

January 22, 2004

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY GENERATING STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000373/2003005;
05000374/2003005

Dear Mr. Skolds:

On December 31, 2003, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your LaSalle County Generating Station. The enclosed report documents the inspection findings which were discussed on January 13, 2004, with the Site Vice President, Mr. G. Barnes, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Specifically, this inspection focused on reactor safety, emergency preparedness, and radiation protection.

Based on the results of this inspection, there was one self-revealed finding of very low safety significance. No violations of regulatory requirements were identified.

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Sincerely,

/RA/

Bruce L. Burgess, Chief
Branch 2
Division of Reactor Projects

Docket Nos. 50-373; 50-374
License Nos. NPF-11; NPF-18

Enclosure: Inspection Report 05000373/2003005; 05000374/2003005
w/Attachment: Supplemental Information

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LaSalle County Station Plant Manager
Regulatory Assurance Manager - LaSalle
Chief Operating Officer
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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Dockets: 05000373; 05000374

Licenses: NPF-11; NPF-18

Report No: 05000373/2003005; 05000374/2003005

Licensee: Exelon Nuclear Generation Company

Facility: LaSalle County Generating Station, Units 1 and 2

Location: 2601 N. 21st Road
Marseilles, IL 61341

Dates: October 1 through December 31, 2003

Inspectors: D. Kimble, Senior Resident Inspector
D. Eskins, Resident Inspector
R. Alexander, Radiation Protection Specialist
R. Jickling, Emergency Preparedness Inspector
M. Jordan, NRC Contractor
C. Phillips, Senior Operations Engineer
D. Schrum, Regional Engineering Inspector
W. Slawinski, Senior Radiation Protection Specialist
R. Winter, Regional Engineering Inspector
N. Valos, Operator Licensing Examiner
P. Young, Operator Licensing Examiner
J. Yesinowski, Illinois Dept. of Emergency Management

Observers: T. Powell, NRC Intern

Approved by: Bruce L. Burgess, Chief
Branch 2
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000373/2003-005, 05000374/2003-005; Exelon Nuclear Generation Company; 10/01/03-12/31/03; LaSalle County Generating Station, Units 1 & 2; Maintenance Effectiveness.

The inspection was conducted by the site resident inspectors, regional inspectors, and a NRC contractor. The report covers a 3-month period of baseline resident inspection and announced baseline regional inspections of the licensed operator requalification program, maintenance effectiveness, emergency preparedness, and radiation protection. One Green finding was identified. No violations of regulatory requirements were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609 "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green," or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

Green. A finding of very low safety significance was self-revealed following the failure of the Unit 2 station air compressor (SAC). During a March 2003 overhaul of the SAC, maintenance personnel installed the main shaft thrust bearing backwards. The improperly installed thrust bearing later contributed to the failure of the Unit 2 SAC on September 18, 2003. Inspectors determined that a primary cause of this finding was related to the cross-cutting area of Human Performance, since the thrust bearing was installed contrary to established instructions and drawings.

The finding was determined to be more than minor because the improperly installed thrust bearing actually caused a hard failure of a risk-significant component in a mitigating system. The finding was of very low safety significance because all other remaining mitigating systems and components were available and the duration of the Unit 2 SAC unavailability as a result of the finding was relatively short. No violations of regulatory requirements were identified as being associated with this finding.

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

Summary of Plant Status

Unit 1

The unit began the inspection period operating at full power. Power was reduced on October 25, 2003, to approximately 74 percent for control rod adjustments. Full power was achieved once again on October 26. On November 26, 2003, a unit shutdown was commenced to facilitate repairs on a main electrical generator hydrogen leak. The following day, Thanksgiving Day, operators were forced to manually scram the reactor in response to lowering reactor vessel water level due to a stuck open reactor feed pump check valve (Sections 1R14.1 and 4OA3.1). The unit returned to service following repairs on November 28, 2003, with full power being reached on December 2, 2003. On December 6, 2003, power was reduced to approximately 74 percent to permit control rod adjustments. Full power was restored on December 7, 2003. The unit operated at full power until December 12, 2003, when a catastrophic failure in the 1B turbine-driven reactor feed pump minimum flow valve's pneumatic control system caused the valve to travel to the full open position. Operators responded to the transient by reducing power, ultimately stabilizing the unit at approximately 45 percent. Following repairs, reactor power was returned to 100 percent on December 12, 2003. On December 21, 2003, power was reduced to approximately 73 percent to permit a final control rod adjustment prior to entering end-of-cycle coast down. Full power was reestablished later that same day, with the unit entering end-of-cycle coast down on December 31, 2003.

Unit 2

The unit began the inspection period operating at full power. On December 12, 2003, power was reduced to approximately 81 percent to repair an air leak in the 2B turbine-driven reactor feed pump minimum flow valve's pneumatic control system. Operation at full power was restored later that same day. On December 13, 2003, power was reduced to approximately 52 percent to permit a control rod pattern adjustment. The unit returned to full power operation on December 15, 2003, and remained there through the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather (71111.01)

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The following two systems or plant areas were selected as inspection samples for a detailed review by the inspectors:

- Lake screen house
- Unit 1 and 2 emergency diesel generator (EDG) ventilation penthouses

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System/Train Alignment Verification

a. Inspection Scope

The inspectors performed a partial alignment verification of the following three equipment trains to verify operability and proper equipment lineup. These three inspection samples were selected based upon risk significance, plant configuration, system work or testing, or inoperable or degraded conditions.

- Unit 2 high pressure core spray (HPCS)
- 'B' diesel fire pump (DFP) with the 'A' DFP out-of-service for routine maintenance
- 'O' Emergency Diesel Generator (EDG) with opposite division EDG inoperable

The inspectors verified the position of critical redundant equipment and looked for any discrepancies between the existing equipment lineup and the required lineup.

b. Findings

No findings of significance were identified.

.2 Semiannual Complete System Alignment Verification

a. Inspection Scope

Due to the system's risk significance, the inspectors selected the standby liquid control (SLC) system for a complete alignment verification. For this single inspection sample, the inspectors walked down the SLC system on both units to verify mechanical and electrical equipment lineups, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors walked down the following six risk significant areas looking for any fire protection issues. The inspectors selected these six inspection samples because the

areas contained systems, structures, or components that the licensee identified as important to reactor safety.

- Fire Zone 8B1; Unit 2 HPCS Diesel-Generator Room - Elevation 710' 6"
- Fire Zone 8B2; Unit 2 Division 2 Standby Diesel-Generator Room - Elevation 710' 6"
- Fire Zone 8B3; Unit 2 HPCS Diesel Day Tank Room - Elevation 710' 6"
- Fire Zone 8C3; Unit 2 HPCS Diesel Pump Room - Elevation 674' 8"
- Fire Zone 8C4; Unit 2 Division 2 RHR Service Water Pump Room - Elevation 674' 8"
- Fire Zone 8C5; Unit 2 Division 1 Residual Heat Removal (RHR) Service Water Pump Room - Elevation 674' 8"

In particular, the inspectors verified that all observed transient combustibles were being controlled in accordance with the licensee's administrative procedures. The physical condition of fire suppression devices, such as overhead sprinklers, was inspected. Observed deficiencies were verified not to impact the operational effectiveness of the system. The physical condition of portable fire fighting equipment, such as portable fire extinguishers, was also observed. The inspectors verified that extinguishers were located appropriately and that access to the extinguishers was unobstructed. Fire hoses were verified to be installed at appropriate locations with unobstructed access and the physical condition of the hoses was verified to be satisfactory. Passive fire protection features such as fire doors, ventilation system fire dampers, fire barriers, fire zone penetration seals, and fire retardant structural steel coatings were inspected and verified to be properly installed and in good repair.

b. Findings

No findings of significance were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors reviewed design basis and licensee Probable Risk Assessment (PRA) documentation that identified possible internal flood paths for areas which contain safety-related equipment. Internal flooding core damage frequency (CDF) accounts for 37 percent of the total CDF for LaSalle Station. This is due largely to the PRA assessment that a large circulating water line break in the turbine building outside the condenser pit has the capability, if not isolated, to flood the entire turbine and reactor buildings up to the 701 foot elevation.

