U. S. NUCLEAR REGULATORY COMMISSION

REGION I

DOCKET/REPORT NOS:	50-387/94-03 50-388/94-03
LICENSE NOS:	NPF-14 NPF-22
LICENSEE:	Pennsylvania Power and Light Company 2 North Ninth Street Allentown, Pennsylvania 18101
FACILITY NAME:	Susquehanna Steam Electric Station, Units 1 and 2
INSPECTION AT:	Berwick, Pennsylvania
INSPECTION DATES:	January 10-14, 1994 February 1-10, 1994

INSPECTOR: Peter D. Drysdale, Sr. Reactor Engineer, Systems Section, EB, Division of Reactor Safety — Date: 4/14/94

APPROVED BY: Eugene M. Kelly, Chief, Systems Section, EB, Division of Reactor Safety — Date: 4/18/94

Areas Inspected: Corporate and onsite engineering programs, management support, communications, technical training, engineering deficiency reports, modification controls, and QA involvement in engineering activities.

Results: Nuclear engineering activities function effectively after completion of a two year reorganization. The onsite system engineering groups were well staffed and supported the site's technical needs through close system monitoring, performance trending, and timely resolution of technical deficiencies.

Good interdepartmental communications existed between the corporate and onsite technical groups. An active and effective interface existed between the engineering and plant organizations. The revised engineering deficiency report (EDR) process functioned effectively and the backlog of unresolved discrepancies was significantly reduced in the past year. Technical evaluations, reportability and operability determinations, and corrective actions for EDRs were of sufficient scope and depth to assure that appropriate corrective actions were taken.

Modifications and design changes were of good quality and technically accurate. Quality assurance audits and surveillances of engineering and technical support activities were effective and have resulted in program improvements.

DETAILS

1.0 ENGINEERING PROGRAMS AND ACTIVITIES (IP 37700)

Purpose and Scope

The purpose of this inspection was to determine the effectiveness of the licensee's engineering organization in providing engineering and technical support to the plant organizations during the current SALP period (4/19/92-2/26/94). The inspection scope included the engineering organizational structure, the adequacy of staffing, and the overall involvement of management in assuring that the design basis of plant systems and equipment is maintained within all engineering activities such as design changes and modifications. The level of communications and interface between engineering and site organizations was assessed. The engineering management's role in improving plant safety and performance and the role of the QA organization in evaluating engineering performance were also examined.

1.1 Nuclear Engineering Department Organization and Programs

In November 1993, the licensee formally completed a reorganization of the Nuclear Engineering Department (NED) in accordance with recommendations made by the Organizational Effectiveness Review (OER) that was completed two years earlier. The department reorganization achieved an overall reduction in the engineering workload that permitted a more effective use of engineering resources to support the daily technical needs of the plant. A permanent Engineering Review Committee (ERC) was established during the department reorganization as a management oversight committee to ensure an orderly transition and to ensure that the new organization was developing consistent with the original intent to achieve better performance and efficiency. The ERC was also established to perform engineering self-assessments through structured meetings and deliberations, followed with recommendations for improvement to the engineering department managers. The ERC was specifically charged to review discrepancy and nonconformance reports, NRC and INPO inspection findings and observations, plant modification packages, safety and technical evaluations, Nuclear Quality Assurance deficiency and audit reports, and other engineering functions on a monthly basis. The ERC remained active after the department reorganization and has become a tool for measuring and evaluating NED performance and the effectiveness of engineering programs.

The NED now consists of four principal functional groups containing technical personnel both at the corporate engineering offices in Allentown, PA, and at the Susquehanna Steam Electric Station (SSES) in Berwick, PA. Nuclear Technology Engineering (NTE) focuses on the resolution of engineering and technical deficiencies, the development of new engineering initiatives and programs, the development of engineering procedures, and the resolution of long term engineering issues. Nuclear Modifications Engineering (NME) concentrates primarily on the development of plant modification packages and following them through to closeout. NME also conducts post-installation testing to assure that installed modifications meet their original design intent. Nuclear Systems Engineering (NSE) is concerned mainly with day-to-day technical support to the plant through system performance monitoring and is

closely involved with the maintenance department supporting post-maintenance testing and troubleshooting equipment discrepancies and failures. Nuclear Fuels Engineering (NFE) provides fuel and core design analyses required for both reactors at SSES. NFE also performs core reload analyses and licensing actions, incore fuel and control rod analyses, and reactor safety/transient analyses.

