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Licensee: Philadelphia Electric Company
P.O. Box 195
Wayne, Pennsylvania 19087-0195

Facility Name: Limerick Generating Station, Units 1&2

Inspection at: Sanatoga and Chesterbrook, Pennsylvania

Inspection Conducted: January 27, 1992 to February 7, 1992

Inspectors: Robert A. McBrearty — March 3, 1992
R. A. McBrearty, Reactor Engineer, date
Engineering Branch, Electrical Section,
Division of Reactor Safety

Approved by: E H Gray — 3/5/92
E. H. Gray, Chief, Materials Section, date
Engineering Branch,
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Inspection Summary: Inspection on January 27, 1992 to February 7, 1992 (Report No. 50-352/92-06 and 50-353/92-05).

Areas Inspected: An unannounced inspection was conducted of the licensee's Nuclear Engineering Department (NED) program for providing engineering and technical support to Limerick activities. The inspection included modifications at the site, NED interface with site personnel, staffing, training and organization.

Results: The Nuclear Engineering Department is capable of providing adequate support to Limerick. Several mechanisms have been initiated to enhance the exchange of information among the engineering groups and the site including the location at Limerick of the NED site branch.

1.0 Inspection Scope

The scope of this inspection was to review and evaluate the engineering and technical support activity at the Limerick Generating Station, Units 1 and 2. The inspection was performed to ascertain that appropriate engineering effort is directed toward the safe operation of the plants within their design bases and compliance with Technical Specifications, and Code of Federal Regulations. Included in the inspection was examination of those activities directed at improvement of engineering performance. This included consideration of staff levels and organization, training, communication, and modification package implementation.

2.0 Engineering and Technical Support (37700)

The Nuclear Engineering Division (NED) at Chesterbrook, Pennsylvania is organized into sections by discipline. Each section manager reports to the Manager, NED, who, in turn, reports to the Vice President, Nuclear Engineering and Services Department (NESD). The division has a branch at Limerick, the NED site branch, whose head reports to the Manager, Site Engineering section at Chesterbrook. A reorganization of the site branch at Limerick is in progress, and will result in two branches, Mechanical/Civil and Electrical/I&C, each with its own branch head.

The reorganization is intended to enhance the support provided by NED to the site and is expected to be implemented by the start of the upcoming refueling outage at Limerick. At the time of this inspection, the staff of each section was at essentially full strength. The few vacancies that existed were in the process of being filled. The section staffs are a mixture of licensee and contractor employees and are gradually being changed to all licensee employees. The division staff is represented by a wide range of experience from 1 year to more than 30 years, and educational background includes MS, BS and Associate degrees in the various disciplines.

The site branch staff provides daily contact with site personnel, expediting communications and the resolution of engineering problems, such as nonconformance reports, without the need for contacting NED at Chesterbrook for resolution. An example of support provided to the site by the NED site engineering staff is the analysis of the residual heat removal (RHR), core spray (CS), high pressure coolant injection (HPCI), and reactor core coolant injection (RCIC) system room coolers to determine why operating the fans resulted in tripping the thermal overload. Based on the analysis, the problem was resolved.

Activities in which the department is involved include modification planning, the performance of internal safety system functional inspections, three system walkdowns per year at both Limerick and Peach Bottom sites, and detailed walkdowns in conjunction with site personnel which are performed before, during and after modifications. The major efforts of NED are the preparation of design basis document packages, response

to engineering work requests and the resolution of nonconformance reports from the site. Other areas where NED provided support to Limerick include the development of common procedures for Peach Bottom and Limerick, the resolution of the condensate demineralizer tank bolted head gasket leaks, review of work packages prior to and during the last Limerick refueling outage to determine whether barriers would be violated during the performance of work and to minimize operability problems, and the electro hydraulic control (EHC) system tube replacement project. The Nuclear Engineering and Services Department works closely with the plant regarding the Cobalt Reduction Program which has been effective in reducing personnel exposure to radiation. Design review boards, started approximately 1-1/2 years ago as a self assessment tool, perform in depth reviews of selected modifications at Peach Bottom and Limerick with the focus on technical adequacy, process weaknesses and ways to improve the modification process. The use of the review board has been effective in centering management attention on the modification process and the resolution of associated problems. The NED self assessment program has evolved into a program that involves all employees, rather than only management.

Several methods are employed to improve communications between NED and the site, and include staff rotation, monthly site interface meetings during which ongoing activities are discussed, frequent telephone conversations with site management, and mutual participation on modification teams. When it is considered to be appropriate, training bulletins are issued to the site in which specific items are discussed. Those bulletins are issued on an as-needed basis.

The Nuclear Engineering Division/Project Management (PM) Training Program Plan provides guidance and direction for training activities which prepare NED/PM personnel to perform engineering, design, and managerial tasks in support of Peach Bottom and Limerick. The training course was developed by the Nuclear Training section with guidance from NED. The Manager, NED and the Managers of Projects are responsible for the approval of the Program Plan and the Course Plans. The training program consists of initial training for new engineers, continuing training for experienced engineers (refresher training), and specialized skills training for selected individuals who perform as specialists on designated tasks or task areas. In addition to the above, on-the-job training is also provided. On-the-job training (OJT) is guided by training modules which include specific tasks, references, knowledge requirements and performance standards. The OJT also includes training on site-unique procedures, systems and components.