For this single inspection sample, the inspectors walked down accessible portions of lake screen house to verify that the licensee's flooding mitigation plans and equipment were consistent with design requirements and risk analysis assumptions.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Facility Operating History

a. Inspection Scope

The inspectors reviewed the plant's operating history from October 2001 through October 2003 to assess whether the Licensed Operator Requalification Training (LORT) program had addressed operator performance deficiencies noted at the plant.

b. Findings

No findings of significance were identified.

.2 Licensee Requalification Examinations

a. Inspection Scope

The inspectors performed a biennial inspection of the licensee's LORT program. The inspectors reviewed the annual requalification operating and biennial written examination material to evaluate general quality, construction, and difficulty level. The examination material reviewed consisted of two dynamic simulator scenarios, six job performance measures (JPMs), and a biennial written examination consisting of 40 open reference multiple choice questions. The inspectors reviewed the methodology for developing the examinations, including the LORT program 2 year sample plan, probabilistic risk assessment insights, previously identified operator performance deficiencies, and plant modifications. The inspectors also reviewed and assessed the level of examination material duplication within the current year annual examinations and to the previous year's examinations. Additionally, the inspectors interviewed members of the licensee's management, operations, and training staff and discussed various aspects of the examination development.

b. Findings

No findings of significance were identified.

.3 Licensee Administration of Requalification Examinations

a. Inspection Scope

The inspectors observed the administration of the requalification operating test to assess the licensee's effectiveness in conducting the test and to assess the facility evaluators' ability to determine adequate performance using objective and measurable performance standards. The inspectors evaluated the performance of one shift crew in parallel with the facility evaluators during two dynamic simulator scenarios. In addition, the inspectors observed licensee evaluators administer ten JPMs to four licensed operators. The inspectors also observed the administration of the written examination to one operating crew. The inspectors evaluated the ability of the simulator to support the examinations. A specific evaluation of simulator performance was conducted and documented under Section 1R11.7, "Conformance With Simulator

Requirements Specified in 10 CFR 55.46,” of this report. The inspectors also reviewed the licensee’s overall examination security program.

b. Findings

No findings of significance were identified.

.4 Licensee Training Feedback System

a. Inspection Scope

The inspectors assessed the methods and effectiveness of the licensee’s processes for revising and maintaining its LORT program up to date, including the use of feedback from plant events and industry experience information. The inspectors interviewed licensee personnel (operators, instructors, training management, and operations management) and reviewed applicable licensee procedures. In addition, the inspectors reviewed the licensee’s training department self-assessment reports, to evaluate the licensee’s ability to assess the effectiveness of its LORT program and to implement appropriate corrective actions.

b. Findings

No findings of significance were identified.

.5 Licensee Remedial Training Program

a. Inspection Scope

The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the previous annual requalification examinations and the training planned for the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans, and interviewed licensee personnel (operators, instructors, and training management). In addition, the inspectors reviewed the licensee’s previous NRC annual examination cycle remediation packages for unsatisfactory operator performance on the operating test to ensure that remediation and subsequent re-evaluations were completed prior to returning individuals to licensed duties.

b. Findings

No findings of significance were identified.

.6 Conformance With Operator License Conditions

a. Inspection Scope

The inspectors reviewed the facility and individual operator licensees’ conformance with the requirements of 10 CFR 55. The inspectors reviewed the facility licensee’s program for maintaining active operator licenses and to assess compliance with

10 CFR 55.53 (e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators and which control room positions were granted credit for maintaining active operator licenses. The inspectors also reviewed ten licensed operator medical records maintained by the facility's nurse and assessed compliance with the medical standards delineated in ANSI/ANS-3.4, "American National Standard Medical Certification and Monitoring of Personnel Requiring Operator Licenses for Nuclear Power Plants," and with 10 CFR 55.21 and 10 CFR 55.25. In addition, the inspectors reviewed the facility licensee's LORT program to assess compliance with the requalification program requirements as described by 10 CFR 55.59 (c).

b. Findings

No findings of significance were identified.

.7 Conformance With Simulator Requirements Specified in 10 CFR 55.46

a. Inspection Scope

The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements as prescribed in 10 CFR 55.46, "Simulation Facilities." The inspectors also reviewed a sample of simulator performance test records (i.e., transient tests, scenario test and discrepancy resolution validation test), simulator discrepancy and modification records, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy process to ensure that simulator fidelity was maintained. Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics. Furthermore, the inspectors conducted interviews with members of the licensee's simulator staff about the configuration control process and completed the IP 71111.11, Appendix C, checklist to evaluate whether or not the licensee's plant-referenced simulator was operating adequately as required by 10 CFR 55.46 (c) and (d).

b. Findings

No findings of significance were identified. One Unresolved Item (URI) was identified.

In accordance with 10 CFR 55.31(a)(5) an applicant for a reactor operator or senior reactor operator license must perform five significant reactivity manipulations. On October 22, 2003, a member of the licensee's staff provided the inspectors with a letter from the licensee to the NRC dated October 17, 2000, in which the licensee requested an exemption from the requirements of 10 CFR 55.31(a)(5) in order to take credit for reactivity manipulations performed on the site specific simulator prior to rulemaking on 10 CFR 55.46 taking effect; and a copy of a letter from John Zwolinski of the NRC to Oliver Kingsley of Exelon, dated July 2, 2001, which accepted the alternate method of performing reactivity manipulations based on the understanding that the licensee met all the commitments made to the NRC in letters dated October 17, 2000, November 22, 2000, and April 5, 2001.

In March 2002, the licensee used the simulator to take credit for reactivity manipulations performed by one reactor operator and one senior reactor operator initial license candidates required by 10 CFR 55.31(a)(5) in order to apply to take the initial license

examination in 2002. The NRC will not grant approval to take the initial license examination without the successful completion of the five reactivity manipulations. These reactivity manipulations were documented on the two initial license candidates' NRC Form 398s, "Personal Qualification Statement - Licensee." Both candidates passed the subsequent initial license examination and were granted licenses on May 13, 2002.

The October 17, 2000, letter requesting the exemption stated, "to verify that the simulators' performance matches the designed core, a series of tests are run. Tests are run to verify that the simulator's reactor power profiles at full power match the design code for the same set of conditions. To verify that the response of the simulator core model is accurate, additional tests are run to determine reactivity coefficients. Void reactivity, moderator temperature coefficient of reactivity, doppler coefficient of reactivity, xenon worth, and control rod worth are all tested against design code values for Dresden Nuclear Power Station, LaSalle County Station, and Quad Cities Nuclear Power Station."

