatch was not established when the fire protection systems for both trains of the Standby Gas Treatment System charcoal filters were blocked. On March 15, the required firewatch was not established when the fire protection system for inside both Control Room Emergency Fresh Air System (CREFAS) charcoal filter housings were blocked. The cause of both events centered around inadequate communications among the shift personnel. Corrective actions included a memorandum from operations management stressing the shift supervisors ultimate responsibility for establishing firewatches and the personnel involved were counselled. The inspector found the licensee's corrective actions adequate.

On March 14, Unit 1 reactor power was reduced to 80% because feedwater copper level had increased to 0.35 ppb. The unit remained at 80% reactor power until copper level decreased to 0.24 ppb on March 23. Reactor power was then increased to 100%.

On March 25, Unit 2 reactor power was reduced to approximately 20% of rated thermal power and the main turbine was taken off line due to an Electrohydraulic Control (EHC) fluid leak on the #2 main turbine control valve. On March 28, prior to completing the leak repairs, the unit was manually scrammed from 20% power due to rapidly increasing condensate and reactor water conductivity levels.

On March 30, a loss of Unit 2 Shutdown Cooling occurred due to the loss of an RPS/UPS power supply caused by a transformer fire in the '2B' inverter. The inverter was bypassed, the bus re-energized and shutdown cooling reestablished within 17 minutes. The resultant reactor coolant system heatup was less than 1 degree Fahrenheit (F). The NRC was notified via the ENS.

Following repair of the EHC leak and the condenser tube leak on Unit 2, a reactor startup was begun on April 2 and criticality was achieved on April 3. Following a hold period for copper levels to decrease, the unit was increased to 100% power on April 7.

On April 5 and 6, control room ventilation was manually shifted to the "Chlorine Isolation" mode following a "High Toxic Chemical Concentration Alarm." Control room personnel donned self contained breathing apparatus and observed that the toxic gas monitor alarm channel 'B' indicated high ethylene oxide. Air samples of the control room and the control room air intake plenum were normal. Following the first isolation on April 5, the 'B' channel was declared inoperable. During calibration testing of the channel on April 6, the second isolation occurred. On April 9, the detector was replaced and the 'B' toxic gas monitor declared operable.

At the end of this inspection period both reactors were operating at 100% power.

3.0 Update/Closeout of Open Items (92701)

Unit 2

(Closed) Unresolved Item 50-353/88-99. Three Mile Island Action Item III.A.1.2.: Upgrade Emergency Support Facility.

This item was last updated in Inspection Report 50-353/88-27. The inspector examined the Technical Support Center (TSC) and verified that the Unit 2 drawings and procedures required to support TSC activities were in place. The inspector reviewed Hot Functional Tests 2HF-050, "Plant Monitoring System, Plant Variable Display Test" and 2HF-051, "Plant Monitoring System, Regulatory Guide 1.97, Reasonableness Test," results approved January 16, 1990. The Unit 2 Safety Parameter Display System (SPDS) was declared operational on January 16, 1990, upon successful completion of the SPDS validation testing and results approval. This item is closed.

4.0 Surveillance/Special Test Observations (61726)

During this inspection period, the inspector reviewed in-progress surveillance testing as well as completed surveillance packages. The inspector verified that surveillances were performed in accordance with licensee approved procedures, plant technical specifications, and NRC Regulatory Requirements. The inspector also verified that instruments used were within calibration tolerances and that qualified technicians performed the surveillances.

Unit 1

ST-2-026-594-1 Radiation Liquid Effluent Monitoring - RHR Service Water and Service Water Systems Effluent Line Source Checks

ST-6-052-232-1	B Loop Core Spray Pump, Valve and Flow Test

Unit 2

ST-6-055-200-2	High Pressure Coolant Injection Valve Test
ST-6-107-450-2	Emergency Core Cooling System and Reactor Core Isolation Cooling System Lineup, Operational Conditions 1, 2 and 3
ST-6-107-885-2	Thermal Limits Determination for Two Recirculation Loop Operation

No deficiencies were identified.

5.0 Maintenance Observations (62703)

The inspector reviewed the following safety related maintenance activities to verify that repairs were made in accordance with approved procedures, and in compliance with NRC regulations and recognized codes and standards. The inspector also verified that the replacement parts and quality control utilized on the repairs were in compliance with the licensee's QA program.

No deficiencies were noted.

8909092	Unit 1 Equipment Pit Draining and Decontamination
8983488	D-13 Emergency Diesel Generator (EDG) 18 Month Inspection
8905401	Repair Air Leak on D-13 EDG Air Receiver
901919	Repair Bolting to D-13 EDG Exhaust Piping
N/A	Unit 2 RPS Static Inverter Troubleshooting

The D-13 Emergency Diesel Generator was removed from service on March 26 to perform the routine 18 month inspection and to complete various minor corrective maintenance items. The work was performed in accordance with approved preventive maintenance procedures and work instructions. The maintenance foreman closely supervised the mechanics and ensured quality control hold points were observed and properly documented. When improper clearance was encountered on the engine blower assembly, vendor assistance was obtained. The maintenance foremen closely supervised the vendor personnel actions and were instrumental in effecting the proper resolution. The inspector found the diesel generator maintenance to be well controlled.

The work was completed on April 3 and retesting commenced on April 4. The diesel was declared operational on April 7.

A detailed review of the maintenance program is being performed by the resident inspector staff and the results will be documented in a future report.

6.0 Radiological Controls

On March 16, 1990, a bag of trash was discovered on the Unit 1 Reactor Building 313 foot elevation (near the reactor water cleanup hold pump rooms) with a dose reading of 100 mr/hr on contact and 8 mr/hr at 18 inches. The bag was located in a non-posted area. The area around the trash bag was immediately posted as a radiation area and the bag was appropriately labeled. The inspector questioned a licensee health physics representative regarding circumstances surrounding this bag. The licensee's investigation revealed that a decontamination (decon) effort had been performed at a floor drain on elevation 313 foot on March 7, 1990. The floor drain had backed up while draining the fuel floor equipment pit. Apparently due to the decon effort being performed late in the day, the health physics (HP) personnel rushed to complete the assignment and the dose rates on a group of rags and Scotch Brite were missed. The HP technician stated he had asked radwaste to pull the trash (prepare trash bag for HP to measure dose rate and label) from the waste receptacle that afternoon. However, the bag was not pulled by radwaste, because the department had no one scheduled for afternoon shift. Subsequently, the bag remained on the 313 foot elevation until March 15 when radwaste pulled the trash. However, at this time health physics was not informed that the bag had been pulled and was ready to be labeled. On March 16, an HP technician, on routine walkdown, discovered the bag and took appropriate action.

During the time the trash bag was on elevation 313 foot, a weekly radiation and contamination area survey was performed by an HP technician. The survey did not specifically show dose rates on the bag, however, they did show general area dose rates in normally traveled areas past the bag to not have increased above the nominal 2 mR/hr. Therefore, the licensee concluded that dose to personnel from this bag was minimal.

The inspector questioned the HP representative regarding why radwaste did not take a dose reading of the bag when it was pulled on March 15. The representative stated that the current procedure only requires radwaste to pull trash bags and inform HP of the location of the bags.

