U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No: 50-373/88006; 50-374/8806

Docket Nos: 50-373; 50-374 Licenses No: NPF-11; NPF-18

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle Site, Marseilles, Illinois

Inspection Conducted: March 14-18, 1988

Inspectors: S. D. Eick — 4/7/88 Date

N. C. Choules — 4/7/88 Date

Approved By: F. J. Jablonski, Chief
Maintenance and Outage Section — 4/8/88 Date

Inspection Summary

Inspection on March 14-18, 1988 (Reports No. 50-373/88006; 50-374/88006(DRS))
Areas Inspected: Routine, announced inspection of maintenance activities and licensee's action on a previous inspection finding, scheduled to coincide with a planned outage, using selected portions of Inspection Modules 62700, 62702, 62704, 62705, 92701 and 92720.
Results: In the areas inspected, one violation was identified for failure to take timely corrective action (Paragraph 3.3.2). With the exception noted, the inspectors concluded that overall maintenance was adequately accomplished, effective, and self assessed.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

G. J. Diederich, Station Manager
R. M. Clark, Quality Control Supervisor
T. A. Hammerich, Technical Staff Supervisor
W. R. Huntington, Services Superintendent
J. R. Kodrick, Mechanical Maintenance Group Supervisor
T. J. O'Conner, Engineer, Site Engineering
J. L. Payton, Electrical Maintenance Master Electrician
J. C. Renwick, Production Superintendent
W. E. Sheldon, Assistant Superintendent, Maintenance
J. D. Williams, Mechanical Maintenance Master Mechanic

Nuclear Regulatory Commission (NRC)

F. J. Jablonski, Chief, Maintenance and Outage Section
R. A. Kopriva, Resident Inspector

The above listed individuals attended the exit meeting on March 18, 1988. Other licensee personnel were contacted as a matter of routine during this inspection.

2. Licensee Action on Previous Inspection Findings

(Open) Open Item (373/85032-02, 374/85033-02): Control of lubricants. The licensee revised procedure LAP-1400-2, "Withdrawal and Return of Material From the Storeroom," to include instructions for the issuing of lubrication products from the storeroom. The instructions were adequate for this purpose. However, the Operations Department maintained a storage area for lubrication products used by operators in performing equipment lubrications but there were no instructions for the control of lubricants stored there. This item will remain open pending completion and review of the instructions that the licensee plans to write for control of those lubricants.

3. Evaluation of Maintenance

This inspection was conducted to evaluate and assess the effectiveness of maintenance activities at LaSalle, and was scheduled to coincide with a Unit 1 planned outage. This was accomplished by:

- Observation of maintenance activities;
- Review of completed work requests;
- Evaluation of maintenance backlog;

- Walkdown of plant systems;
- Review of training records;
- Review of maintenance rework records.

The inspection also assessed the quality verification process as it related to maintenance, which was accomplished by:

- Review of audit reports;
- Review of corrective action documents such as discrepancy records and Licensee Event Reports (LERs).

In preparation for this inspection, the inspectors reviewed a number of 1987 maintenance related Licensee Event Reports (LERs). Most of the LERs were associated with the Reactor Core Isolation Cooling (RCIC) system and the Emergency Diesel Generator Electrical system.

Results of the inspection are documented in the following sections.

3.1 Accomplishment of Maintenance

3.1.1 Maintenance Backlog

The inspectors reviewed the licensee's system for monitoring work requests and preventive maintenance (PM) not yet completed. The licensee issued detailed weekly reports about the work request backlog assigned to each plant department, the backlog of non-outage corrective maintenance (CM) work requests, and outage work requests. Trends of the total and department back logs were shown on several graphs which indicated that the non-outage work request backlog had decreased from approximately 1400 in July 1987 to approximately 980 on March 16, 1988.