On October 29, 2003, the licensee provided copies to the inspectors of the reactivity coefficient testing results described in the October 17, 2000 letter. These tests were performed by a licensee contractor between January and March 2002. Each test cover sheet was signed as accepted by an Exelon employee that was not a member of the licensee's staff. The inspectors identified that significant portions of the testing results exceeded the acceptance criteria stated within the text of four of the five test procedures. There was no documented explanation as to why the test results which exceeded the test procedure acceptance criteria were acceptable. The inspectors interviewed the Exelon employee that signed for accepting the test results. The only explanation given for why the test results were accepted with data exceeding the acceptance criteria was the engineering judgement of the individual accepting the test results. The test results were not reviewed by any other Exelon or licensee employee. The inspectors did not have the nuclear engineering background to assess the engineering judgement of the individual that evaluated the test results. Further review of the test results was necessary by the NRC staff.

What remains unresolved is, did the licensee successfully meet the commitments made to the NRC in the licensee's October 17, 2000 letter requesting an exemption from 10 CFR 55.31(a)(5) in order to use the simulator to meet the required reactivity manipulations? This is an Unresolved Item (URI 05000373/2003005-01; 05000374/2003005-01).

.8 Biennial Written Examination and Annual Operating Test Results

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of individual written tests, Job Performance Measure (JPM) operating tests, and simulator operating tests (required to be given per 10 CFR 55.59(a)(2)) administered by the licensee from September 8 through October 17, 2003. The overall results were compared with the significance determination process in accordance with NRC Manual Chapter 0609I, "Operator Requalification Human Performance Significance Determination Process (SDP)."

b. Findings

No findings of significance were identified.

.9 Quarterly Resident Inspector Observation of Licensed Operator Training

a. Inspection Scope

The resident inspectors observed a training crew during a simulator scenario and reviewed licensed operator performance in mitigating the consequences of events. The scenario included a reactor scram with loss of normal heat sink, complicated by a loss of off site electrical power. Areas observed by the inspectors included: clarity and formality of communications, timeliness of actions, prioritization of activities, procedural adequacy and implementation, control board manipulations, managerial oversight, emergency plan execution, and group dynamics. The observation of this simulator scenario by the inspectors constituted a single inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Quarterly Maintenance Effectiveness Inspection – Unit 1 Division 1 125 Vdc Grounds

a. Inspection Scope

The inspectors reviewed the licensee's handling of performance issues and the associated implementation of the Maintenance Rule (10 CFR 50.65) to evaluate maintenance effectiveness for the selected system and issues. The inspection sample was selected based on being designated as risk significant under the Maintenance Rule and due to an identified issue or problem that potential impacted system work practices, reliability, or common cause failures.

The inspectors review included verification of the licensee's categorization of specific issues including evaluation of the performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with the condition reports (CRs) reviewed, and current equipment performance status.

b. Findings

No findings of significance were identified.

.2 Quarterly Maintenance Effectiveness Inspection – Unit 2 Station Air Compressor (SAC)

a. Inspection Scope

The inspectors reviewed the licensee's handling of performance issues and the associated implementation of the Maintenance Rule to evaluate maintenance effectiveness for the Unit 2 SAC. The inspection sample was selected based on being designated as risk significant component under the Maintenance Rule, and due to a continuing series of maintenance-induced performance problems that impacted compressor availability.

The inspectors review included verification of the licensee's categorization of specific issues including evaluation of the performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with the CRs reviewed, and current equipment performance status.

b. Findings

Introduction: A finding of very low safety significance (Green) was self-revealed following the failure on the part of maintenance personnel to properly install the main shaft thrust bearing during a March 2003 overhaul of the Unit 2 SAC. The improperly installed thrust bearing was later discovered to have been installed backwards, and ultimately contributed to the failure of the Unit 2 SAC on September 18, 2003. No violations of regulatory requirements were identified as being associated with this finding.

Description: In March of 2003, the Unit 2 SAC underwent a routine overhaul. The SAC was returned to service at the completion of the maintenance activities and operated normally until July 7, 2003, when it tripped during a Unit 2 scram. A subsequent attempt to restart and load the SAC was unsuccessful, and on July 10, 2003, plant operators noted a water-oil mixture coming from the compressor's 4th stage drain. Without knowing the source of this oil-water mixture, operations and engineering personnel, in coordination with the SAC vendor, determined that the compressor should be considered unavailable until repaired.

On July 18, 2003, the licensee began work on the Unit 2 SAC to investigate the problem. The licensee's investigation revealed a missing plane bearing O-ring on the oil side of the SAC's 4th stage, and that this critical bearing O-ring had been inadvertently left out during the previous overhaul. A compressor vendor representative was working with licensee mechanical maintenance personnel at the time of the overhaul and both parties failed to reinstall the plane bearing oil O-ring as required by the applicable maintenance procedure. The failure to install the missing O-ring and subsequent SAC unavailability was determined by inspectors to have constituted a finding of very low safety significance (Green), which was documented in NRC Inspection Report 05000373/2003004; 05000374/2003004 (FIN 05000373/2003004-01; 05000374/2003004-01). Repairs to the Unit 2 SAC were completed and the compressor returned to service on July 23, 2003.

On September 18, 2003, control room operators again responded to a trip of the Unit 2 SAC. Initial investigations indicated that the compressor had tripped on low oil pressure. The following day, troubleshooting efforts revealed that the key for the SAC's shaft-driven

oil pump had sheared, which accounted for the low oil pressure trip. The SAC was repaired and returned to service.

The Unit 2 SAC operated without incident until October 23, 2003, when periodic vibration monitoring revealed elevated rolling element bearing frequencies. Licensee engineering personnel concluded that the source of these elevated vibrations could only be either the thrust or radial bearings supporting the bull gear assembly. Checking the compressor's maintenance history, the licensee noted that both of these bearings had been replaced during the March 2003 overhaul.

On October 28, 2003, the bearings were inspected and the licensee discovered that the thrust bearing had been installed backwards. Further, engineering personnel examining the issue concluded that the improperly installed thrust bearing had contributed to the September 2003 failure of the shaft-driven lube oil pump. The Unit 2 SAC was repaired and returned to service on November 3, 2003.

Analysis: A licensee performance deficiency associated with this issue was identified by the inspectors. Specifically, licensee personnel who conducted the Unit 2 SAC overhaul in March of 2003 failed to follow the written instructions and drawings in applicable maintenance procedure that described the installation of the thrust bearing. In determining the initial significance of this finding, the inspectors concluded that it was more than minor and that a Phase 1 SDP was warranted in accordance with the guidance provided in NRC IMC 0612, Appendix B, "Issue Screening."

Inspectors determined that the finding was more than minor in that if left uncorrected, it would represent a more significant safety concern. The inspectors reasoned that, in general, the failure to follow established maintenance procedures for risk-significant components, such as the Unit 2 SAC, would ultimately lead to reduced component availability, reliability, and capability. In this case specifically, the improperly installed thrust bearing had contributed to the failure of the shaft-driven oil pump, and ultimately the Unit 2 SAC itself.

In evaluating the Phase 1 SDP in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," the inspectors used the mitigating systems cornerstone path due to the impact that the loss of a SAC has on mitigating systems and components within the licensee's probabilistic risk assessment (PRA) model. Because the improperly installed thrust bearing actually contributed to a hard failure of the SAC that resulted in the loss of ability to perform its specified function for greater than 24 hours, the inspectors concluded that a Phase 2 SDP was required.