The inspector also questioned a licensee maintenance representative regarding the floor drain back up and if a procedure was used for draining the equipment pit. The representative stated that a Troubleshooting Control Form (TCF) was being used for draining the pit and that the floor drain back up resulted in only a minor spill of water. The inspector reviewed the TCF and found it to be appropriate for controlling the work.

Corrective actions included implementation of a Radchecker Program

(procedure RW-160) by which Radwaste personnel are required to perform preliminary radcheck for contact radiation on each bag of waste. Training of the personnel on RW-160 is in progress. Personnel involved in this incident were counselled on the importance of attention to detail and communication of job status to fellow workers and supervision. And, a letter stressing the importance of attention to detail during routine HP survey surveillances was issued to all HP technicians. The inspector found PECo's corrective actions appropriate and had no further concerns.

7.0 Emergency Service Water Microbiologically Induced Corrosion

Emergency Service Water (ESW) system fouling has been an issue of concern at Limerick Generating Station (LGS) since prior to commercial operation of Unit 1. During the second refueling outage for Unit 1, sections of the 'B' loop of ESW piping were replaced due to aging (corrosion degradation) of the pipe, in order to ensure sufficient system flows to support two unit operation. Samples of the deposits obtained from the ESW piping were analyzed. The results indicated that the fouling problem was caused by general iron corrosion products and not from silt/mud deposition, microbiological fouling or microbiologically induced corrosion (MIC). Several actions were taken to ensure the ESW system would continue to meet its required demands and support operability including quarterly flow balancing of the ESW system and periodic inspection of piping and components.

In July 1989, LGS experienced the first through-wall failure on ESW pipe. A pin-hole leak was discovered on the three inch line that supplies the Unit 1 HPCI room unit coolers. In August 1989, a section of pipe approximately four feet long was removed to effect repairs. The pipe was then cut into two samples and sent out for failure analysis. Nalco Company inspected the segment with the failure, and an independent consultant, Heat Exchanger Systems (HES) inspected the other. In both samples, the corrosion mechanism was general corrosion (not MIC) with the exception of the immediate area encompassing the failure. A detailed report indicated the failure was that of a MIC attack at a weld backing ring. The backing ring, used to ease the field welding process, provided a crevice for organisms to colonize. The organisms are anaerobic in nature. Once beneath the backing ring and covered by a small layer of sediment/corrosion products they thrive. The failure or the pipe was characteristic of a MIC attack in that once a perforation occurred the oxygen content increased and microbiological activity was inhibited. The organisms tend to tunnel parallel to the pipe surface with significant damage to the underlying metal, however, only a pin hole surface flaw is observed. At Limerick, backing rings were used on most field welds (straight to straight pipe) for ESW pipe three inches in diameter and larger.

pipe three inches in diameter and larger.

Analyses performed at the Peach Bottom Atomic Power Station for similar through wall failures indicated that the failures they experienced did not affect system operability, including seismic concerns. However, since the corrosion mechanisms at Peach Bottom and Limerick are different (general corrosion versus MIC) further analysis and testing will be required to fully analyze the structural impact of MIC on the pipe. PECo is currently developing an action plan to address this issue. The inspectors found PECo's actions appropriate and will continue to follow this issue as part of the routine resident inspection program requirements.

8.0 Review of Periodic and Special Reports (90713)

Upon receipt, the inspector reviewed periodic and special reports. The review included the following: inclusion of information required by the NRC; test results and/or supporting information consistent with design predictions and performance specifications; planned corrective action for resolution of problems; and reportability and validity of report information. The following periodic report was reviewed:

Monthly Operating Report - February 1990

The inspector had no questions regarding this report.

9.0 Licensee Event Report Followup (90712)

The inspector reviewed the following LERs to determine that reportability requirements were fulfilled, that immediate corrective action was taken, that corrective action to prevent recurrence was accomplished and that continued operation of the facility was conducted in accordance with Technical Specifications (TS) and did not constitute an unreviewed safety question as defined in 10 CFR 50.59. In accordance with the above inspection module the inspector considers the following reports closed. The inspector had no further comments or questions except as noted.

LER Number	Subject/Comments
1-90-003	A High Pressure Coolant Injection (HPCI) system isolation valve inadvertently isolated during performance of a surveillance test. The valve closed when the Instrumentation and Controls (I&C) technicians tripped one channel of the isolation logic as directed by the test procedure, without detecting that the other channel of the isolation logic had inadvertently tripped. The logic on this channel was in the tripped condition because the Rosemount trip unit intermittently failed

in the energized tripped condition due to degradation of the Darlington output transistor inside the trip unit. The trip unit was subsequently replaced. The root cause of the trip unit failure is under investigation and a supplement to this LER will be issued.

1-90-004 Missed primary coolant and gaseous effluent sampling analysis during reactor power changes of more than 15% of rated thermal power (RTP) in one hour. The missed sampling and analysis were caused by a procedural deficiency which led to inadequate communication between shift personnel. This event occurred on July 8, 1989 but was not identified until February 9, 1990. A similar event occurred on September 10, 1989 (LER 1-89-052) at which time appropriate corrective action to prevent recurrence was taken.

1-90-005 Failure to perform a TS required firewatch inspection within one hour due to personnel inattentiveness. Appropriate corrective action was taken including reinstruction of firewatch personnel on the importance of being thorough and vigilant while on firewatch duty.

1-90-006 The capability to activate the public alert notification (voluntary) system (sirens) by the local counties within the Emergency Planning Zone was lost due to equipment problems and personnel error. In addition, it was noted that no procedure existed for, and only limited personnel were capable of, operating the sirens from the Limerick Station. Corrective action included generation of an implementing procedure for siren actuation from the Technical Support Center and formal training.

1-90-007 Setpoints for a Main Steam Line Radiation monitor were set outside required limits due to the issuance of an incorrect background radiation measurement (BRM). A personnel error resulted in the Unit 2 BRM being issued instead of the correct Unit 1 BRM. Corrective action included unitization and color coding of the BRM log book.

10.0 Records Retention and Document Control Programs (39701, 39702)

The inspector reviewed PECo's Record Retention Program for the Limerick Station to verify that appropriate records are being retained, controls for records storage have been established, and stored records are readily retrievable. The inspector also reviewed PECo's Document Control Program

to verify that adequate measures have been established to control the issuance of documents affecting quality including changes to these documents. The inspector specifically looked at the controls for Technical Specifications, Administrative and Implementing Procedures, and drawings.

During the performance of the inspection, the inspector reviewed the references and procedures listed in Attachment 1 to this report. In addition, the inspector held discussions with various PECo representatives regarding the Records Retention and Document Control Programs. To verify satisfactory implementation of the programs, the inspector requested retrieval of various records including Maintenance Request Forms, completed check off lists and modification packages, and inspected various "controlled" procedures in the library of the construction building.

10.1 Record Retention

At Limerick, all documents are considered to require "Lifetime" retention. The PECo vault is located inside the protected area and is used for short term temporary storage of documents prior to shipment to the final storage facility near Pittsburgh, Pennsylvania. In addition, the Bechtel vault is located on-site outside of the protected area. Records related to the construction of Unit 2 are stored within this vault and are currently being turned over to PECo for final storage. This turnover process is expected to be complete in September 1990.