Engineering performance is assessed by management through tracking and trending engineering review requests, engineering work requests, nonconformance reports and modification safety evaluations. The trending results are presented to the Senior Vice President - Nuclear on a monthly basis. The trends related to Limerick show that backlogs and overdue packages are maintained at a relatively low level, although increases occur during refueling outages and level off at the end of the outage. The

various items are prioritized so that the highest priority work is completed first and, therefore, the impact of the backlog and overdue items on site activities is minimized. Modification safety evaluations (SE) are reviewed regarding the number of times an SE is submitted to the Plant On-Site Review Committee (PORC) before approval is granted. The majority of modification SEs at Limerick are now approved at the first submittal to PORC.

Conclusions

The engineering department is involved in a variety of activities and is capable of providing good support to the site in each of those activities. The range of experience and educational background of the NED staff at Chesterbrook and the site permits those with less experience to benefit from more experienced staff members and to provide quality support to site activities. The reorganization of the NED site branch is designed to improve the department's ability to provide engineering support on a daily basis.

The importance of good communications is recognized by NED management. A number of mechanisms have been initiated to enhance the exchange of information among the engineering groups and the site including meetings on topics of mutual interest and the location at Limerick of the NED site branch, whereby daily contact of engineering and site personnel is accomplished.

The licensee has an organized training policy to assure that engineering staff members receive training as appropriate to maintain and enhance their skills. The personnel rotation program provides an excellent opportunity for cross training, and has the added feature of improving cooperation and communication between the site and corporate engineering at Chesterbrook.

3.0 Review of Modifications (37828)

Packages representing four modifications were selected for inspection. The packages were inspected with respect to content and technical thoroughness. The following were selected for inspection:

- Modification No. 06104-1, Install low point drain on containment atmospheric control system suppression chamber exhaust line.

- Modification No. 06078-2, Install low point drain on containment atmospheric control system suppression chamber exhaust line.

- Modification No. 06157-2, Eliminate high speed capability of turbine turning gear motor.

- Modification No. 05342, Install 16 new 10" chain operated gate valves on the inlet and outlet lines of the condensate filter demineralizers.

The modifications were controlled by Procedure No. A-14, Revision 12, "Procedure for Control of Plant Modifications." The procedure applies to safety related and non-safety related components/systems and provides the measures to control the identification, coordination, implementation and documentation of modifications.

The packages which were reviewed were determined to be of excellent quality. They contained all of the necessary documentation with no or few field changes. Acceptance testing was documented and all required reviews and approvals were obtained prior to returning the various systems to operation. The quality of the packages is evidence of the effectiveness of the modification team concept and the engineering planning during development of the modification. The lack of field changes is further evidence of good engineering practices used during the design and implementation of the modifications.

In addition to the above, modification related nonconformance reports (NCRs) were inspected to determine whether they were processed properly and whether the disposition was adequately justified by the documentation. The following NCRs were selected for inspection:

- NCR #L90-171, L91-009, L91-195, L91-196, L91-218, L91-237, L91-247, L91-256, L91-259

The NCR packages were determined to be complete, the problem was clearly identified, proposed dispositions were provided, and after the appropriate engineering review, final dispositions were documented along with adequate technical justification to support the disposition. When it was appropriate, as defined by Procedure NA-03N001, Revision 3, "Control of Nonconformances," a 10 CFR 50.59 review was performed, and a safety evaluation was performed when necessary. All required documentation was included in the NCR packages.

As a result of NRC concerns regarding the adequacy of documented justification of NCR dispositions, the licensee conducted a workshop and provided guidance on documenting those justifications. The reviewed NCR packages contained complete documentation to technically justify the disposition of each NCR. The thoroughness of the documented justification demonstrated that the licensee's efforts to improve the quality of NCR documentation were effective.

Conclusions

Modifications at Limerick are controlled procedurally and are well planned and implemented as evidenced by the small number of field changes that are included in the work packages, and the completion of required actions within the allotted time.

Nonconformances are clearly documented and licensee efforts to improve documentation regarding the technical justification of dispositions were effective as demonstrated by the quality of the reviewed NCRs.

4.0 Exit Meeting

The inspector met with licensee representatives, denoted in Attachment 1 at the conclusion of the inspection at Limerick on January 31, 1992, and at Chesterbrook, Pennsylvania on February 7, 1992. The inspector summarized the scope and findings of the inspection.

ATTACHMENT 1

Persons Contacted

Philadelphia Electric Company

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F. A. Cook, Manager, Site Engineering Section, NED
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G. Hunger, Project Manager, Limerick
**R. M. Krich, Branch Head, Limerick licensing
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*Denotes those present at exit meeting on January 31, 1992 at Limerick.
**Denotes those present at exit meeting at the Corporate Engineering Office, Chesterbrook on February 7, 1992.