The inspectors performed the required Phase 2 SDP, and determined the Loss of Instrument Air (LOIA) initiating event to be applicable. Through discussions with the NRC Regional Senior Reactor Analyst (SRA), the inspectors also determined that the LOIA initiated series of events was dominant for this finding. In evaluating the event sequences, the inspectors were able to credit all applicable remaining mitigation capabilities and conclude that the frequency associated with finding was on the order of 10^{-7} events per year. In accordance with IMC 0609, Attachment A, the inspectors and the SRA evaluated this result for additional contributions from both external initiating events and large early release frequency (LERF). In each case, the inspectors and SRA concluded that the contribution to the result from these sources was inconsequential, largely due to the integral conservative assumptions in the station-specific Phase 2 SDP worksheets. With a

final Phase 2 SDP result of 10^{-7} events per year, the inspectors, backed up by the SRA, concluded that the finding was of very low safety significance (Green) and within the licensee's response band. (FIN 05000373/2003005-02; 05000374/2003005-02)

Enforcement: Although considered a risk-significant component within the licensee's PRA and under the Maintenance Rule, the Unit 2 SAC and its maintenance procedures are not subject to the regulatory requirements specified in 10 CFR 50, Appendix B. Component unavailability time and a maintenance-preventable functional failure related to this issue were assessed as required by the licensee's Maintenance Rule program. As a result, the inspectors determined that there were no violations of regulatory requirements associated with this finding. The licensee had entered this issue into their corrective action program as CR 183508.

.3 Quarterly Maintenance Effectiveness Inspection – Unit 1 Reactor Feedwater Valves

a. Inspection Scope

The inspectors reviewed the licensee's handling of performance issues and the associated implementation of the Maintenance Rule to evaluate maintenance effectiveness for the Unit 1 reactor feedwater system. Specifically, the inspectors focused on recent feedwater valve issues experienced by the licensee on Unit 1. This inspection sample was selected based on being designated as a risk significant system under the Maintenance Rule, and due to several reactor feedwater valve performance problems that contributed to reactor power transients.

The inspectors review included verification of the licensee's categorization of specific issues including evaluation of the performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal-setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with the CRs reviewed, and current equipment performance status.

b. Findings

No findings of significance were identified. One Unresolved Item (URI) was identified by inspectors.

Since 1995, the licensee has documented at least five reactor feed pump minimum flow valve performance issues due to malfunctions of the conoflow snap acting (SNAP) relays within the valves' pneumatic control systems. The licensee determined through failure analysis that upgrading from Buna-N to Viton elastomers would serve as appropriate corrective action for the SNAP relay performance problems.

On November 27, 2003, the licensee entered a Unit 1 maintenance outage (L1M14). Several performance problems were noted with reactor feed pump minimum flow valves:

- The 1A turbine-driven reactor feed pump (TDRFP) minimum flow valve exhibited dual position indication, and a position feedback of 3.2 percent open with a full closed demand signal. Actual position was 10 percent open.

- The 1B TDRFP minimum flow valve exhibited a demand verses actual position mismatch.
- The 1C motor-driven reactor feed pump (MDRFP) minimum flow valve would not travel fully closed with a full close demand signal. Actual position was 23 percent open.

Though potential failure of the SNAP relays was considered, the licensee planned to defer repair/replacement of these components until the next scheduled refueling outage (L1R10 and L2R10) on each unit. Licensee management, supported by the site's engineering staff, concluded that, given the current symptoms observed, no catastrophic failure mechanism existed and the probability of incurring a plant transient from the degraded condition was low.

On December 7, 2003, the licensee noted increased air leakage on the 1C MDRFP minimum flow valve SNAP relay. Licensee management made the decision to remove the 1C MDRFP from service and replace the minimum flow valve SNAP relay. The replacement relay was outfitted with Viton elastomers.

On December 10, 2003, the 1B TDRFP minimum flow valve failed open due to a SNAP relay air leak. The resulting reactor feedwater transient forced operators to reduce reactor power by lowering core recirculation flow. When core flow had been reduced to approximately 60 million pounds per hour, an unrelated trip of several feedwater heaters caused reactor power to increase. Operators noted that this resulting power increase placed the unit in Region 'B' of the power-to-flow instability map, and inserted control rods to reduce reactor power per applicable procedures. The total time the unit was within the bounds of Region 'B' was approximately 5 minutes, and reactor power was ultimately stabilized at 45 percent.

The inspectors determined the identification of a licensee performance deficiency and subsequent inspection finding to be unresolved pending review of the licensee's root cause report for the 1B TDRFP minimum flow valve failure and the resultant reactor power transient. The licensee currently has a root cause investigation in progress, with an anticipated completion date in mid-January of 2004. The licensee has entered this issue into their corrective action program as CR 190091. (URI 05000373/2003005-03)

.4 Biennial Periodic Evaluation Inspection

a. Inspection Scope

The inspectors examined the periodic evaluation report completed for the time period of June 2000 through June 2002. To evaluate the effectiveness of (a)(1) and (a)(2) activities, the inspectors examined a number of (a)(1) action plans, functional failures, and CRs. These same documents were reviewed to verify that the threshold for identification of problems was at an appropriate level and that the associated corrective actions were appropriate. Also, the maintenance rule program documents were reviewed. The inspectors focused the inspection on the following four systems (samples):

- Residual heat removal
- Residual heat removal service water
- Low pressure core spray
- High pressure core spray

The inspectors verified that the periodic evaluation was completed within the time restraints defined in 10 CFR 50.65 (once per refueling cycle, not to exceed 2 years). The inspector also ensured that the licensee reviewed its goals, monitored structures, systems, and components (SSCs) performance, reviewed industry operating experience, and made appropriate adjustments to the maintenance rule program as a result of the above activities.

The inspectors verified that the licensee balanced reliability and unavailability during the previous refueling cycle, including a review of safety significant SSCs.

The inspectors verified that (a)(1) goals were met, that corrective action was appropriate to correct the defective condition, including the use of industry operating experience, and that (a)(1) activities and related goals were adjusted as needed.

The inspectors verified that the licensee has established (a)(2) performance criteria, examined any SSCs that failed to meet their performance criteria, and reviewed any SSCs that have suffered repeated maintenance preventable functional failures including a verification that failed SSCs were considered for (a)(1).

In addition, the inspectors reviewed maintenance rule self-assessments that addressed the maintenance rule program implementation.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed and observed emergent work, preventive maintenance, or planning for risk significant maintenance activities. The inspectors observed maintenance or planning for the following four activities or risk significant systems undergoing scheduled or emergent maintenance.

- Troubleshooting of the Unit 2 'A' traversing in-core probe (TIP) following failure to withdraw
- 'A' DFP periodic rebuild
- On line inspection of the Unit 1 service water tunnel by divers
- Repair of the 1A turbine-driven reactor feed pump (TDRFP) stuck open discharge check valve

The inspectors also reviewed the licensee's evaluation of plant risk, risk management, scheduling, and configuration control for these activities in coordination with other scheduled risk significant work. The inspectors verified that the licensee's control of activities considered assessment of baseline and cumulative risk, management of plant configuration, control of maintenance, and external impacts on risk. In-plant activities were reviewed to ensure that the risk assessment of maintenance or emergent work was complete and adequate, and that the assessment included an evaluation of external factors. Additionally, the inspectors verified that the licensee entered the appropriate risk category for the evolutions.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events (71111.14)

.1 Unit 1 Manual Reactor Scram

a. Inspection Scope

Inspectors responded to the station following a scram on Unit 1 in the early morning hours on Thanksgiving Day, November 27, 2003. While in the process of switching feedwater from a turbine-driven reactor feed pump (TDRFP) to the unit's motor-driven reactor feed pump (MDRFP) in preparation for a planned maintenance shutdown, reactor water level began dropping inexplicably. Later investigation by the licensee revealed that the 1A TDRFP discharge check valve had stuck in the open position, thereby permitting the MDRFP's flow to be diverted back to the condenser hotwell instead of being sent to the reactor.

