Commonwealth Edison Company LaSalle Generating Station 2601 North 21st Road Marscilles, II. 61341-9757 Tel 815-357-6761

ComEd

January 10, 1997

United States Nuclear Regulatory Commission Attention: Document Control Desk Washington, D.C. 20555

Subject: NRC INSPECTION REPORT NO. 50-373/96011; 50-374/96011 (DRS) Reference:

G.E. Grant Letter to W.T. Subalusky, dated November 15, 1996, Transmitting NRC Inspection Report 373/374/-96011

The referenced letter transmitted the results of the System Operational Performance Inspection (SOPI) Report conducted at LaSalle County Station. This SOPI assessed the service water system's operational performance by a detailed review of the design, maintenance, operation, surveillance and testing. Four apparent violations are described in Sections M2.1 through M2.6 of the report. Based on LaSalle's review of these apparent violations, we have enclosed our response. Please note that many of the broader corrective actions discussed are part of our ongoing planning to define the activities necessary to restart the units.

Per our telephone conversation with Mr. Mark Ring of your staff, the due date for the response was extended to January 10, 1997.

If there are any questions or comments concerning this letter, please refer them to me at (815) 357-6761, extension 3600.

Respectfully,

W. T. Subalusky Site Vice President LaSalle County Station

160033

Enclosure

A Unicom Company

PDR

CC: A. B. Beach, NRC Region III Administrator M. P. Huber, NRC Senior Resident Inspector - LaSalle D. M. Skay, Project Manager - NRR - LaSalle DCD - Licensing (Hardcopy: Electronic:) Central File 9701160195 970110 PDR ADDCK 05000373 PDR

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

Apparent Violations

Four apparent violations were identified. A listing of the apparent violations follows:

- 1. One example affecting Technical Specification 4.0.5.a (96011-04)
- One example affecting 10CFR50 Appendix B, Criterion III, "Design Control" (96011-02)
- 3. Two examples affecting 10CFR50 Appendix B, Criterion XVI, "Corrective Actions" (96011-05 and 96011-06)
- Four examples affecting 10C: R50 Appendix B, Criterion XI, "Test Control" (96011-03, 96011-07, 96011-08, and 96011-09)

Response: We acknowledge the apparent violations and agree with the overall description of facts surrounding these apparent violations included in the NRC report. Rather than address each cited event the following provides classifications are of the most important issues from our review and understanding of the issues.

Summary of Issues: In March 1992, Work Request L06416 was issued to perform a complete rebuild of the 2A RHRSW pump. Maintenance records indicate that the replacement impeller had a diameter of 14-1/8 inches compared to the dimension for the correct impeller size of 13-5/8 inches. Surveillance testing records indicate that the original impeller size provided the flow and pressure characteristics necessary to fulfill design basis requirements. The replacement impeller was supplied by the manufacturer at the maximum size that can be accommodated by the pump casing design, and it is intended that the end-user machine the impeller to the needed size prior to installation and use. Consequently, the replacement of the impeller for the 2A RHRSW pump was initiated as a maintenance activity. However, as described in the following, this maintenance activity did not proceed as intended.

1. Inadequate Work Package

The work package under which the 2A RHRSW pump impeller was being replaced did not include instructions to machine the new impeller to dimensions which maintained the new impeller characteristics like those of the impeller being replaced. Since the larger impeller size can be accommodated by the pump casing, no interference or other telltale indication was available which alerted maintenance personnel to a potential problem, other than a direct comparison of replacement versus original impeller dimensions. If this comparison was performed, and the discrepancy noted, there is no record.Consequently, the impeller was installed without having been machined to the

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

appropriate size of 13 5/8inches. Since the impeller size was not as originally required, it was now a design change. Installation of the incorrect impeller size could have been avoided by proper preparation and review of the work package which installed the replacement impeller, including: 1) requirements for machining of the impeller (specific to this case), and 2) requirements for dimensional checks of the impeller and casing to ensure adequate clearance and fit-up (general practice during pump maintenance activities).