The engineering department maintains a Nuclear Engineering Projects, Programs, and Issues Report that describes all activities currently within the NED. The report is updated monthly with inputs from each of the department managers and provides detailed descriptions and status reports of projects and programs, identifies responsible engineers and managers, provides plans and schedules, and identifies the direct linkage of projects and programs to PP&L's strategic business plan and its 5-year corporate plan. The inspector considered this report to be an excellent management tool for monitoring progress of engineering projects and issues and for promulgating engineering program information throughout PP&L. Some of the notable engineering initiatives and long-term projects currently in progress that are described in the Projects, Programs, and Issues Report include the following:

- Power Uprate: The NED has completed the engineering analyses and modification packages for increasing the electric power output of each unit by 50 megawatts. The NRC completed an SER on this project in November 1993, and the licensee intends to install the necessary modifications at both units beginning with the next refueling outage at Unit 2. The power uprate for Unit 1 is scheduled for the spring of 1995.

- Design Basis Reconstitution: NED has undertaken a joint project with General Electric to reconstitute the design basis for most of the plant's primary and balance-of-plant systems. As of this inspection, 7 Design Basis Documents (DBDs) have been completed. Throughout 1994, 7 more will be completed. A total of 50-75 system DBDs will eventually be completed over several years.

- Maintenance Rule Implementation: The NED assembled a Maintenance Rule Task Force and has developed a Maintenance Rule Scoping Matrix to identify all plant systems, programs, and activities that will have to be developed or changed in order to meet the 10 CFR 50.65 Maintenance Rule.

- ECCS Pump Suction Strainers: SSES has participated in the BWR Owner's Group initiative on potential ECCS pump suction strainer clogging during the recirculation phase of cooling following a LOCA. NED performed an extensive analysis of fibrous pipe insulation inside containment and concluded that the potential for clogging ECCS pump strainers warranted a plant modification. NED prepared an extensive modification to remove all fiberglass insulation within 7 pipe diameters of large bore primary system piping. All effected insulation was removed from Unit 1 during the past refueling outage and all is scheduled to be removed during the next outage at Unit 2.

- Reactor Vessel Water Level Instruments: SSES installed a reactor vessel "keepfill" level instrument in Unit 1 in accordance with NRC Bulletin 93-03. NED has been leading an separate effort to design and test a passive level instrument that does not require periodic adjustment. The passive design will be more accurate and less susceptible to instrument error. Testing has been completed on a prototype test loop and SSES plans to install this modification during the next refueling outage at Unit 2, and the following refueling outage at Unit 1.

- Spent Fuel Pool Cooling: SSES has examined the adequacy of the original design basis for the spent fuel pool and concluded that the loss of fuel pool cooling during a LOCA is outside the licensing basis for the plant. NED has completed fuel pool design evaluations and has initiated modifications to enhance the ability of the fuel pool cooling system to assure cooling of the pool. The modifications are scheduled for installation during the next Unit 2 refueling outage.

- Jet Pump Holddown Beam Replacements: The General Electric Co. recently notified BWR plants of failures in jet pump holddown beams in unanticipated locations. Potential failures at other BWR facilities were predicted within one operating cycle. SSES replaced all jet pump holddown beams in Unit 1 during the past RFO and is scheduled to replace all beams in Unit 2 during the next RFO.

The NED is also pursuing numerous other initiatives and projects related to upgrading plant systems such as the EDGs, station heat exchangers, the service water system, the plant computer, and the plant simulator. The NED also supports the ongoing development of existing plant programs such as MOVs, the IST program, a degraded grid study, station blackout evaluations, and plant reliability modeling.

1.2 Nuclear System Engineering (NSE) Organization, Activities, and Staffing

During the past two years, the onsite NSE organization has evolved under the System Engineering Transition Plan. Although the OER reorganization was officially declared complete in November 1993, some additional staffing adjustments continued within the NSE organization in order to bring as many system engineers as possible into the NED. Engineering management effectively integrated most of the system engineering functions into the NED as recommended by the OER. Some system engineering functions are performed by the Maintenance, I&C, and Chemistry Departments.