The unit's reactor operators responded to the transient by initiating a manual reactor scram as specified by applicable operating procedures. Inspectors observed operator performance in the control room for approximately 3 hours during the post-scram recovery and stabilization of the unit to evaluate the personnel response to the scram, and to determine if the response was appropriate to the event and in accordance with procedures, training, and regulatory requirements. This inspection constituted a single sample.

b. Findings

No findings of significance were identified.

.2 Annual Review of Licensee Event Reports (LERs) for Personnel Performance Issues

a. Inspection Scope

The inspectors reviewed all LERs written during the 2003 calendar year, focusing on those involving personnel response to non-routine conditions. Where applicable, the inspectors verified that licensee personnel responded in accordance with applicable procedures and training. This review constituted a single inspection sample.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors reviewed the technical adequacy of the following four operability evaluations to determine the impact on Technical Specifications, the significance of the evaluations, and to ensure that adequate justifications were documented.

- OE03-016, Unit 1 and Unit 2 reactor vessel pressure/temperature curves
- Unit 2 spent fuel pool (SFP) liner leakage
- Evaluation of the 1A TDRFP discharge check valve missing components
- 1A EDG output breaker closure failures

The four inspection samples were selected based upon the relationship of the safety-related system, structure, or component to risk.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected the following eight post-maintenance activities for review. These eight inspection samples were selected based upon the structure, system, or component's ability to impact risk.

- Unit 1 'B' RHR seal cooler leak check and flow rate test
- Unit 2 station air compressor test run following rebuild
- '0' emergency diesel generator (EDG) testing following various minor maintenance activities
- 'A' DFP post-rebuild test run
- Unit 1 'A' hydrogen cooler leak check following leak repairs
- Unit 1 'A' master trip solenoid valve (MTSV) test following solenoid replacement
- Unit 1 'A' EDG output breaker testing
- Unit 1 'A' TDRFP discharge check valve testing following emergent repairs

The inspectors verified by witnessing the test or reviewing the test data that post-maintenance testing activities were adequate for the above maintenance activities. The inspectors' reviews included, but were not limited to, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use and compliance, control of temporary modifications or jumpers required for test performance, documentation of test data, Technical Specification applicability, system restoration, and evaluation of test data. Also, the inspectors verified that maintenance and post-maintenance testing activities adequately ensured that the equipment met the licensing basis, Technical Specifications, and Updated Final Safety Analysis Report (UFSAR) design requirements.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

a. Inspection Scope

Activities for a planned Unit 1 maintenance outage (L1M14) that began on November 27, 2003, and ended on November 28, 2003, were observed by inspectors. The

inspectors verified that the licensee considered risk in developing, planning, and implementing the outage schedule.

The inspectors reviewed the outage equipment configuration and risk management, electrical lineups, selected clearances, control and monitoring of decay heat removal, reactor startup and heatup activities, and identification and resolution of problems associated with the outage. The review of these planned maintenance outage activities constituted a single inspection sample.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors selected the following three surveillance test activities for review. These three inspection samples were selected based upon risk significance and the potential risk impact from an unidentified deficiency or performance degradation that a system, structure, or component could impose on the unit if the condition were left unresolved.

- '0' emergency diesel generator monthly test run
- Unit 1 reactor low level instrument calibration
- Unit 2 drywell floor drain sump fill-up rate functional test

The inspectors observed the performance of surveillance testing activities, including reviews for preconditioning, integration of testing activities, applicability of acceptance criteria, test equipment calibration and control, procedural use, control of temporary modifications or jumpers required for test performance, documentation of test data, Technical Specification applicability, impact of testing relative to performance indicator reporting, and evaluation of test data.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed the following two temporary modifications:

- EC 343896; Installation of temporary air movers to cool 1APD1E/2E/3E/4E/5E/7E voltage regulating transformers (VRTs)
- EC 344894; MR90A(4) Evaluation for RCIC System connections for troubleshooting

The inspectors reviewed the safety screening, design documents, UFSAR, and applicable Technical Specifications to determine that the temporary modifications were consistent with modification documents, drawings and procedures. The inspectors also reviewed the post-installation test results to confirm that tests were satisfactory and the actual impacts of

the temporary modifications on the permanent system and interfacing systems were adequately verified.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspector reviewed Revisions 14, 15, and 16 of the LaSalle Station Annex to Exelon's Standardized Emergency Plan to determine if changes identified in these annex revisions reduced the Plan's effectiveness, pending on-site inspection of the implementation of these changes.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The resident inspectors reviewed a site-wide emergency preparedness drill that included a demonstration of site personnel assembly and accountability in preparation for a site-wide evacuation. The drill observed, which constituted a single inspection sample, included six opportunities for emergency classification and notification that provided input to the Emergency Preparedness Drill/Exercise Performance Indicator. The inspectors verified that there were no discrepancies between the observed licensee performance and performance indicator reported statistics.

The inspectors observed the licensee's classification of events, notifications to off-site agencies, and drill critiques to evaluate the adequacy of the licensee's ability to self-identify weaknesses and deficiencies. Observations from the inspectors were compared to the licensee's observations and corrective action program entries. The scenario observed resulted in emergency classifications for an unusual event, an alert, and a site area emergency. No protective action recommendations were required.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Review of Licensee Performance Indicators for the Occupational Exposure Cornerstone

a. Inspection Scope

The inspectors reviewed licensee event reports, corrective action documents, dosimetry transaction data for radiologically controlled area egress, and data reported on the NRC's web site relative to the licensee's occupational exposure control performance indicator to determine whether or not the conditions surrounding any actual or potential PI occurrences had been evaluated, and identified problems had been entered into the corrective action program for resolution. Performance indicator data collection and analysis methods were evaluated by the inspectors as described in Section 4OA1.

This review represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Plant Walkdowns/Boundary Verifications and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors reviewed several current and recently completed radiation work permit (RWP) packages including As Low As Is Reasonably Achievable (ALARA) plans, surveys, and total effective dose equivalent (TEDE) ALARA evaluations for activities performed in radiologically significant areas within high and locked high radiation areas of the plant. The inspectors evaluated the adequacy of the radiological controls to determine if these controls including postings and access control barricades were acceptable.

The inspectors reviewed the RWPs and work packages which governed access into these areas to identify the work control instructions and control barriers that had been specified. Electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant policy. Workers were interviewed to verify that they were aware of the actions required when their electronic dosimeters noticeably malfunctioned or alarmed.

The inspectors walked down and surveyed (using a NRC survey meter) these areas and other selected areas in the Unit 1 and Unit 2 Turbine, Reactor and Radwaste Buildings to verify that the prescribed radiological controls were in place, and that licensee postings were complete and accurate. During the walkdowns, the inspectors challenged access control boundaries to verify that locked high radiation area (LHRA) access was controlled consistent with the licensee's procedures, Technical Specifications, and the requirements of 10 CFR 20.1601.

The inspectors reviewed RWP and post job review documents for selected activities completed in 2003 to verify barrier integrity and engineering controls performance (e.g., filtered ventilation system operation) and to determine if there was a potential for individual worker internal exposures of >50 millirem committed effective dose equivalent. Additionally, the inspectors reviewed the radiation protection staff's assessment of fuel degradation problems to determine if its radiological impact was properly assessed, including the presence of transuranic material, and to determine if the licensee implemented provisions to identify alpha emitters during work activities and instituted necessary radiological work control measures to limit airborne transuranics.

The adequacy of the licensee's internal dose assessment process for internal exposures greater than 50 millirem committed effective dose equivalent was assessed, as available. However, for calendar year 2003 up through the period of the inspection, the licensee had not assigned any internal exposures of greater than 50 millirem committed effective dose equivalent.