2. Inadequate Resolution of Post Maintenance Testing Results

Post maintenance testing indicated that the differential pressure across the pump was substantially higher and in the "required action" range for Inservice Testing surveillance procedure LOS-RH-01 "RHR (LPCI) & RHR Service Water Pump and Valve Inservice Test for Operational Conditions 1, 2, 3, 4 and 5". Engineering evaluation (per procedure LAP-100-29, "Conduct and Review of Station Surveillances") correctly identified that the higher differential pressure was due to the larger impeller diameter, and that the test results were consistent with the larger impeller size. Engineering inappropriately focused primarily on whether the resulting head/flow characteristics satisfied design basis requirements, and incorrectly concluded that it was satisfactory because the test provided baseline data under ASME Section XI and that the minimum flow requirements for RHRSW were satisfied. The Engineering evaluation was too narrowly focused on the "letter" of the ASME testing requirements and whether the perceived design basis functional requirement was being satisfied. Engineering failed to fulfill its responsibility to step outside of the narrow confines of literal compliance with a perceived set of requirements and consider the broader implication of the test results.

3. Inadequate Design Control

Once the post maintenance testing results were evaluated and the correct understanding reached that the larger impeller had been installed, Engineering failed to recognize that the larger impeller constituted a design change and hence, required evaluation, analysis and review within the design change process, including implementing the 50.59 safety evaluation process. If the design change process had been initiated, additional considerations such as motor sizing, electrical cable voltage drop, breaker capabilities and coordination, relief valve set points, pressure and differential pressure ratings of associated components, and instrumentation capabilities, could have been properly evaluated. Had the design change process been initiated once the installation of the larger impeller was recognized, the design reviews could

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

have concluded that the as-left condition was satisfactory, either temporarily or permanently, or that the impeller size needed to be corrected because a design capability had been violated. The opportunity to reach the technically-considered answer was lost because the impeller size change was not recognized as a design change.

Inadequate Implementation of ASME Section XI Requirements

Once it was recognized that a larger impeller was installed, a new baseline pump curve should have been developed. Single point verification by throttling to a set flow and determining differential pressure, or conversely establishing a pre-determined differential pressure condition and measuring the developed flow, is sufficient only once it has been demonstrated that the characteristic curve would be expected to fulfill functional design basis requirements. No new baseline characteristic curve was taken. Once it was recognized that the larger impeller was installed, if Engineering had treated this as a design change, presumably the need to revise the baseline curve and fulfill ASME Section XI requirements would have been recognized.

In Cctober 1995, the guarterly testing of the 2A RHRSW pump within the Inservice Testing (IST) program could not be performed (LOS-RH-Q1, "RHR (LPCI) & RHR Service Water Pump & Valve Inservice Test for Operational conditions 1, 2, 3, 4 and 5") because the discharge valve (2E12-F332A) was binding and could not be throttled to establish test conditions. It was incorrectly concluded that the IST requirements could be satisfied by parallel operation of the 2A and 2B RHRSW pumps which could be accomplished without the throttling operation. Alternative, although less desirable valve throttling lineups could have been achieved pending repair of the problem valve, but were not seriously pursued once it was incorrectly concluded that parallel pump operation would satisfy IST requirements. Engineering failed to understand the fundamental technical testing and analysis requirements underlying the IST program which made the parallel pump testing invalid as a means of monitoring the performance of an individual pump. Additionally, Engineering failed to recognize the need under regulation to obtain relief from NRC for such testing requirements in the event the necessary testing could not be practically implemented. At least three alternatives were available to satisfactorily fulfill regulatory design basis requirements including repairing the problem valve, using an alternative lineup or obtaining regulatory relief, none of which were pursued.

5. Inappropriately Accepting Over-ranged Flow Instrumentation

The higher flow from the 2A RHRSW pump resulted in over-ranging the flow indicator. As a result, during periodic surveillance testing, the result of flow measurement was recorded as ">8000 gpm" for at least three of the tests. It is unsatisfactory to use an over-ranged measuring device since the flow being indicated cannot be determined,

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

performance trends cannot be assessed and the instrument may be damaged providing no true indication of flow, high or low. This condition was permitted to persist over a period of at least four years. Engineering could have specified the use of temporary instrumentation pending replacement of the installed instrumentation. The capability of the instrumentation could have been assessed and dispositioned as part of the design change if the larger impeller installation had been recognized as a design change.