The administrative requirements established for the entire Nuclear Department in PP&L apply to all NED and plant organizations with system engineering functions. NDAP-QA-0400, "Conduct of Nuclear Systems Engineering," outlines the responsibilities for the system engineering function. The plant system trending program also applies to all site organizations that monitor system performance, and it assures that consistent trending is performed using similar system parameters. NED management indicated that several systems

and functions currently included under the Maintenance, I&C, and Chemistry departments may be better managed within NED and some will eventually be brought directly into the NSE organization.

The inspector noted that the NSE manager position has been occupied by at least two temporary managers in the past year. The inspector held discussions with all individuals who have held the NSE manager position in the past year and concluded that the NSE organization has been well managed and that management continuity has been maintained as the various NSE programs as the organization has developed during the reorganization. A permanent NSE manager has been selected and is expected to assume NSE responsibilities in mid-1994.

The present NSE organization consists of 5 different functional groups: Programs & Testing, Nuclear Steam Supply Systems, Electrical/I&C Systems, Balance-of-Plant Systems, and Computer Systems. The principle functions of all NSE groups include directly supporting the daily technical needs of the operations and maintenance departments, monitoring and trending system functions and performance, conducting post-modification and post-maintenance testing, providing technical and safety evaluations for temporary modifications, identifying and resolving deficiencies, performing root cause analyses and identifying corrective actions, and reviewing industry events and operational experience.

The SSES plants each have over 200 "systems" and "subsystems" that were originally designated by the architect/engineer (Bechtel). Each system is assigned to a system engineer in the NSE, Maintenance, I&C, or Chemistry departments. There are over 100 engineers and support personnel assigned to the NSE group with responsibility for approximately 150 of the systems at SSES, including both primary and balance-of-plant systems. The inspector reviewed the breakdown of responsibilities in the NSE organization. Each system engineer typically has the lead responsibility for 2 to 4 plant systems and also provides backup support for other system engineers. Each system also has a Maintenance and/or I&C department individual with functional responsibilities that require a continuous interface with the NSE engineers. The NSE group also has lead responsibility for technical programs onsite such as thermal performance monitoring, inservice testing, erosion/corrosion monitoring, and leak rate testing. The inspector concluded that the existing level of NSE staffing is adequate for the number of systems and other responsibilities of the NSE organization.

In late 1991, the charter for the systems engineering organization identified the need for system performance monitoring and trending. At that time, SSES considered that system monitoring and trending would help to reduce the number of repeat events in the plant. Other benefits were perceived in the area of predictive maintenance and implementation of the maintenance rule. The development of a system monitoring and trending program that could be used by all nuclear departments in PP&L paralleled the NED reorganization under the OER.

Together with the system trending program, NED initiated System Status Reports (SSRs). Nuclear System Engineering Instruction NSEI-AD-011 was developed in April 1993 and provides the guidelines for SSR preparation. SSRs are designed to compile most of the significant system information such as system availability, material condition, open work authorizations, planned modifications, operating events, system and component test failures, equipment discrepancies, system functional data, and industry events into a cohesive report to show system performance trends. The SSR is also designed to assist in predicting and taking early action for adverse trends, to confirm positive system trends, and/or to indicate the need for system maintenance. System parameters such as flow, pressure, temperature, response times, actuations, etc., provide data to the trending program and are captured with each SSR over a six month period. The inspector reviewed the SSRs for the Reactor Core Isolation Cooling system, the High Pressure Coolant Injection system, the Emergency Diesel Generators, and the Offgas Recombiners. These SSRs provided detailed technical evaluations and comprehensive evaluations of system performance that were based upon actual system data. All open equipment discrepancy items were included, and trends in system parameters were graphed over several months.