The inspectors reviewed the licensee's physical and programmatic controls for highly activated and/or contaminated materials (non-fuel) stored within spent fuel or other storage pools. Specifically, radiation protection (RP) and fuel handling procedures were reviewed, involved staff were interviewed, the most recent inventory record for the spent fuel pools was reviewed and a walkdown of the refuel floor was conducted. In particular, the radiological controls for non-fuel materials stored in the Unit 1 and Unit 2 spent fuel pools were examined to ensure adequate barriers were in-place to reduce the potential for the inadvertent movement of highly irradiated material stored in the pools.

These reviews represented six inspection samples.

b. Findings

No findings of significance were identified.

.3 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, field observations, and event reports related to the access control program to verify that identified problems were entered into the corrective action program for resolution.

The inspectors reviewed approximately ten corrective action reports related to access controls including five high radiation area (HRA) radiological incidents (non-PI occurrences identified by the licensee in high radiation areas <1R/hr). Radiation protection staff were interviewed and corrective action documents were reviewed to verify that follow-up activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk based on the following:

- Initial problem identification, characterization, and tracking
- Disposition of operability/reportability issues
- Evaluation of safety significance/risk and priority for resolution
- Identification of repetitive problems

- Identification of contributing causes
- Identification and implementation of corrective actions

The inspectors evaluated the licensee's process for problem identification, characterization, prioritization, and verified that problems were entered into the corrective action program and resolved. For repetitive deficiencies, the inspectors verified that the licensee's self-assessment activities were capable of identifying and addressing these deficiencies.

The inspectors reviewed licensee documentation packages for all performance indicator (PI) or potential PI events occurring since the last inspection to determine if any of these events involved dose rates >25 R/hr at 30 centimeters or >500 R/hr at 1 meter or involved unintended exposures >100 millirem total effective dose equivalent (or >5 rem shallow dose equivalent or >1.5 rem lens dose equivalent). None were identified.

Additionally, the inspectors reviewed the circumstances surrounding an incident that occurred at the end of the licensee's last refueling outage in February 2003, that involved the unscheduled movement of a traversing in-core probe (TIP) during TIP system maintenance and testing. The licensee's root cause investigation was reviewed, the actual and potential radiological impact of the incident was independently assessed using the NRC's significance determination process for the occupational radiation safety cornerstone, and the adequacy of the licensee's problem identification and corrective action for the incident was evaluated.

These reviews represented four inspection samples. Specifically, the samples pertained to the licensee's self-assessment capabilities, its problem identification and resolution program for HRA incidents, a review of the licensee's ability to identify and address repetitive deficiencies, and a review of those potential PI occurrences of greatest radiological risk.

b. Findings

No findings of significance were identified.

.4 Job-In-Progress Reviews and Review of Work Practices in Radiologically Significant Areas

a. Inspection Scope

The inspectors observed the disassembly and removal of a Unit-1 condensate polisher pre-filter, and its transport to the maintenance hot shop and placement in a cask liner for eventual disposal. The job generated a high radiation area as the filter was extracted from its housing and a moving HRA during its transport to the maintenance shop. The inspectors reviewed radiological job requirements for this activity including the RWP requirements and those provided in the ALARA plan, and the associated TEDE ALARA evaluation was evaluated for technical adequacy. The inspectors attended the ALARA pre-job briefing for the work and assessed the adequacy of the information exchanged.

Job performance was observed to verify that radiological conditions in the work area were adequately communicated to workers through the pre-job brief and postings. The inspectors also verified the adequacy of radiological controls provided by the radiation protection staff including the radiological surveys and radiation protection technician job

coverage which consisted of continuous visual surveillance as the filter was removed from its housing and transported to another area of the plant.

Previously completed radiological work in high radiation work areas having significant dose rate gradients was reviewed to evaluate the application of dosimetry to effectively monitor exposure to personnel and to verify that licensee controls were adequate. This work included areas where the dose rate gradients were subject to significant change (i.e., cavity dives performed during a previous outage) which involved use of multiple dosimeters and enhanced job controls.

The inspectors also reviewed the licensee's procedures and discussed with RP staff its practices for at power and initial entries into the drywell, and for TIP room access to determine the adequacy of the radiological controls and hazards assessment associated with such entries. Work instructions provided in radiation work permits and in high level activity briefings for initial drywell entries were discussed with RP staff to determine their adequacy relative to industry practices and NRC Information Notices. The inspectors also reviewed the licensee's procedure and generic practices for dosimetry placement, use of multiple dosimetry and for extremity monitoring for work in high radiation areas having significant dose gradients for compliance with the requirements of 10 CFR 20.1201(c) and applicable NRC and Institute of Nuclear Power Operations (INPO) Guidelines.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.5 High Risk Significant, High Dose Rate HRA and VHRA Access Controls

a. Inspection Scope

The inspectors reviewed the licensee's procedures, RP job standards and evaluated RP practices for the control of access to radiologically significant areas (high, locked high, and very high radiation areas) and assessed compliance with the licensee's Technical Specifications, procedures, and the requirements of 10 CFR Part 20. In particular, the inspectors evaluated the licensee's control of keys to LHRAs and VHRAs, the use of access control guards to control entry into such areas, and methods and practices for independently verifying proper closure and locking of access doors upon area egress. The inspectors selectively reviewed LHRA/VHRA key issuance/return and door lock verification logs for 2003 through October, and key inventory records for selected period in 2003, to verify the adequacy of accountability practices and documentation. The inspectors also reviewed records and evaluated the licensee's practices for RP and station management approval of access to Level 2 LHRAs and VHRAs to verify compliance with procedure requirements and those of 10 CFR 20.1602. Additionally, the inspectors evaluated the licensee's methods for the movement of highly radioactive material within the plant to ensure temporary high radiation areas were properly controlled and posted.

The inspectors discussed with RP supervisors the controls that were in place for areas that had the potential to become very high radiation areas during certain plant operations, to determine if these plant operations required communication beforehand with the RP group,

so as to allow corresponding timely actions to properly post and control the radiation hazards.

The inspectors conducted plant walkdowns to verify the posting and locking of entrances to numerous LHRAs in the Turbine, Reactor and Radwaste Buildings, and for most high dose rate HRAs and very high radiation areas.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified

.6 Radiation Worker Performance

a. Inspection Scope

During performance of the condensate polisher pre-filter replacement, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and evaluated whether workers were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and that their performance had accounted for the level of radiological hazards present.

The inspectors reviewed radiological problem reports which found that the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause, and to determine if this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.7 Radiation Protection Technician Proficiency

a. Inspection Scope

During job observations, the inspectors evaluated radiation protection technician performance with respect to radiation protection work requirements and evaluated whether they were aware of the radiological conditions in their workplace, the RWP controls and limits in place, and if their performance was consistent with the radiological hazards that existed.