The corrective steps that have been taken and the results achieved:

- 1. Inadequate Work Package
 - During L2R07, the impeller for the 2A RHRSW Pump will be returned to the original design configuration. Therefore, the design basis will not be required to be updated to incorporate new pump performance curves for this pump. This work has yet to be completed but will be completed prior to declaring the 2A RHRSW pump operable.
 - A sample of 100 previously performed Work Requests (WRs) was performed to determine if there was any indication of additional WRs that were installed that should have classified as design changes or that should have included Engineering involvement. These WRs focused on maintenance activities, not preventative maintenance or routine activities and covered the period 1987 to 1996. No situations were found where it appeared that the appropriate level of engineering input to address technical issues had not been present. This will be expanded as discussed below in corrective actions to avoid further violation.
 - The procedure for rebuilding the RHRSW pumps, LMP-GM-50, "Crane Deming Model 5063/5064 Pump Maintenance" currently contains steps (revision 9) to specifically determine if the pump impeller is the correct size (13 5/8").
- 2. Inadequate Resolution of Post Maintenance Testing Results, and
- 3. Inadequate Design Control
 - LAP-100-29 was revised on June 20, 1994 to require that a PIF be generated if an operability issue was raised during a surveillance evaluation. It also states that a surveillance evaluation does not alone address operability. When the PIF process is initiated an operability review is completed. If this process had been in place at the time of the pump repair, the appropriate actions should have been taken. This process is in place today and provides

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

confidence in activities subsequent to the procedure revision that similar issues would today be identified and appropriately resolved.

- 4. Inadequate Implementation of ASME Section XI Requirements
 - Special Test LST-96-063, "Inservice Test for 2A RHR Service Water," was performed on September 19, 19\$6, to test each pump independently consistent with the requirements of ASME/ANSI (Part 6). This special test utilized the 2A RHR Heat Exchanger Inlet Stop valve, 2E12-F014A, to control the flow rate for the 2A RHR SW Pump and the 2B RHR SW Pump Discharge Stop Valve, 2E12-F332B, to control the 2B RHR SW Pump flow rate. The test data obtained using LST-96-063 was reviewed and compared with the reference values, from testing done prior to October 1995 (previous single pump testing). The review determined that the pressure, flow and vibration characteristics for each pump were consistent with the reference data obtained prior to October 1995. Based upon evaluation of the data obtained, the pumps were determined to be operating satisfactorily and operable.
 - LaSalle Station surveillance procedure, LOS-RH-Q1, "RHR(LPCI) & RHR Service Water Pump & Valve Inservice Test for Operational Conditions 1, 2, 3, 4 and 5", was revised (Revision 36 approved November 25, 1996) to require individual pump testing in accordance with ASME Section XI program requirements.
 - LaSalle Station performed a summary assessment of selected portions of the IST program to provide confidence in the status of current testing requirements. This assessment was performed by a team of expert personnel from other ComEd stations and the corporate office. This assessment reviewed test methods and test results for a selected portion of IST tested components and reviewed program administration. Based upon this assessment, LaSalle Station has concluded that the current IST program is being conducted properly and that continued performance of the program will meet Technical Specification requirements.
 - LaSalle Station is in process of performing a thorough assessment of the IST program, including consideration of detailed recommendations provided by the summary assessment. This contracted assessment will be completed by March 31, 1997. In the course of conducting the assessment, the contracted

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

expert will work closely with and provide mentoring to the newly assigned IST Coordinator. The contracted IST expert will be retained by LaSalle Station until such time as the recently assigned IST Coordinator is determined to be fully qualified.

 During L2R07 and L1F35. all 8 RHR Service Water Pump Discharge Valves, 1(2)E12-F332A,B,C&D, were inspected. Valve 2E12-F332A was found to be failed (the disk guides had failed) and the other 7 valves were found to be operable but in a degraded condition. Maintenance will be completed on all 8 RHR Service Water Pump Discharge Valves to restore them to acceptable conditions prior to the respective Unit's restart.

5. Inappropriately Accepting Over-Ranged Flow Instrumentation

- Design Change Packages were issued to replace these instruments with flow indicators with an upper range of 10,000 gpm (DCPs 9600027, 28, 29 & 30). These DCPs will be installed during L2R07 and L1F35 (WRs 960004062, 4063, 4068 &4074) prior to the corresponding unit's startup.
- Operating Crew training has been ongoing. As part of the current training module, expectations for surveillance testing have been reviewed. The Operations Manager will reinforce with each Crew that, if an offscale condition is encountered, a Problem Identification Form (PIF) will be initiated to evaluate the condition. Any future examples of instrumentation being in an offscale condition will be identified and addressed through the PIF process. This training and reinforcement will be completed by February 21, 1997.
- Actions taken within the Engineering Department are described below.