Overall, the inspector determined that PECo is retaining appropriate records and that stored records are currently retrievable. However, the inspector noted several areas of concern which are discussed below.

- During review of the Limerick procedures governing record retention, the inspector noted that the entire process of moving a record from the record user to the record's final storage location was not thoroughly documented.

- The inspector noted eleven boxes of completed surveillance test (ST) procedures stacked on the floor in the ST Coordinator's area waiting to be moved to the PECo storage vault. These boxes are required to be temporarily stored in steel file cabinets or on shelving in containers for protection, per A-46.

- The inspector noted approximately 35 boxes of procedures including STs and preoperational test procedures stacked on the floor around the desks in the Document Administration Center (DAC) on the first floor of the Startup Building.

Several of the boxes had been in this location since January 1990. These documents are required to be stored in fire resistant cabinets per procedure RMOSI-1 or in the PECo vault.

- The inspector noted that the quarterly inspection of the PECo vault required by procedure RMOSI-6 was not being properly performed. The purpose of the inspection is to verify that the vault and the records temporarily stored within the vault are in good condition, and that the records are retrievable.

- The inspector noted that responsibility for the periodic testing of the Bechtel vault fire detection system and Halon system had not been turned over to PECo, when Bechtel employees who previously had responsibility for this testing left the site.

- The inspector discussed the philosophy of considering all records at Limerick as requiring Lifetime retention with several PECo representatives from Limerick and Chesterbrook. The inspector noted the potential problems which could be encountered when attempting to retrieve records from the system after 20 or more years of storing everything. The PECo representatives acknowledged these concerns and stated that they are currently reviewing alternative record storage methodologies. Current plans are to have a new records storage system in place by the end of 1992.

- The inspector noted during review of the QA audit of LGS Nuclear Records Management dated July 22, 1988, that several of the above issues were also identified by QA. The response to the issues was untimely, (approximately 15 months for final resolution), and the corrective action apparently inadequate.

The issues identified by the inspector were promptly acted upon by PECo management. All boxes were moved to appropriate storage locations. The Administrative Superintendent is currently revising several Administrative procedures to more thoroughly describe the record retention and document control (discussed below) programs and is developing a permanent solution to the recurring box storage problem.

10.2 Document Control

The inspector determined that procedures exist for control of the issuance of documents affecting quality. However, during a random sampling of the status of the "controlled" procedures in the Construction Building the inspector noted several

discrepancies. The inspector noted obsolete procedure revisions, missing procedures, misfiled procedures, and a missing volume of the Unit 1 and Common ST-6's with no sign out card. The inspector brought these findings to the attention of PECo management. Prompt action was taken to begin a review of all controlled documents on site in order to identify the extent of the problem and initiate corrective action. Similar discrepancies were noted in all areas with the control room having the least number of discrepancies.

The Code of Federal Regulations, 10 CFR 50, Appendix B, Criterion VI states in part that measures shall be established to control the issuance of procedures, including changes thereto, which prescribe all activities affecting quality and that these procedures, including changes, are distributed to the location where the prescribed activity is performed. These requirements are implemented by administrative procedure A-2, "Control of Procedures and Certain Documents." The deficiencies described above are considered a violation of procedure A-2 and criterion VI (50-352/90-13-01). Based upon the results of this inspection and previously identified document control discrepancies (violations 50-353/89-81-01, 50-352/87-05-01 and 50-352/87-19-01 and IR 50-352/90-02, section 2.2), it appears that inadequate importance has been focused on the document control and record retention tasks.

11.0 Security Allegation

On March 13, 1990, the Resident Inspector received an anonymous allegation. The alleger stated that a representative of the licensee's proprietary security organization had overridden a determination made by one of the contractor's surveillance testing personnel on March 9, 1990, concerning the outcome of a test (ST-7-084-36) on a portion of a security system. The alleger contended that, while the contractor's tester considered the equipment to have failed the test, the licensee's representative found the equipment to be acceptable and told those involved in the test to document that the equipment met the testing acceptance criteria. The alleger further stated that, because the test was documented as being successful a previously established compensatory measure that had been taken while the equipment was being worked on, was removed. The alleger indicated that about three days later the matter was brought to the attention of another licensee representative, who re-established the compensatory measure. The alleger also stated that no report was made to the NRC concerning this matter and that because of several similar previous occurrences, five testers had requested to be removed from surveillance testing duties and returned to the security force, even though the testing duties commanded higher pay. An anonymous allegation describing similar circumstances was received in Region I on March 20, 1990. The Region I Allegation Review Panel determined that both allegations pertained to the same test.

On March 30, 1990, a regional security inspector was dispatched to the station to follow up on this allegation. The inspector reviewed the testing program and procedures, the documented results of the test in question and interviewed representative of the licensee and the security force contractor. Because of the anonymity of the alleger, he could not be contacted for an interview.

The inspector found that ST-7-084-36 was conducted on security-related equipment on March 9, 1990, after work had been performed on the equipment to enhance its performance. During the test, a licensee representative who was in the Central Alarm Station, commented that, while the performance of the equipment could be better, it was sufficient to meet the acceptance criteria of the test. One of the individuals involved in the test, who was in the field and could not monitor the equipment's performance, heard the licensee's comment on a two-way radio being used during the test and indicated that he believed the acceptance criteria had not been met. The licensee's representative offered to explain his rationale in accepting the test to the individual in the field, but the individual declined the offer. The test was completed and the test documentation was signed by all individuals responsible for the test. Although two comments appeared on the test documentation, neither indicated that the equipment was not acceptable. The previously established compensatory measure was removed.

On March 12, 1990, the individual who was in the field during the conduct of ST-7-084-32 brought the matter to the attention of another security representative of the licensee. The representative duplicated the test, to the extent practical, and determined that the equipment's performance was marginally acceptable. Because there was no technical assistance available at that time (this occurred on the second shift), he conservatively re-established the compensatory measure. When technical assistance was available on the following day, the matter was again reviewed. During this review the licensee's security group decided that the issue could be resolved by using another piece of equipment, in conjunction with the equipment in question. When that action was taken, the question regarding the acceptability of the first piece of equipment was eliminated.

The inspector's review of the surveillance test criteria and documentation of the test, together with the interviews conducted, resulted in the conclusion that the original surveillance test was appropriately determined to be acceptable even though there was a potential for better equipment performance (i.e., the equipment met the NRC's performance requirements). The inspector also found that two other contract security officers, who participated in the original test and were in a position to monitor the performance of the equipment also believed that the test was satisfactory. Given the forgoing, no report to the NRC was required.

The inspector also found that four of the contract security officers had requested to be removed from their duties as surveillance testers in the recent past, as a result of several similar occurrences. However, three of the four requests were retracted after the licensee and the contractor's management met with the assigned testing personnel to reinforce the licensee's position that personnel involved in testing should document any disagreement regarding the outcome of a test in the test procedure. (The fourth request was not related to this type of issue.) As a result of these types of issues, the licensee developed and implemented a formal program requiring documentation and review by a technically qualified group when there is any question about the acceptability of security systems' and equipment performance. The inspector reviewed this program and found it acceptable to resolve this kind of issue in the future.