The inspectors reviewed several radiological problem reports generated in 2003 through October to determine the extent of any specific problems or trends caused by RP technician errors, and to determine if the corrective action approach taken by the licensee to resolve the reported problems was on target.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

2OS3 Radiation Monitoring Instrumentation and Protective Equipment (71121.03)

.1 Rescue Capabilities During Use of One-Piece Atmosphere Supplying Respiratory Protection Devices

a. Inspection Scope

The inspectors reviewed the licensee's respiratory protection and confined space entry procedures and discussed their implementation relative to the requirements of 10 CFR 20.1703(f) for standby rescue persons whenever one-piece atmosphere supplying suits, or any combination of respiratory protection and personnel protective equipment were used which the wearer may have difficulty extricating himself. Specifically, the inspectors reviewed the licensee's work planning process and implementing practices, and interviewed RP staff and the plant's industrial safety specialist regarding the following aspects of 10 CFR 20.1703:

- Designation of an adequate number of standby rescue workers and their training/instruction
- Presence of equipment staged at the work site for the safety of the rescuer and for extrication of the respiratory equipment user
- Practices for continuous communication between standby rescuer(s) and the respiratory protection user(s)
- Provisions for immediate availability of the standby rescuer

The inspectors discussed with RP management its plans to enhance the RWP and ALARA planning process for those jobs not performed in confined space atmospheres to formally address and better document provisions for standby rescuers.

This review represented one (industry event prompted) inspection sample.

b. Findings

No findings of significance were identified.

4. **OTHER ACTIVITIES**

4OA1 Performance Indicator Verification (71151)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Occupational Radiation Safety

.1 Radiation Safety Strategic Area

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicator (PI) listed below for the period February 2002 through October 2003. To verify the accuracy of the PI data

reported during that period, PI definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," were used. The following PI was reviewed:

- Occupational Exposure Control Effectiveness

For the time period reviewed, one reportable event was identified and reported by the licensee which occurred during the first quarter of calendar year 2003. The occurrence was previously evaluated by the NRC and documented in Inspection Report 05000373/2003002; 05000374/2003002. To assess the adequacy of the licensee's PI data collection and analyses, the inspectors independently reviewed electronic dosimetry dose alarm investigation reports, radiation exposure investigation reports, RP log book entries and the licensee's CR database along with individual CRs generated during the period reviewed to verify there were no unrecognized occurrences. Additionally, as discussed in Section 2OS1, the inspectors walked down the boundaries of selected LHRAs, high dose rate-HRAs and VHRAs to verify the adequacy of posting and access controls. The review of this PI constituted one inspection sample.

b. Findings

No findings of significance were identified.

.2 Data Submission Issue

a. Inspection Scope

The inspectors performed a review of the data submitted by the licensee for the 3rd quarter 2003 performance indicators for any obvious inconsistencies prior to its public release in accordance with IMC 0608, "Performance Indicator Program."

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

.1 Biennial Sample Review by Operator Licensing Branch

a. Inspection Scope

The inspectors reviewed a licensee self-assessment and two CRs written to document deficiencies identified in the licensed operator training program. The licensee's self assessment included a review of the licensed operator training program 6 months (April 2003) prior to this inspection activity. There were three deficiencies identified. Two of the three deficiencies had been previously identified in a self-assessment review in 2002. The corrective actions to these deficiencies required a change to a company wide procedure which had not yet been approved and was not completely within the control of the station. One CR reviewed documented the deficiencies identified in the self-assessment performed in 2002. The self-assessment and CR were reviewed to ensure that the full extent of the

issues were identified, an appropriate evaluation was performed and the CR was appropriately prioritized. The inspectors determined that the corrective actions were enhancements to the existing licensed operator training program and not significant conditions adverse to quality per 10 CFR 50, Appendix B.

b. Findings

There were no findings of significance.

.2 Routine Resident Inspector Review of Identification and Resolution of Problems

a. Inspection Scope

As part of the routine resident inspections documented in this report, the inspectors verified that the licensee entered the problems identified during the inspection into their corrective action program. Additionally, the inspectors verified that the licensee was identifying issues at an appropriate threshold and entering them in the corrective action program, and verified that problems included in the licensee's corrective action program were properly addressed for resolution. Attributes reviewed included: complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrences reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

Cornerstone: Initiating Events

.1 Unit 1 Thanksgiving Day Scram

a. Inspection Scope

Inspectors responded to the station following a scram on Unit 1 in the early morning hours on Thanksgiving Day, November 27, 2003. While in the process of switching feedwater from a turbine-driven reactor feed pump (TDRFP) to the unit's motor-driven reactor feed pump (MDRFP) in preparation for a planned maintenance shutdown, reactor water level began dropping due to a stuck open 1A TDRFP discharge check valve. This failure permitted the MDRFP's flow to be diverted back to the condenser hotwell instead of being sent to the reactor.

The unit's reactor operators responded to the transient by initiating a manual reactor scram as specified by applicable operating procedures. In response to the event, the inspectors observed plant parameters and status, including mitigating systems and fission product barriers; evaluated the performance of mitigating systems and licensee actions; and confirmed that the licensee properly reported the event as required by 10 CFR 50.72. The

inspectors determined that all systems responded to the event as designed, that the shutdown was not complicated by material condition deficiencies associated with mitigation equipment, and that no human performance errors complicated the event response.

b. Findings

No findings of significance were identified.

.2 Unanticipated Reactor Vessel Level Transient During Feed Pump Transfer

a. Inspection Scope

The inspectors evaluated licensee response to an unexpected reactor vessel water level transient that occurred on Unit 1 during transfer of reactor feed pumps on December 11, 2003.

b. Findings

No findings of significance were identified. One Unresolved Item was identified by inspectors.

On the morning of December 11, 2003, the 1A TDRFP and 1C MDRFP were supplying feedwater flow to the Unit 1 reactor vessel. Reactor power was approximately 50 percent. At 0529, an automatic feed pump transfer was initiated by operators to secure the 1A TDRFP and begin feeding the reactor vessel with the 1B TDRFP. During the transfer sequence, a reactor vessel high level alarm, level 7, was received and reactor vessel level was observed to be rising towards + 50 inches. Operators took manual control of reactor water level and stabilized it back within the normal operating band. Preliminary reviews of the transient data indicate that reactor vessel level reached + 49 inches, or within 6 inches of level 8, which is the reactor vessel high level scram setpoint.

The inspectors determined the identification of a licensee performance deficiency and subsequent inspection finding to be unresolved pending review of the licensee's apparent cause report for the event. The licensee currently has an investigation in progress in accordance with their corrective action program requirements. The anticipated completion date is in mid-January of 2004. The licensee has entered this issue into their corrective action program as CR 190125. (URI 05000373/2003005-04)

4OA4 Cross-Cutting Issues

.1 Human Performance

The inspectors determined that one of the findings described elsewhere in this report had as the majority of its causes various human performance deficiencies.

- A finding described in Section 1R12.2 involved the failure of licensee maintenance personnel to follow the work instructions and drawings delineated in their procedure for the overhaul of the Unit 2 station air compressor. In so doing, the maintenance personnel installed a thrust bearing backwards, which directly contributed to the shearing of the key for the compressor's shaft-driven oil pump and the ultimate failure of the compressor itself.