The corrective steps that will be taken to avoid further violations:

The five issues summarized above are not amenable to individual corrective actions or procedural revisions. The underlying problems of approach to design control, testing, evaluation and analysis of technical information, and to the engineering process as a whole require broader improvement activities. As part of the restart planning for LaSalle, the following general problem areas have been identified:

 Technical capability, judgment and instinct of Engineering personnel are in need of improvement.

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

- Engineering products often marginal in technical content and quality
- Managerial and supervisory capabilities within Engineering are limited
- Authorized permanent complement for Design Engineering is too small for the current scope of responsibilities
- Current total Engineering manpower is insufficient to resolve current scope of materiel condition deficiencies

This list does not address the full range of problems observed within Engineering, but focuses on those most pertinent to the issues described above with installation of the over-sized impeller in the 2A RHRSW pump, and are most important to be addressed in the restart effort.

Restart Actions:

The following summarize the most important of the improvement efforts that will be implemented prior to restart of LaSalle. Detailed action steps for each of these areas are currently in preparation:

- Complete system qualifications for all System Engineering personnel for assigned systems in accordance with plant procedures (all systems will be assigned). This will include both incumbent and contractor personnel. Contractor personnel qualification will be determined on a case-by-case basis considering previous experience and observed capability. Assess and replace personnel as required to develop fully capable System Engineering organization. Revise training syllabus to resolve known deficiencies.
- Continue Engineering Assurance Group functions. Reviews will be in-line for the following engineering products: Safety Evaluations, Operability Evaluations, Technical Specification Clarifications, Root Cause Reports, selected design packages, selected material evaluations, LERs, regulatory submittals.
- Use System Functional Performance Review program and Engineering Assurance Group reviews as fundamental tutoring processes for assessing and improving technical capabilities of Engineering.
- Reduce scope of Design Engineering responsibilities to that necessary to maintain design basis (i.e., perform role of design authority), and manage and review design activities performed for LaSalle elsewhere in ComEd or by contracted design services.

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

- Accomplish all engineering functions for material management within LaSalle Site Engineering.
- Augment Engineering staff on task or coaching basis, as appropriate, to complete reviews and evaluations of backlogs, to assist in completion of System Functional Performance Reviews and Design reviews.
- Replace or coach selected supervisors and managers within Engineering as necessary to achieve minimal necessary management capability. This may be accomplished via use of ComEd or contracted personnel.
- Perform review of selected Engineering processes and determine changes required prior to restart.

Operational Readiness Assessment

The above focus on near term improvements in the Engineering capability. Additionally, the following are pertinent to the issues described above. These actions are part of our planning to define the activities necessary to restart the units. These actions provide additional assurance that the plant will be fully capable of safe and reliable operation, and will be operating within its design bases. Detailed action steps are currently being developed.

System Functional Pe formance Reviews and Functional Testing

- Determine list of systems important to safe and reliable operation of LaSalle.
- Complete System Functional Performance Reviews on selected systems that are important to safe and reliable operation; apply criteria for expansion included in "System Functional Performance Review" program guidance document.
- As an extension of System Functional Performance Review program, conduct functional testing of all systems important to safe and reliable operation prior to restart (i.e., demonstration of functional readiness).
- Review startup related procedures for adequacy and literal compliance capability.

LaSalle County Generating Station Response to Apparent Violations in Inspection Report No. 50-373/96011 (DRS); 50-374/96011 (DRS)

Design Reviews:

- Complete Design Reviews on systems selected during System Functional Performance Reviews (e.g., VE/VC, CSCS, 125 VDC).
- Assess potential extent of conditions identified in the design reviews referred to above and reach conclusions on safety significance as it affects restart; expand review, if required, to additional systems or to particular attributes.
- Implement "required-for-restart" designated corrective actions.

Configuration Control Evaluation

Evaluating potential significance of loss of configuration control by:

- Reviewing potential for modifications under "chron letter process" and review work
 package records for selected systems over past five years to assess whether
 records indicate such modifications were made.
- Walking down selected mechanical systems per isometrics.
- Assessing functional testing results in consideration of potential unauthorized modifications.
- Selecting one safety related mechanical system to perform design configuration walkdown of seismic supports.

The date when full compliance will be achieved:

Full compliance has been achieved for the current mode of operation (shutdown) and will be achieved for all modes of operation prior to the restart of the units from their current outages L1F35 and L2R07.