While the inspector generally substantiated the facts presented in the allegation, he found that no violation of NRC requirements had occurred, that the licensee had been responsive to the issue when it was raised and that the licensee had acted responsibly in implementing a review program to reduce the probability of such issues from recurring. The inspector had no futher questions on this matter.

12.0 Evaluation of PECo Self-Assessment Capability (40500)

The resident inspectors reviewed PECo's activities and plant operation since the last Systematic Assessment of Licensee Performance (SALP) to ascertain continuing trends and to identify any new strengths and weaknesses in PECo's operation of Limerick. During this assessment the resident inspectors reviewed Licensee Event Reports (LERs), the last SALP, Inspection Reports, Monthly Operating Reports, Quality Assurance Audits and NRC Violations in order to compile the assessment. The following is the results of this inspection, as well as PECo's own assessment of their performance.

On March 13, 1990, a meeting was held at Limerick for PECo to present their self assessment to the NRC. (Attachment 2 is the list of Meeting Attendees and Attachment 3 is PECo's Presentation) After the PECo presentation, PECo's self assessment was compared to the NRC evaluation of the identified strengths and weaknesses which had been developed prior to the meeting. This comparison resulted in the following:

- The licensee addressed all of the NRC's identified weak areas and identified improvement measures to be followed in order to strengthen these areas.

- There was noted improvement in the two areas that were identified in the last SALP as requiring increased management attention: Engineering off-site support to the site and emergency planning.

- New areas of concern highlighted were: the unsatisfactory grades on the requalification of licensed operators examination conducted by the NRC on January 29 - February 2, 1990; the recently identified concerns in plant security system maintenance; and the high percentage of LERs attributed to personnel error (nine out of 25).

- Strengths of the licensee's program appear to be consistent with the strengths noted in the last SALP. These strengths include good self assessment, critical assessments of root causes, excellent operational history with absence of plant trips, minimal number of NRC violations and management's desire to operate a safe facility as evidenced by prompt correction of identified concerns and problems in a safe and efficient manner.

At the close of the meeting, NRC management reiterated the need to closely follow personnel error concerns and the continued vigilance over the entire operation of the facility in order to correct short comings and enhance the strengths noted.

13.0 Exit Interview (30703)

The NRC resident inspectors discussed the issues in this report with the licensee throughout the inspection period, and summarized the findings at an exit meeting held with the plant manager, Mr. M. J. McCormick, Jr. on April 6, 1990. No written inspection material was provided to licensee representatives during the inspection period.

ATTACHMENT 1

RECORDS RETENTION AND DOCUMENT CONTROL

Reference Documents

ANSI/ASME N45.2.9-1979, Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants

ANSI N18.7-1976, Administrative Controls and Quality Assurance (QA) for the Operational Phase of Nuclear Power Plants

Limerick Generating Station (LGS) Technical Specifications, Section 6, Administrative Controls

10CFR50, Appendix B

LGS Final Safety Analysis Report, Section 17.2.17, Quality Assurance Records

Regulatory Guide 1.33, QA Program Requirements (Operation), Revision 2, February 1978

Documents Reviewed

Administrative Procedure (A)-2, Control of Procedures and Certain Documents, Revision 5

A-6, Control and Distribution of Drawings, Manuals, and Drawing Logs, Revision 2

A-29, Control of Revisions of License Documents, Revision 2

A-46, Maintenance of Plant Quality Assurance Records, Revision 2

RMOSA-1, Administrative Procedure to Control Records Management and Office Services Section (RMOS) Procedures, Revision 5

RMOSI-1, Creating PECo's Record Copy of Submitted Nuclear Related Documents, Revision 6

RMOSI-2, Retrieving Information from the Nuclear Records Management System (NRMS), Revision 4

RMOSI-6, Utilizing PECo Storage Vault by the Limerick Generating Station Document Administration Center (DAC), Revision 7

RMOSI-7, Periodic Verification of Correctness of Controlled Copy Sets of LGS Procedures, Revision 2

RMOSI-8, Duplication and Distribution of LGS Procedures, Revision 3

RMOSI-9, Receipt, Distribution and Control of Instruction Manuals at LGS, Revision 2

RMOSI-10, Processing and Control of Limerick Generating Station Quality Assured Operating Charts and Recordings, Revision 3

RMOSI-11, Receipt and Control of Drawings and Drawing Logs at LGS, Revision 4

Nuclear Records Management System, Nuclear Related Document Register, January 1990

Routine Test, RT-2-022-600-0, NRMS Vault Fire Detection Instrumentation Functional Test, Revision 0

Quality Assurance Department Audit Report AL88-71 PR, LGS Nuclear Records Management, July 22, 1988

ATTACHMENT 2

MID CYCLE SALP - MARCH 13, 1990
LIMERICK GENERATING STATION
ATTENDANCE LIST

PECo

G. J. Madsen, Regulatory Engineer
J. T. Smugeresky, Project Manager
F. A. Cook, Section Manager
G. A. Hunger, Jr., Director-Licensing
J. F. O'Rourke, Manager-Limerick Quality Division
L. B. Pyrih, Manager, Engineering Division
K. B. Weisbend, Plant Division-Engineer
B. Tracy, Test Engineer
D. B. Neff, Licensing Engineer
V. J. Cwietniewicz, Superintendent-Training
J. Doering, Project Manager
E. P. Fogarty, Manager, Nuclear Support
C. L. Adams, Director, Emergency Preparedness
P. J. Duca, Jr., Support Manager
G. M. Leitch, Vice President
M. J. McCormick, Jr., Plant Manager
R. C. Brown, Site Emergency Preparedness Supervisor
K. W. Meck, Reports Supervisor

NRC

J. Wiggins, Deputy Director
A. R. Blough, Branch Chief
L. Doerflein, Section Chief
T. Kenny, Senior Resident Inspector
L. Scholl, Resident Inspector
M. Evans, Resident Inspector
J. Nakoski, Reactor Engineer
C. Gordon, Emergency Preparedness Specialist
R. Clark, Limerick Project Manager
E. Trottier, Project Manager

State of Pennsylvania

A. K. Bhattacharyya, Nuclear Engineer

ATTACHMENT 3

MID SALP REVIEW
AGENDA

1. OVERVIEW	G. M. LEITCH
2. QRTLY. SELF-ASSESSMENT RESULTS	M. J. McCORMICK
3. OVERVIEW OF TRAINING PROGRAMS	V. J. CWIETNIEWICZ
4. SECURITY	P. J. DUCA
5. EMERGENCY PREPAREDNESS	P. J. DUCA C. ADAMS
6. ENGINEERING SUPPORT	L. B. PYRIH
7. QUALITY ASSURANCE ASSESSMENT	J. F. O'ROURKE
8. SUMMARY REMARKS	G. M. LEITCH
9. OPEN DISCUSSION	