NED is currently conducting system status reviews with the system engineers, their supervisors, and NED and plant department managers. Systems engineers use the content of the SSR as the basis for presenting the current system status. The inspector attended the status review meeting for the Reactor Core Isolation Cooling system and noted a high level of interest and involvement on the part of all participants. The licensee currently plans to conduct status review meeting for each of the primary and balance-of-plant systems over the course of several months. The meetings will be subsequently evaluated to determine which systems should be reviewed in this way on a regular basis. The inspector concluded that the status review meetings were very beneficial to the plant and engineering groups. The NSE organization effectively supported the plant's technical needs through monitoring and reporting plant systems performance trends.

1.3 System Engineering Training

The training provided to NSE system engineers is part of a larger training and certification program that was developed for all NED engineers and accredited by INPO in 1993. The NSE training program for system engineers is managed within the Programs & Testing Section and is administered through Nuclear Training Procedures NTP-QA-64.8, "Engineering Support Training Program for Nuclear Systems Engineers;" NTP-QA-65.1, "On-site Engineering Support Personnel Training and Certification Program;" and NTP-QA-65.2, "On-site Engineering Support On-The-Job Orientation." These procedures provide detailed and comprehensive training requirements for system engineer certification.

Training for system engineers is a broad-based qualification program designed to provide administrative and technical training for all new system engineers. Most of the training is conducted through the SSES Training Center and is grouped into three general areas: (1) "Core" training covering system engineering and scientific fundamentals in the major

discipline areas; (2) engineering department and plant programs training covering processes such as safety evaluations, root cause analyses, and deficiency resolution, as related to the system engineering function; and (3) position specific training that is related to an individual engineer's specific responsibilities through on-the-job experiences and self study under the supervision of a lead or supervising system engineer.

A Training Matrix was developed by the Programs and Testing Section to specify the training courses that all system engineers in NSE must complete to become fully qualified. The matrix indicates courses completed by each individual and tracks the total number of course hours. As of February 9, 1994, 29 system engineers were in certification training and approximately 85% of their training overall was complete. The NSE Programs and Testing Section Supervisor indicated that the remainder of qualification training for system engineers is expected to be complete by the summer of 1994.

Ongoing quarterly training is also conducted within the entire NED department to review concerns and issues in many areas such as new engineering initiative and programs, current industry issues, and overall engineering department performance. The inspector reviewed the agenda for the quarterly training conducted during this inspection. Overall, the NED and NSE maintain a good ongoing training program that supports performance improvements and open communications with all engineering departments.

1.4 Engineering and Communications and Interface with Site Organizations

Good communications exist between engineering personnel and the various plant organizations. This was evident in the high level of regular interactions between NED engineers and the plant operations and maintenance groups. Communications between operations, maintenance, and the engineering groups were established through daily morning and afternoon plant meetings that were well attended. The inspector attended morning meetings and noted that representative from each group interacted with other representatives and demonstrated effective interactions that communicated the operational and technical needs of the plant. Corporate NED management scheduled a regular and frequent presence onsite that facilitated good communications between all organizations.

The weekly plant system status reviews conducted with NED and plant department managers. These reviews effectively communicated system performance and status information to the engineering management. Senior engineering managers were directly involved in these reviews and used the opportunity to communicate management expectations of the system engineers and to directly measure the effectiveness of system engineering activities.

The Nuclear Engineering Department also held monthly seminars and keep technical personnel abreast of department programs, performance, issues, and concerns. Management expectations were openly and effectively communicated to the nuclear engineering departments during these seminars.

1.5 Engineering Deficiency Reports (EDRs)

The licensee revised the EDR program in 1993 due to concerns related to inconsistencies in the EDR administrative procedures and in the program's implementation. Many EDRs in the backlog were more than two years old without a disposition identified. NED also recognized the need to bring the EDR process more into alignment with other discrepancy reporting mechanisms such as nonconformance reports (NCRs) and significant operating occurrence reports (SOORs). NDAP-QA-0740, "Engineering Deficiency Reports," was issued in June 1993 and established a significant upgrade in the EDR program. Early benefits from the revised process were realized through improvements in the timeliness and thoroughness of operability and reportability evaluations for EDRs.

When the new EDR system was first established, the licensee placed direct management of the process directly under the site licensing group to coordinate EDR processing and to track their status through completion. NDAP-QA-0740 established a new requirement to process all EDRs to completion before the end of the next refueling outage for the applicable Unit. All open EDRs were entered into an "open items" tracking system and report and that identifies applicable dates, responsible individuals and organizations, and required actions needed for resolution and disposition of each EDR. A continuous reduction in the EDR backlog was evident in the monthly plant performance report that tracks open deficiencies over the entire operating cycle for each unit.