The PM backlog was very small during the fourth quarter of 1987. During the quarter, 2008 PMs were completed; only 31 PMs had not been completed. During review of the PM backlog, the inspectors noted that during the first six months of 1987, the backlog was large for lubrication items. In May, 304 lubrication items were scheduled but only 25 were completed; however, by October, the items not completed were reduced to 2. Since October, the number of uncompleted items was not greater than two, which indicated increased management attention had been given to the lubrication program.

3.1.2 Review of Completed Work Requests

The inspectors reviewed approximately ten work requests for completeness, accuracy and technical content. Some of the specific areas evaluated were:

- Adequacy of work instructions;
- Post-maintenance testing;
- Identification of root causes;
- Resolution of concerns identified during the performance of the work.

The inspectors concluded that the work requests reviewed appeared to adequately address the above items.

3.1.3 Review of Time Spent on Corrective and Preventive Maintenance

The inspectors reviewed the amount of time spent on PM and CM. For the fourth quarter of 1987, the licensee reported to INPO that of the total time spent on maintenance, 47% was spent on PM with 42% of that effort spent on Technical Specification surveillances. There appeared to be a good balance between PM and CM with PM approaching 50%.

3.1.4 Review of Maintenance Rework

The inspectors reviewed implementation of the programs utilized for monitoring maintenance rework. Rework was recorded on a special form when rework was caused by procedure deficiencies, engineering or design problems, material defects, failure of post-maintenance testing, training inadequacies, or personnel errors. The licensee published a quarterly report that showed the number of work requests which required rework and listed the reasons for the rework. During the first nine months of 1987, the percentage of work requests that required rework, was approximately 2.8%. During the last three months of 1987, the percentage was approximately 1.3%, which indicated an improving trend.

The licensee also used a computerized program that provided a readout when three work requests were performed on a piece of equipment within one year. The readouts were evaluated by the cognizant maintenance department to determine if additional action needed to be taken. Since initiation of the program in September 1986, 613 readouts have been generated. A review of selected readouts indicated that many were due to normal maintenance on equipment. The program provided a useful tool for trending and identifying recurrent equipment problems.

3.2 Effectiveness of Maintenance

3.2.1 Observation of Work Activities

The inspectors observed portions of approximately eight electrical, instrument, and mechanical maintenance activities to determine if those activities were performed in accordance with required administrative and technical requirements. The inspectors concluded that maintenance activities were effectively accomplished based on the following:

- Administrative approvals were obtained;
- Equipment was properly tagged;
- Replacement parts were acceptable and certified;
- Approved procedures were available and properly implemented;
- Work was accomplished by experienced and knowledgeable personnel;
- Radiological controls were established and implemented;
- Appropriate post maintenance testing was identified.

In particular, the inspector observed a vendor representative, vendor technicians, and station maintenance personnel simultaneously perform three maintenance work requests associated with the 1A HPCS diesel. The work was done in an orderly manner and without interferences between jobs due mainly to the maintenance foreman who acted as work coordinator, controlled adherence to procedures, and supervised all workers involved.

One item of concern was noted during the observations of work activities. Work request package L71272 Revision 1, contained a "Maintenance and Surveillance Schedule" for Limitorque Valve Actuators. Step A1.e, listed eleven lubricant substitutes for Exxon brand "Nebula EPO" for the drive sleeve top bearing. Ten of the substitutes listed were not available onsite but all 11 had different soap bases than Nebula EPO. Mixing of greases was of concern to the inspector due to the potential for loss of lubrication if the greases were incompatible. Exxon Nebula EPO and one substitute lubricant, Sun Oil 50-EP, were actually used onsite; however, even the Sun Oil product was being replaced by Nebula EPO for all Limitorque valve operators. Controls for the Nebula EPO and Sun 50-EP lubricants appeared to be adequate; however, in order to eliminate the potential for mixing of lubricants, the ten alternative lubricants should be considered for removal from the maintenance instruction. This is an Open Item (373/88006-01; 374/88006-01).