- INTRODUCTION

- SPEAKERS

- GENERAL COMMENTS

  . UNIT 1 OPERATION SUMMARY

  . UNIT 2 STARTUP/
    OPERATION SUMMARY

  . CURRENT PLANT STATUS

INTRODUCTION

- o SELF ASSESSMENT PROCESS
- o PLANT DIVISION OVERVIEW
  - NEW INITIATIVES
  - ACCOMPLISHMENTS
  - WATCH AREAS
- o SUMMARY & CONCLUSIONS

SELF ASSESSMENT PROCESS

1. ADEQUACY OF UNIT 1, UNIT2, AND COMMON SYSTEMS FOR SAFE AND RELIABLE OPERATION

2. CONTROL ROOM OPERATIONS AND PROFESSIONALISM

3. TEAMWORK AND COMMUNICATIONS

4. ENGINEERING AND MAINTENANCE SUPPORT SERVICES

5. ORGANIZATIONAL INTERFACES (ONSITE AND OFFSITE)

6. PLANT CONFIGURATION CONTROL

7. PROCEDURAL ADEQUACY AND EFFECTIVENESS OF IMPLEMENTATION

8. REVIEW OF AUDITORS IDENTIFIED ISSUES/ WHY NOT SELF IDENTIFIED

- ASSURANCE OF QUALITY OVERALL

OPERATIONS SECTION

o NEW INITIATIVES

-SR. SHIFT PERSONNEL INTO LINE RESPONSIBILITY
- EQUIPMENT STATUS CONTROL
- PLANNING AND SCHEDULING INTERFACE

o ACCOMPLISHMENTS

- EXTENDED QUALITY RUNS/NO SCRAMS
- TRANSITION FROM 1 UNIT TO 2 UNIT OPERATIONS IN A PROFESSIONAL MANNER

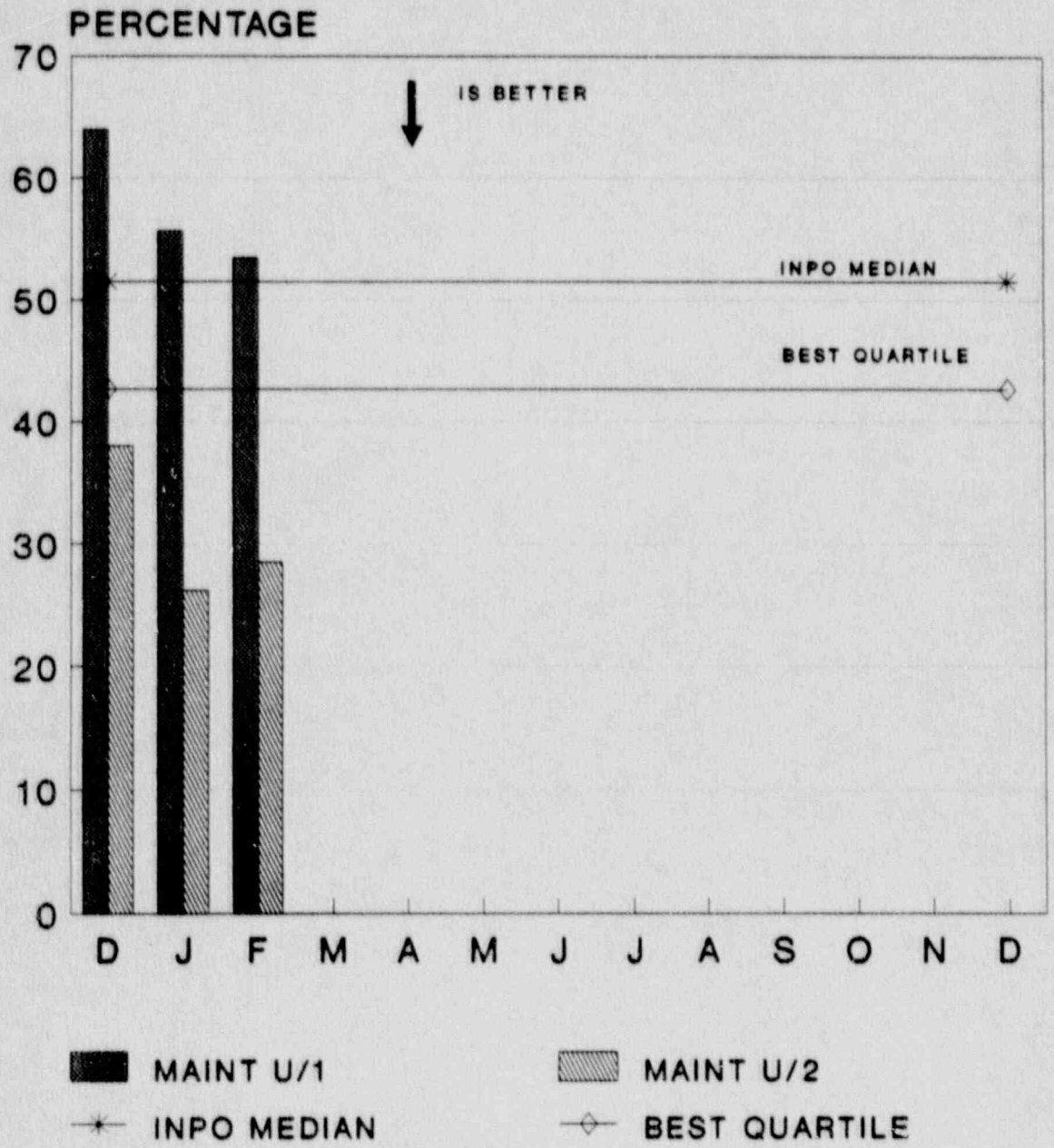
o WATCH AREAS

- MANAGEMENT INATTENTION TO ROUTINE PROGRAMS
- ADEQUACY OF CORRECTIVE ACTIONS
- REQUAL PROGRAM FOR LICENSED OPERATORS

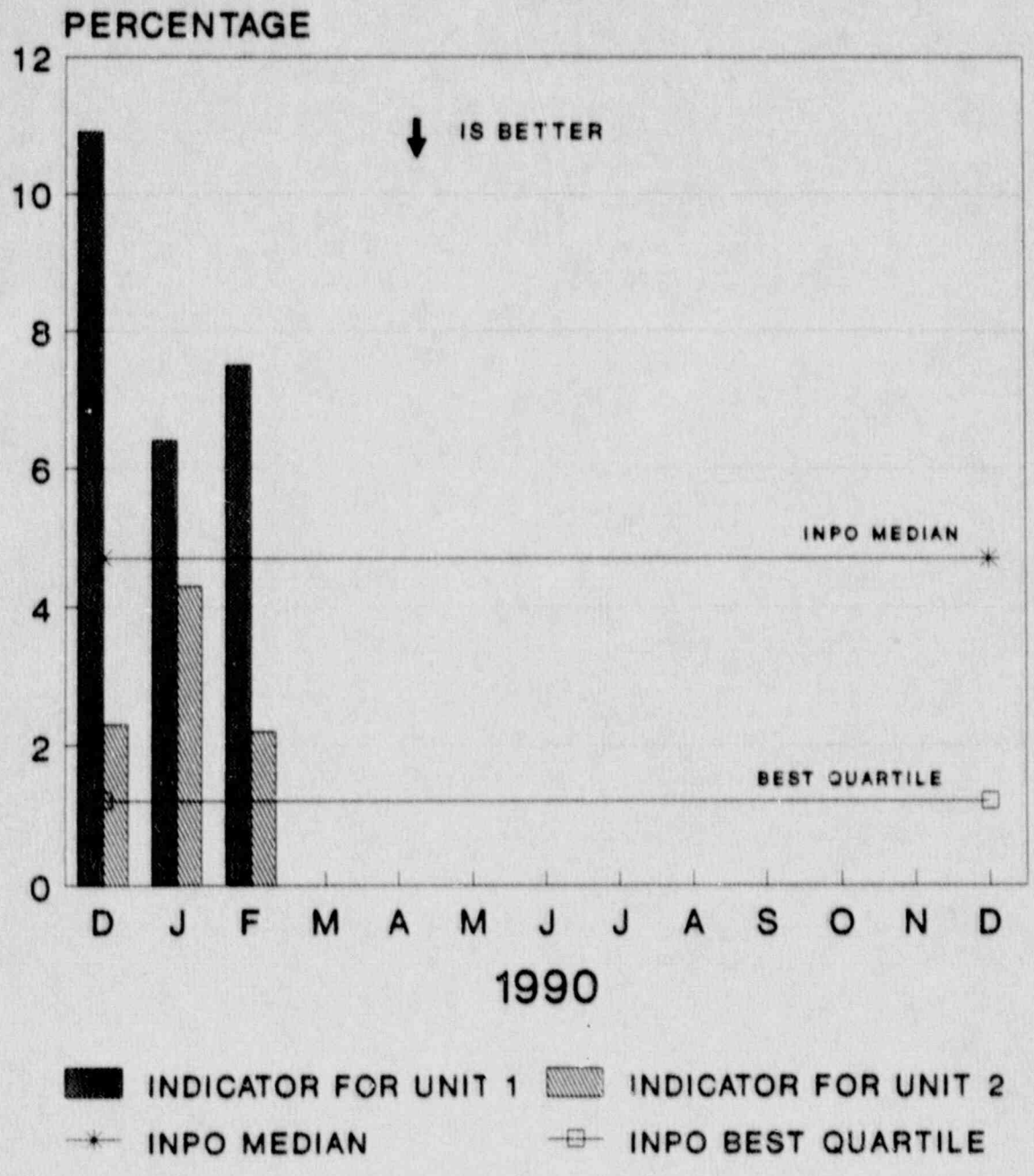
MAINTENANCE SECTION

- o NEW INITIATIVES
  - 13 WEEK ROLLING SCHEDULE
  - WORK TEAM DEVELOPMENT
  - PLANNING AND SCHEDULING
- o ACCOMPLISHMENTS
  - ROOT CAUSE ANALYSIS (HPES)
  - SUPERVISOR SELECTION ACADEMY
  - MRF COMPLETION RATE/DAY IMPROVEMENT
- o WATCH AREAS
  - NEW ORGANIZATIONAL CONCERNS/ (IBEW)
  - CORRECTIVE MRF BACKLOG/ UNIT 1 (OUTAGE-NONOUTAGE)
  - OVERDUE PM MRF INDICATOR

LIMERICK UNITS 1 & 2
CM BACKLOG INDICATOR
MRF'S GREATER THAN 3 MONTHS OLD



LIMERICK UNITS 1 & 2
PM OVERDUE INDICATOR



SERVICES SECTION

- o NEW INITIATIVES
  - DECREASE UNIDENTIFIED AND TOTAL LIQUID RADWASTE
  - MINIMIZE DISCHARGE OF LIQUID RADWASTE DUE TO EHC CONTAMINATION
- o ACCOMPLISHMENTS
  - LOW RADIATION EXPOSURE/ PERSONNEL CONTAMINATIONS
  - NO FUEL FAILURES
  - LOW COPPER LEVELS
  - GOOD CHEMISTRY PERFORMANCE INDICATORS
- o WATCH AREAS
  - UNIT 1 CONDENSER LEAKS
  - CONDENSATE DEMIN RUN LENGTHS