Tracking and trending of open EDRs has been used by NED management as one means to measure the effectiveness of the engineering organization. Under the revised EDR process, a steady decline in the backlog of outstanding EDRs has occurred over a two year period with particular emphasis on EDRs greater than two years old that did not have a disposition identified. NED reprocessed all existing EDRs without dispositions under the new NDAP in order to ensure they were dispositioned properly. The inspector reviewed 6 EDRs written under the old EPM that were reprocessed and closed under the new NDAP and 6 EDRs that were initiated, processed, and closed out entirely under the new NDAP. In all cases, operability and reportability determinations were thoroughly reviewed, the root causes and corrective actions were well documented, and the final disposition appeared to fully resolved the original discrepancy or concern. The inspector concluded that the new EDR process was a significant program improvement and that it was effectively implemented.

1.6 Modification Controls and Design Change Program Implementation

The inspector reviewed administrative and engineering procedures to determine whether the engineering design change and modification activities are specified and controlled by approved procedures. Nuclear Department Administrative Procedures NDAP-QA-1201, "Configuration Management Program," NDAP-QA-1202, "Nuclear Department Modification Program," NDAP-QA-0410, "Plant Modification Program," and NDAP-QA-0482, Post-Maintenance/Modification Test Program," comprise the basic requirements of the plant modification program.

The licensee's procedures provided detailed administrative guidance and controls to ensure that design changes and modifications are controlled and processed properly. Appropriate considerations were made for design limits to ensure that unreviewed safety questions are not bypassed. Guidelines and requirements are provided for 10 CFR 50.59 screening to ensure that the appropriate safety evaluations are performed for plant modifications. The engineering and technical staff reflected good understanding of the modifications and design change processes established by the administrative and engineering procedures.

The licensee divides permanent plant modifications into two primary groups, major and minor. Major modifications are usually large and significant systemwide or high cost projects that are placed under the control of a single project manager. The project manager coordinates all aspects of scoping and developing a modification package, construction and installation, post-construction testing, and turnover to the plant organization. Minor modifications are more reduced in overall scope and are typically involved on the component level. Minor modifications are placed under the responsibility of a Minor Modifications Review Team (MMRT). The MMRT typically consists of lead members from all engineering and plant organizations who will share activities in the course of progressing a minor modification through completion and turnover to the plant. The MMRT provides the oversight and coordination for minor modification packages in a manner similar to the project manager for major modifications; however, the MMRT is process driven and no single individual has overall responsibility for a minor modification.

Prior to the OER, an integrated modification planning process did not exist within the NED. A Project Management and Modification Services group was created to centralize the planning for plant modifications and to develop a single integrated modification schedule. Procedure MFP-00-1400 established a Nuclear Modifications Group Integrated Schedule. The inspector reviewed several weekly modification update schedules and daily outage work priority lists for the recent Unit 2 refueling outage.

All modification packages planned for a plant outage must be completed and ready for installation by a predetermined cutoff date before the outage begins. All modifications are scheduled for completion during the outage in which installation begins. No modifications are carried over to subsequent outages, except in rare circumstances. Modification closeouts are managed as part of the licensee's configuration control program. Modifications are tracked through all phases of development and completion and are reported on regularly as their status is updated. All modification activities are linked to the formal tracking process to ensure that all drawings, procedures, design, and licensing documents affected by the modification are closed out properly.

The inspector selected several design changes and modification packages for Units 1 and 2 for detailed review. Design analyses, calculations, 10 CFR 50.59 safety evaluations, management reviews, and hardware installations were evaluated. The resolution of technical issues during the installation process and post-modification tests was also evaluated to determine the extent to which modifications achieved their original design intent.