3.2.2 Plant Tours and System Walkdowns

To assess the material conditions of the plant, the inspectors performed plant tours including system walkdowns of the Residual Heat Removal (RHR), Emergency Diesel Generator System, and the Reactor Core Isolation Cooling System (RCIC). The inspectors evaluated equipment conditions and verified that work requests had been initiated on noted equipment problems. Work request tags were hung on components needing repair, which appeared to reduce the generation of duplicate work requests. The inspectors did not identify any items for repairs or maintenance that had not already been noted by Station personnel.

During the walkdowns, the inspectors also evaluated housekeeping and noted very little evidence of dirt and debris. A painting program had been implemented that: (1) differentiated Unit 1 from Unit 2 equipment with the use of different colors; (2) labeled all equipment with equipment number and name; and (3) labeled flow direction in piping. The painting program should be beneficial in reducing the number of "wrong unit" type personnel errors and indicated a positive management attitude towards housekeeping.

3.2.3 Training

Training and qualification records were reviewed for seven maintenance personnel that participated in maintenance activities witnessed by the inspectors. Training files were readily available and documented all training received since the employees were hired by the licensee. The inspector determined from review of the seven training records that personnel were qualified to perform the assigned maintenance activities.

The inspector discussed the maintenance training program with maintenance management personnel and was informed that the maintenance training program was accredited by INPO in March 1987. The licensee has committed to give experienced maintenance personnel 80 hours of continued training per year. The licensee indicated that training had been and is planned to be given about four days a week except during outages.

The licensee planned to use a Mechanical Stress Improvement Process (MSIP) on certain piping welds during the Unit 1 outage to prevent stress corrosion cracking. The process involves placing clamps around the pipe welds and squeezing the pipe. The inspector noted during a plant tour that training on MISP was being conducted. The inspector observed a portion of the training which appeared to be adequate.

3.2.4 Summary of Maintenance Accomplishment and Effectiveness

Maintenance activities observed during the inspection were accomplished in an effective manner. Training records were complete and readily available. Maintenance personnel observed were knowledgeable and professional and licensee procedures described the maintenance work process in good detail. Control over vendor personnel during maintenance activities was evident.

The inspectors concluded that the housekeeping and material condition of the plant was good. The painting program that was ongoing will improve the plant's appearance and may reduce the risk of operators manipulating equipment on the wrong unit. There appeared to be a good balance between CM and PM. The maintenance backlog was being reduced and good management controls were established to track the backlog.

No violations were identified.

3.3 Quality Verification

The inspectors reviewed audit reports and corrective action documents to evaluate the licensee's quality verification process. The documents were reviewed for root cause analysis, timely corrective action, technical assessments, and justification for close out of corrective action documents.

3.3.1 Review of Audits and Surveillances

The inspectors reviewed six Maintenance Program/Product audits for 1987. The audits appeared to be programmatically oriented; although, "in-process" type audits had been regularly performed. Each QA inspector was required to witness work performed in the field on a routine basis. Problems or concerns identified in the audits appeared to be followed up in a timely manner with effective corrective action.

3.3.2 Discrepancy Records

The inspector reviewed the status of discrepancy records (DRs) which were originated by plant personnel when a discrepant condition was found. The DR was used to document the discrepant condition, the proposed corrective action, the completed corrective action, and various reviews. The QC Department was responsible for followup of DR status.

It was reported to plant management in QC surveillance report 88-01, dated March 4, 1988, that there were 77 DRs open greater than 90 days. The inspector reviewed those open DRs on March 18, 1988, and determined that 64 were

still open without indication that corrective action had been completed. Twenty-seven of the open DRs were identified prior to 1987, two in 1984. Some examples of the conditions identified were: (1) evaluation of steel brackets for solenoid valves not completed; (2) instruments found out of calibration; and (3) nonsafety-related parts installed in a safety-related air compressor. It appeared to the inspector that corrective action may have been completed for some of the items, but there was no way to determine that fact without an in-depth investigation. The inspector reviewed other surveillance reports about open DRs and determined that many of the items on the March 4, 1988, surveillance were previously identified in QC surveillance 87-014, conducted in March 1987. Failure to ensure that timely corrective actions were completed in response to DRs is a violation of 10 CFR Appendix B, Criterion XVI (373/88006-02, 374/88006-02).