  - SURFACE AREA CONTAMINATION (W/REDUCED STAFF)

TECHNICAL SECTION

- o NEW INITIATIVES
  - RELOCATION/REORGANIZATION
  - NED/LGS SYSTEM ENGINEER WALK SYSTEM DOWN TOGETHER
- o ACCOMPLISHMENTS
  - LOW NUMBER OF TCA'S
  - INTERIM MODIFICATION PROCESS
- o WATCH AREAS
  - SNM ACCOUNTABILITY
  - REACTIVITY MANAGEMENT

SUMMARY AND CONCLUSION

- o OVERALL PERFORMANCE - SUPERIOR
- o MANY NEW INITIATIVES/UNDERWAY
- o WATCH AREAS IDENTIFIED AND MONITORED
- o LER TRENDS
- o COMMITMENT TO MAINTAIN QUALITY OF OPERATIONS
  (THROUGHOUT ALL PROGRAMS WITH TIGHTER BUDGETS)
- o NRC / PECo HAVE MUTUAL GOALS

LGS NUCLEAR TRAINING SECTION TOPICS

- INPO
- EMERGENCY RESPONSE ORGANIZATION (ERO) TRAINING
- SIMULATOR CERTIFICATION
- LICENSED OPERATOR REQUALIFICATION (LOR) PROGRAM
  ROOT CAUSE ANALYSIS PREVIEW
- NUCLEAR TRAINING SECTION (NTS) INITIATIVES FOR 1990
- ASSESSMENT OF NTS PERFORMANCE

INPO

- ACCREDITATION RENEWED (1/90)
  - NON-LICENSED OPERATOR
  - REACTOR OPERATOR
  - SENIOR REACTOR OPERATOR/SHIFT SUPERVISOR
  - LICENSED OPERATOR REQUALIFICATION
  - SHIFT TECHNICAL ADVISOR
  - TECHNICAL STAFF & MANAGERS
- ACCREDITATION TEAM VISIT (2/12 - 2/16/90)
  - I & C
  - ELECTRICAL MAINTENANCE
  - MECHANICAL MAINTENANCE
  - HEALTH PHYSICS
  - CHEMISTRY
- AWAITING DRAFT REPORT

  CONCERNS IDENTIFIED:

  1. MAINTENANCE INITIAL TRAINING-
     EXAM QUESTIONS MORE STRIGENT THAN OBJECTIVES
  2. MAINTENANCE CONTINUING TRAINING-
     REVIEW AMOUNT OF TRAINING PROVIDED IN CERTAIN AREAS
- POSITIVE FEEDBACK ON PROGRAMS

EMERGENCY RESPONSE ORGANIZATION TRAINING

- o TRAINING FOR MCR EMERGENCY DIRECTORS- CLASSROOM FOLLOWED BY "TABLETOP" USING SIMULATOR

- o EP DRILLS WILL BE PERFORMED USING SIMULATOR COMMENCING 3/15/90

- o MINI DRILLS SUPPORTED BY NTS

- o TRAINING PROGRAM PLAN FOR ERO PERSONNEL APPROVED

SIMULATOR CERTIFICATION

FUNCTIONAL FIDELITY

- o 30 (OF 61) TESTS PREPARED
- o 30 (OF 61) TESTS PERFORMED

PHYSICAL FIDELITY

- o COMPARISON OF SIMULATOR PANELS TO MCR PANELS IS COMPLETE
- o 35% OF HUMAN FACTORS ENHANCEMENTS COMPLETED IN SIMULATOR

CONFIGURATION MANAGEMENT SYSTEM

- o FULLY IMPLEMENTED
- o IN USE TO TRACK MODS, DISCREPANCIES, ETC.