DCP 91-3019: RCIC Turbine Steam Flow Reduction for Start-up: The RCIC turbine has experienced high overspeed transients during startup when the steam admission valve goes full open before the turbine control system takes effect. The power uprate project will increase normal operating steam pressure by approximately 30 psig and will increase the likelihood of startup transients. This modification was designed to stop the steam admission valve (HV-150-F045) at 10% open for 7 seconds to allow the control system to take control before full steam flow is achieved. The modification also reversed the steam admission valve to provide steam flow over the seat and to replaced the valve internals with a cage plug.

During post-modification testing, it was determined that the steam admission valve should be set at 40% open during the time delay in order to achieve a smoother turbine startup. Final test results indicated that this modification will prevent a turbine transient during startup.

DCP 93-3058E: The licensee made a conservative decision to replace all fibrous insulation in the containment that could become dislodged and cause ECCS pump strainers to plug after a large break LOCA or a HELB. The inspector reviewed the modification to remove all "Nukon" insulation inside the containment and performed a field walkdown to observe the new insulation. Nukon insulation was completely removed from all piping inside the containment building within 7 pipe diameters of all high energy piping and all piping defined for large break LOCA conditions. The licensee considers that 7 pipe diameters is a conservative limit for potential insulation removal; however, NED will continue to evaluate local areas inside containment to ensure the limit is adequate.

DCP 93-3047: "Reactor Vessel Water Level Reference Leg Backfill:" The licensee installed a modification for a new reactor water level instrumentation that was designed to prevent level errors that could occur during a rapid depressurization of the reactor vessel. The inspector reviewed the modification package prepared for fabrication and installation of the new instrument racks and the tubing connecting them to control rod drive tap-offs. The installed equipment was observed during a walkdown of the new system.

The modifications and design changes reviewed were found to be well organized, complete, and were documented in accordance with engineering procedures. Materials, processes, parts, and equipment were identified properly and were verified to be correct for their application. Applicable design inputs and calculations were detailed and correctly documented in the design packages, and the 10 CFR 50.59 safety evaluations supported the design conclusions. The design drawings in the modification packages were marked-up or revised to reflect field changes and the as-built configurations. The post-modification tests were properly identified and successfully accomplished prior to restoration to operation.

As a matter of general policy, SSES does not do partial modification installations, but completes most installations during a single plant outage. The installation packages reviewed were complete, the installation acceptance criteria were met, the installation verifications

were performed. Post-modification acceptance tests and subsequent technical reviews were accomplished in a timely manner before the end of the outage to support turnover to the plant and a return to operation.

2.0 QA SUPPORT TO ENGINEERING AND TECHNICAL SUPPORT (IP 37700)

Quality Assurance (QA) Involvement in Technical Support

Quality Assurance audit reports were reviewed to evaluate the QA organization's involvement in assessing the quality of engineering services to the plant. Audit and surveillance reports completed by the Nuclear Quality Assurance (NQA) organization that represented the current SALP period were selected for review.

Audit 92-119 on Corrective Actions was completed in December 1992 and followed several months of issues and concerns raised with the Engineering Review Committee and the NED management regarding the adequacy of the Engineering Discrepancy Report program. The audit included a comprehensive review of the EDR process and concluded that no significant program deficiencies existed that required corrective actions. However, the report did provide 10 recommendations to the NED management for improving the EDR program. Several examples of inconsistencies within the existing EDR administrative procedure EPM-QA-122 were noted, together with various errors in individual EDRs that did not adhere to EPM-QA-122. None of the administrative errors impacted directly on quality; however, the audit team concluded that EPM-QA-122 should be revised and that training should be given to all engineering personnel. Subsequently, the EDR process was significantly upgraded and EPM-QA-122 was substantially rewritten. The revised program requirements were reissued under Nuclear Department Administrative Procedure NDAP-QA-0740, "Engineering Discrepancy Program," in June 1993.

Audit 92-050 on the ISI and Erosion/Corrosion (E/C) Program was completed in July 1992. The audit evaluated periodic NDE exams, inservice testing of pumps and valves, control and resolution of defects, and the conduct of erosion/corrosion inspections. The auditors concluded that these programs and their implementing procedures adequately addressed the ASME code and licensing commitments. However, seven audit findings identified anomalies in program implementation that required corrective actions. Three of these were closed immediately. One finding identified an unapproved vendor who performed NDE instrument calibrations and could have had a direct impact on plant hardware. All audit findings were followed and closed out in a timely manner. The audit team also made sixteen observations and recommendations for better management and implementation of the ISI and E/C programs. Engineering Management responded to each observation with recommended actions and the NQA auditors evaluated these actions with respect to the intent of the original observation.