3.3.3 Corrective Action Programs (Engineering Support)

The inspectors reviewed problems identified in LERs that pertained to the Reactor Core Isolation Cooling (RCIC) water leg pump and the Emergency Diesel Generator output breaker. The LERs were evaluated for root cause analysis, engineering involvement, and effectiveness of the licensee's corrective actions for equipment problems.

- The inspector's review of LERs 373/87-039, 373/87-015, and 374/85-048 indicated a high failure rate of RCIC water leg pumps. The licensee determined that the failures were primarily limited to one pump. Bearings on that pump had failed three times since 1984 after operating for 21 months, 9 months, and 8½ months. Only after these failures did the licensee contact the vendor who suggested that the oil slinger be moved closer to the thrust bearing since cause of the failures appeared to be insufficient lubrication. After the oil slinger was moved, the pump was placed in storage as a spare. The inspector noted that both onsite and offsite engineering were involved in the analysis of this problem. It appeared to the inspector that if the licensee had been more aggressive, corrective action would probably have been completed after the second pump failure.

- LERs 87-002, 87-033, and 87-040 involved failure of Diesel Generator (D/G) "0" and "1A" output breakers to close. Root cause analysis showed that the failures were caused by faulted Potter and Brumfield MDR relays. The normally energized relays failed to change state because varnish had slowly vaporized from the coil and condensed on the bearing and shaft while the relay was energized.

(SNED) Station Nuclear Engineering Department investigated this deficiency in June 1984, based on a report from INPO (OPEX 83-29) on failures of Potter and Brumfield MDR relays at another nuclear facility. SNED determined that this same relay failure could occur at LaSalle in each of the ESS Division 1 and 2 diesel generator control systems and recommended modifications for correcting or at least alleviating this problem for each relay. From January 1987 through December 1987, three separate failures of these output breakers occurred at LaSalle. Engineering Change Notices (ECN), to modify the Diesel Generator "0," "1A," and "2A" control circuits were not prepared until January 20 and February 11, 1987, five days after D/G "0" output breaker failed to close onto the bus. Units "1A" and "0" relay modifications were scheduled to be completed during the March 1988 outage and Unit "2A" was scheduled to be completed during the Unit 2 refueling outage.

The licensee's investigation, engineering involvement and response to the OPEX 83-29 report was completed in a timely manner; however, plans to implement the modification were not implemented until three instances of failures in one year were experienced.

3.3.4 Summary of Quality Verification

The QA department performed "in process" audits. Considerable improvement was needed in management's insistence that DRs be closed out in a more timely manner. Implementation of corrective actions for the D/G output breaker and RCIC water leg pump problems could have been more aggressively pursued by engineering.

One violation was identified.

3.4 Conclusions

Based on inspection activities described in this report, the inspectors concluded that maintenance was accomplished effective, and self assessed as noted below:

- Immediate management attention is needed to assure that corrective action and closeout of outstanding discrepancy reports is completed in a timely manner.

- Management involvement needs improvement in the area of implementing corrective action since weaknesses were noted in failures associated with the D/G output breaker and the RCIC water leg pump.

- The threshold for placing equipment problems on maintenance work requests was sufficient to maintain the material condition of the plant at an acceptable level.

- Licensee management attention and involvement in plant housekeeping was evident by the painting program being implemented.

- The QA Department made progress toward audits that evaluated processes and activities for technical adequacy.

- Control over vendor personnel during maintenance activities was evident. This was accomplished by active involvement by first line management personnel.

4. Open Items

Open items are matters that have been discussed with the licensee, which will be reviewed further, and involve some action on the part of the NRC or licensee or both. An open item identified during the inspection is discussed in Paragraph 3.2.1.

5. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on March 18, 1988, and summarized the purpose and findings of the inspection. The inspectors discussed the likely content of the inspection report with regard to documents or processes reviewed by inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.