SUMMARY

- o PERFORMANCE TESTING (PT) COMPLETED BY 6/90
- o PHYSICAL FIDELITY CHANGES ARE ONGOING

LOR PROGRAM - ROOT CAUSE ANALYSIS PREVIEW

o PURPOSE

IDENTIFY DEFICIENCIES & WEAKNESSES ASSOCIATED WITH LICENSED PERSONNEL PERFORMANCE DURING THE 1990 ANNUAL EXAMS.

o ANALYSIS METHODS

BARRIER ANALYSIS
CHANGE ANALYSIS
ROOT CAUSE TREE TECHNIQUE

o CAUSES IDENTIFIED

PRIMARY FACTORS

- o INSUFFICIENT MANAGEMENT ATTENTION TO STAFF LICENSE TRAINING
- o PERSONNEL MEETING MINIMUM STANDARDS - NOT IMPROVING
- o TIME VALIDATION INADEQUATE
- o COMMUNICATIONS NOT EMPHASIZED OUTSIDE SIMULATOR
- o PERFORMANCE STANDARDS NOT EMPHASIZED IN WEEKLY TRAINING

SECONDARY FACTORS

- o TWO MONTH PERIOD WITHOUT TRAINING PRIOR TO EXAM
- o EXAM BANK QUESTIONS/ANSWER SOLICITATION
- o T-200 SERIES PROCEDURES/HUMAN FACTORS
- o SYSTEM MANIPULATIONS/CONSISTENCY OF OPERATION

PREPARED TO DISCUSS THE ROOT CAUSE ANALYSIS WITH NRC ON 3/15/90

NTS INITIATIVES FOR 1990

SYSTEM ENGINEER PROGRAM

- o PHASE III OF TECHNICAL STAFF DEVELOPMENT PROGRAM
- o FIRST SESSION TO START 7/90

EP DRILLS ON SIMULATOR

- o REQUIRED SEVERAL MODS
- o INTENSIVE PREPARATION EFFORTS

LIMITED LICENSE SRO PROGRAM

- o FUEL HANDLING DIRECTORS FOR UNIT 1 OUTAGE

ASSESSMENT OF NTS PERFORMANCE

OBSERVATIONS

- o ACCREDITATION RENEWAL/POSITIVE FEEDBACK FROM ATV
- o CANDIDATES (9/9) PASSING GFE
- o STRONG INTERFACE WITH & SUPPORT FROM PLANT ORGANIZATION
- o GOOD PERFORMANCE OF UNITS 1 & 2

KEY AREAS FOR 1990

- o ENHANCEMENT OF LICENSEHOLDER PERFORMANCE IN LOR
- o SIMULATOR CERTIFICATION
- o ERO TRAINING
- o STEADY STATE STAFFING GOALS
- o ACCREDITATION RENEWAL FOR REMAINING PROGRAMS

SUMMARY STATEMENT

OVERALL PERFORMANCE IS STRONG, BUT SPECIAL ATTENTION & EFFORTS WILL BE NEEDED IN THE LOR PROGRAM TO ENSURE CORRECTIVE ACTIONS ARE EFFECTIVE IN ENHANCING LICENSEHOLDER PRFORMANCE.

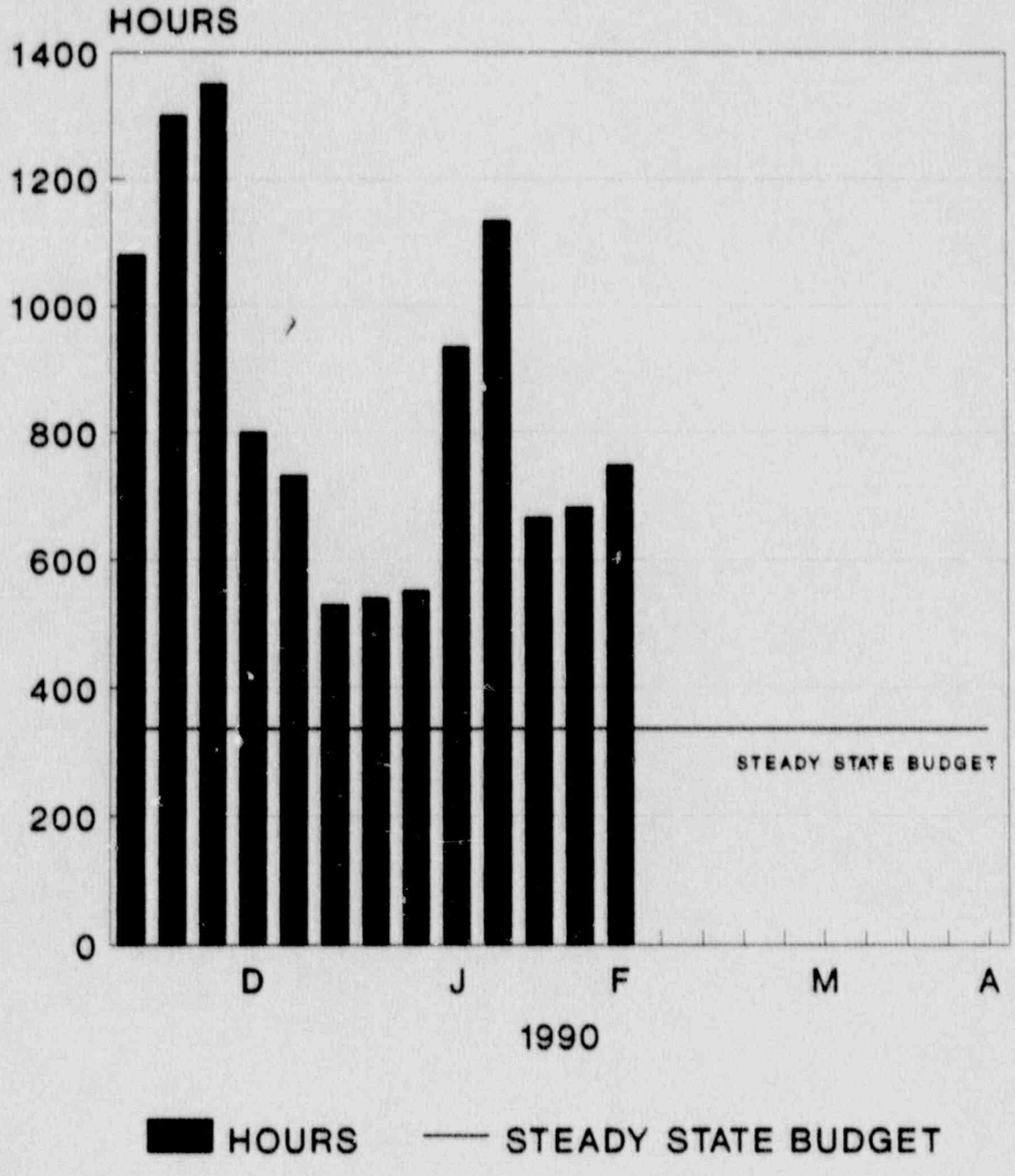
SECURITY

STAFFING

PREVENTATIVE MAINTENANCE PROGRAM

COMPENSATORY POSTS

LIMERICK UNIT 1 & 2
COMPENSATORY POSTING HOURS



EMERGENCY PREPAREDNESS

CURRENT CAPABILITY

EMERGENCY RESPONSE

TRAINING

ENHANCEMENTS

ACTION PLAN

EMERGENCY PREPAREDNESS ACTION PLAN SUMMARY

- PROGRAM DEFINITION
- COMMITMENT TRACKING
- MEDICAL/ACCOUNTABILITY/EVACUATION
- ERO DESIGNATED/TRAINED/READY
- ERO TRAINING/QUALIFICATION
- DRILLS/EXERCISES