The ASME Section XI Repair/Replacement Program Audit 93-027 audit was completed in March 1993 and evaluated the control of design changes, the conduct of inspections, tests,

and examinations, the control and resolution of nonconformances, and the traceability of materials. The audit concluded that the program and its implementing procedures adequately addressed the ASME Code and other licensing commitments. However, the audit team identified four findings that required corrective actions. All corrective actions were completed within one month. Thirteen observations and recommendations were presented to the nuclear engineering management for follow-up consideration that mostly involved minor weaknesses in documentation of field activities.

The inspector also reviewed twenty reports of QA surveillances performed during the current SALP period. These reports included plant activities that required direct engineering involvement such as pump performance testing, EDG testing, plant startup testing, integrated and local leak rate testing, and the response to an NRC Information Notice. Overall, the reports revealed very good technical understanding by QA personnel of the activities under surveillance. The reports effectively communicated the results of QA surveillance activities to NED and NQA through in-depth evaluations that identified strengths and problem areas needing improvement.

In general, the results of the audits and surveillances reviewed provided an in-depth self-assessment of engineering performance in various program activities. The reports identified conditions that could have an impact on quality and identified strengths and weaknesses together with opportunities for improvements. All weaknesses were addressed by the engineering management in a timely manner. The inspector concluded that QA had very good involvement in evaluating engineering program activities and in monitoring the corrective actions taken for audit findings.

3.0 CONCLUSIONS

Nuclear engineering activities are functioning more effectively after the completion of a two year reorganization of the engineering department. The onsite system engineering groups were well staffed and supported the site's technical needs through close system monitoring, performance trending, and timely resolution of technical deficiencies.

Good communications existed between the corporate and onsite technical groups. An active and effective interface existed between the technical and site organizations and exhibited good interdepartmental communications. Good communication and interface processes exist at SSES between the site and engineering staffs. Close management involvement assured that engineering products are of a high quality.

The revised engineering deficiency report (EDR) system functioned effectively and the backlog of unresolved discrepancies have been significantly reduced in the past year under active management support. The technical evaluations, reportability and operability determinations, and corrective actions for EDRs were of sufficient scope and depth to assure that the appropriate corrective actions were taken.

Modifications and design changes were of high quality and were technically accurate. Modifications accomplished their design intent after they were installed. Engineers and project team members were very knowledgeable of the modifications and design changes within their cognizance. The 10 CFR 50.59 safety evaluations, design inputs, technical reviews, and post-modification testing were thorough and clearly reflected the modification program and regulatory requirements.

Quality assurance audits and surveillances of engineering and technical support activities were effective in identifying issues that the engineering organizations were able use to make program improvements. The quality assurance organization maintained a close involvement in the modification process by monitoring the program and implementation activities and by following up on corrective actions to deficiencies.

4.0 EXIT MEETING

Throughout the inspection, the inspector regularly met with the licensee representatives denoted below. At the conclusion of the inspection on February 10, 1994, the inspector summarized the scope and preliminary findings of the inspection. The licensee acknowledged the inspection findings and accepted the conclusions.

Persons Contacted

Pennsylvania Power and Light Company

	G. Butler	Manager - Nuclear Systems Engineering
	M. Golden	Supervisor - NSE Programs and Testing
	G. Jones	Vice President - Nuclear Engineering
	T. Kenny	Supervisor - Nuclear Licensing
	G. Kuczynski	Manager - Nuclear Plant Services
	S. Kuhn	Supervisor - NSE Elec/I&C Systems
*	D. McGann	Supervisor - Nuclear Compliance
	D. Roth	Supervisor - NSE NSSS Systems
	R. Saccone	Manager - Nuclear Modifications
*	G. Stanley	Vice President - Nuclear Operations

U.S. Nuclear Regulatory Commission

*	G. Barber	Sr. Resident Inspector
	D. Mannai	Resident Inspector

* Denotes those attending the exit meeting.