NUCLEAR ENGINEERING SELF-ASSESSMENT

- Level of Effort Support (12/89 - 2/90)
  - Engineering Work Requests
    - 17% decrease in Backlog
    - Improving Trend
  - NCR Dispositioning
    - No change in Backlog
    - No adverse Trend
  - Engineering Review Requests
    - Slight increase in overdue
    - Watch Area
- Mod Support
  - Unit 1 Outage Mods
    - 7 of 24 Mods did not achieve Rev A milestone of 1/20/90
    - 2 of 24 Mods will not make Rev O milestone of 4/13/90
  - As Building
    - Backlog of As Building Drawings restraining closure of Mods and NCR's
    - Action Plan being developed to restructure As Building Program

NED/LGS INTERFACE

- Key Issues from Root Cause Analysis
  - NED's lack of appreciation of Station needs
  - Less than adequate teamwork between NED and LGS
  - Failure of both NED & LGS Managers to establish clear and mutual expectations
- Actions:
  - Meeting of Vice Presidents on 1-22-90
  - Meetings of Vice Presidents & Senior Managers of NED & LGS
    - 2-7-90 - Team Building, discussion of Issues and assignment of Teams to develop Action Plans
    - 2-28-90 - Review & Approval of submitted Action Plans, Resource Requirements & Schedules
  - Next action is Presentation to NRC and Implementation

NED QUALITY IMPROVEMENT

- Objectives
  - Improve NED Work Processes and Products
  - Establish a Quality-Oriented and Customer-Focused Culture
  - Integrate ongoing Improvement Activities
- Quality Improvement Kickoff Meeting 2/21/90
  - All NED Managers and Supervisors plus selected Customers
  - Plans for the Year and Quality Expectations
- Management Overview Meeting 3/7/90
  - Course outline and samples of Personal Quality Training to be given to all employees
  - Sustaining Sponsorship
  - 1990 NED Goals
- Schedule for Training being established
- Employee Recognition Activities begun 2/27/90
- NED Newsletter to address Quality Issues and Employee Recognition under development

NUCLEAR QUALITY ASSURANCE
LIMERICK QUALITY DIVISION

- OBSERVATIONS OF PLANT PERFORMANCE STRENGTHS AND WEAKNESSES/CONCERNS
    - LQD TECHNICAL MONITORING
    - LQD QUALITY CONTROL
    - INDEPENDENT SAFETY ENGINEERING
    - PERFORMANCE ASSESSMENT DIVISION
- LQD SELF-ASSESSMENT

GENERAL OBSERVATIONS

STRENGTHS:

- UNITS 1 AND 2 AND COMMON SYSTEMS OPERATION
- CONTROL ROOM OPERATIONS AND PROFESSIONALISM
- TEAMWORK AND COMMUNICATION
- PROCEDURAL ADEQUACY AND IMPLEMENTATION
- ENGINEERING AND MAINTENANCE SUPPORT SERVICES
- PLANT OPERATORS NUCLEAR

UNIT 2 MINI-OUTAGE

UNITS 1 AND 2 RCIC PM ACTIVITIES

UNIT 2 POWER ASCENSION

STRENGTHS:

- TEAMWORK AND COMMUNICATION
- ORGANIZATIONAL INTERFACES
- PROCEDURAL ADEQUACY AND IMPLEMENTATION

UNIT 2 STARTUP FOLLOWING MINI-OUTAGE

STRENGTHS:

- OPCON CHANGE PORC MEETINGS
- SHIFT OPERATIONS PERSONNEL ATTENTION TO DETAIL
- TEAMWORK AND COMMUNICATIONS

WEAKNESSES/CONCERNS

- IMPROPER ADMINISTRATIVE CONTROLS IN LUBE OIL STORAGE AREA
- H_2O_2 ANALYZER SYSTEM OPERATION
- CONTROL OF CHEMICALS, REAGENTS AND STANDARDS IN CHEMISTRY LABS
- ORGANIZATIONAL INTERFACES

AUDITS/SURVEILLANCES

- EMERGENCY PREPAREDNESS
- SECURITY I&C TECHNICAL TRAINING
- PECo RESPONSE TO GENERIC LETTER 89-13 (SERVICE WATER SYSTEM PROBLEMS)
- CAR/RECOMMENDATION RESPONSES
- ALARA
- NON-LICENSED OPERATOR TRAINING
- CORRECTIVE ACTION
- INDUSTRIAL SAFETY
- PREVENTIVE MAINTENANCE
- MEASUREMENT AND TEST EQUIPMENT
- NON-RADIOLOGICAL ENVIRONMENTAL PROTECTION PLAN AND NPDES PERMIT

LIMERICK QUALITY DIVISION SELF-ASSESSMENT

STRENGTHS:

- ABILITY TO RESPOND TO PLANT STAFF REQUESTS
- PROCEDURE REVIEWS
- PROCUREMENT DOCUMENT REVIEWS
- TIMELY ISSUANCE OF AUDIT REPORTS
- NO CAR/RECOMMENDATION DISAGREEMENTS REQUIRING ESCALATION
- NRC REVIEWS OF AUDITS
- AUDIT ESSENTIAL ELEMENT DEVELOPMENT WITH PLANT INPUT
- RESOLUTION OF ISSUES WITH PLANT PERSONNEL
- PLANNING AND REVIEW OF MRFs
- ISEG SURVEILLANCE REPORTS

LIMERICK QUALITY DIVISION SELF-ASSESSMENT

AREAS FOR IMPROVEMENTS:

- DRAFT CARs NOT AVAILABLE AT EMERGENCY PREPAREDNESS AUDIT EXIT
- APPLICATION OF GRACE PERIOD TO TECHNICAL SPECIFICATION AUDIT PERIODICITY
- QC INVOLVEMENT IN UNIT 1 RCIC SOLENOID REPLACEMENTS
- NQA REPORT AT ROUTINE PORC MEETINGS
- RECEIPT INSPECTION BACKLOG
- TIMELINESS OF ISEG REPORTS
- ISEG TIME IN THE PLANT
- SECTION XI REQUIREMENTS NOT ADEQUATELY ADDRESSED IN PURCHASE ORDERS