As can be seen from this event description, the finding involved human performance deficiencies that were procedure compliance / procedure use and adherence related. Had the personnel involved followed the existing instructions and drawings that were available, it is likely that the occurrence never would have taken place.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. G. Barnes, the Site Vice President, and other members of licensee management on January 13, 2004. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- A Biennial Operator Requalification Program Inspection with Ms. S. Landahl, Plant Manager, on October 10, 2003. A re-exit was conducted on October 29, 2003, with Mr. J. Lindsey, Operations Training Manager.
- An Occupational Radiation Safety/Radiological Access Control Inspection with Ms. S. Landahl, Plant Manager, on November 7, 2003.
- A Maintenance Effectiveness Biennial Periodic Evaluation Inspection with Mr. M. McDowell, Assistant Plant Manager, on November 19, 2003.
- A routine Emergency Preparedness inspection with Mr. S. McCain, Corporate Emergency Preparedness Manager, on December 19, 2003.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

G. Barnes, Site Vice President
S. Landahl, Plant Manager
T. Connor, Design Engineering Manager
D. Czufin, Site Engineering Director
C. Dieckmann, Training Director
D. Enright, Operations Director
S. Fatora, Radiation Protection Department Manager
F. Gogliotti, System Engineering Manager
B. Kapellas, Radiation Protection Manager
G. Kaegi, Regulatory Assurance Manager
J. Lindsey, Operations Training Manager
S. McCain, Corporate Emergency Preparedness Manager
M. McDowell, Assistant Plant Manager
S. Merik, Shift Operations Superintendent
J. Rappeport, Nuclear Oversight
W. Riffer, Emergency Planning Manager
M. Sharma, Maintenance Rule Coordinator
G. Vickers, Radiation Protection Technical Support Manager
E. Wolfe, Radiological Engineer

Nuclear Regulatory Commission

B. Burgess, Chief, Reactor Projects Branch 2

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000373/2003005-01 05000374/2003005-01	URI	Conformance with simulator requirements specified in 10 CFR 55.46. (Section 1R11.7)
05000373/2003005-02 05000374/2003005-02	FIN	Improperly installed thrust bearing leads to station air compressor failure. (Section 1R12.2)
05000373/2003005-03	URI	Unit 1 reactor power transient due to failed open reactor feed pump minimum flow valve. (Section 1R12.3)
05000373/2003005-04	URI	Unit 1 reactor vessel level transient during feed pump switching operations. (Section 4OA3.2)

Closed

05000373/2003005-02 05000374/2003005-02	FIN	Improperly installed thrust bearing leads to station air compressor failure. (Section 1R12.2)
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Discussed

None.

LIST OF DOCUMENTS REVIEWED

1R01 Adverse Weather

WO 00508479-01; LOS-ZZ-A2, Winterize Station; 11/3/2003

LOS-ZZ-A2; Preparation for Winter/Summer Operation; Revision 26

1R04 Equipment Alignment

LaSalle Operating Procedures:

- LOP-HP-02M; Unit 2 High Pressure Core Spray Mechanical Checklist; Revision 15
- LOP-HP-02E; Unit 2 High Pressure Core Spray Electrical Checklist; Revision 5
- LOP-DG-05M; Unit 2 B Diesel Generator Mechanical Checklist; Revision 7
- LOP-DG-05E; Unit 2 B Diesel Generator Electrical Checklist; Revision 9
- LOP-DG-010M; Unit 2 B Diesel Generator Cooling System Mechanical Checklist; Revision 9
- LOP-DG-010E; Unit 2 B Diesel Generator Cooling System Electrical Checklist; Revision 4
- LOP-DC-09E; Unit 2 Division III 125 VDC Distribution Electrical Checklist; Revision 7
- LOP-NB-03M; Unit 1 Reactor Vessel Hydro Preparation Mechanical Checklist; Revision 016
- LOP-NB-04M; Unit 2 Reactor Vessel Hydro Preparation Mechanical Checklist; Revision 016
- LOP-LV-01M; Unit 1 Locked Valve Position Checklist; Revision 010
- LOP-LV-02M; Unit 2 Locked Valve Position Checklist; Revision 008
- LOP-SC-01E; Unit 1 Standby Liquid Control System Electrical Checklist; Revision 009
- LOP-SC-01M; Unit 1 Standby Liquid Control System Mechanical Checklist; Revision 008
- LOP-SC-02E; Unit 2 Standby Liquid Control System Electrical Checklist; Revision 009
- LOP-SC-02M; Unit 2 Standby Liquid Control System Mechanical Checklist; Revision 005
- LOP-SC-06; Preparation for Sampling from the SBLC Solution Tank; Revision 7
- LOP-SC-06; Preparation for Sampling from the SBLC Solution Tank; Revision 0
- LOP-DG-03E; Unit 0 Diesel Generator Electrical Checklist; Revision 8
- LOP-DG-03M; Unit 0 Diesel Generator Mechanical Checklist; Revision 8
- LOP-DG-08E; Unit 0 Diesel Generator Cooling System Electrical Checklist; Revision 8
- LOP-DG-08M; Unit 0 Diesel Generator Cooling System Mechanical Checklist; Revision 15
- LOP-DO-03M; Unit 0 Diesel Generator Fuel Oil Transfer System Mechanical Checklist; Revision 9
- LOP-VD-05E; Unit 0 Diesel Ventilation System Electrical Checklist; Revision 6

LaSalle Chemistry Procedures:

- LCP-830-09; Determination of Minimum Air Sparge Time for Uniform Mixing of Standby Liquid Control Solution Tank; Revision 1
- LCP-830-09; Determination of Minimum Air Sparge Time for Uniform Mixing of Standby Liquid Control Solution Tank; Revision 0
- LCP-110-9; Determination of High Range Boron (Sodium Pentaborate); Revision 20

LaSalle Operating Department Surveillances:

- LOS-SC-Q1; SBLC Pump Operability/Inservice Test and Explosive Valve Continuity Check; Revision 19

Condition Reports:

- 186451; NRC Identified Concerns; 11/13/2003
- 165975; Incorrect Decimal Places Used in Calculations of SBLC Conc; 7/02/2003
- 88662; Found Damage Heat Trace on SBLC Sightglass Suction Line; 1/02/2002
- 104526; SBLC Plugged Line; 4/19/2002
- 143601; Complications Related to SBLC Refuel Surveillances; 2/08/2003
- 135508; NRC Identified Issues with U2 SBLC; 12/12/2002
- 139798; Local Tank Level is Higher than Actual Level; 1/16/2003
- 182749; Lifted Relief Valve During Performance of LOS-SC-Q1; 10/24/2003
- 135520; U2 SBLC Test Tank Boron Contaminated after LOS-SC-Q1; 12/12/2002

Test Results:

- LCP-830-09; Attachment A; Results of High Range Boron Analysis to Determine Uniform Mixing Time for SBLC Solution Tank (Test performed on 12/4/2003); Revision 2
- LCP-830-09; Attachment A; Results of High Range Boron Analysis to Determine Uniform Mixing Time for SBLC Solution Tank (Test performed on 11/30/1983); Revision 0

1R05 Fire Protection

Updated Final Safety Analysis Report; Revision 13:

- Appendix H; Fire Hazards Analysis
- Section 9.5.1; Fire Protection System

LaSalle Technical Requirements Manual:

- Section 3.7.j; Fire Suppression Water System; Revision 1
- Section 3.7.k; Deluge and Sprinkler Systems; Revision 1
- Section 3.7.m; Fire Hose Stations; Revision 1

Exelon Nuclear Station Procedures:

- LS-AA-128; Regulatory Review of Proposed Changes to the Approved Fire Protection Program; Revision 0
- OP-AA-201-008; Pre-Fire Plans; Revision 1

LaSalle Pre-Fire Plan; April 1998

LaSalle Mechanical Maintenance Procedures:

- LMS-FP-15; TRM Fire Hose Stations Inspection; Revision 18

1R06 Flood Protection Measures

Regulatory Guide 1.102; Flood Protection for Nuclear Power Plants;

LaSalle PRA risk insights regarding internal flooding

Updated Final Safety Analysis Report; Revision 14:

- Section 3.4; Water Level (Flood) Design

1R11 Licensed Operator Requalification Program

Licensed Operator Requalification Scenario Guide:
-SEG 01C3-04; Off Gas GSEP Tabletop; Revision 1

LaSalle Station Licensed Operator Requalification Program 2003 Focus Area
Self-Assessment Report; dated April 2003

TQ-AA-106-0305; Exelon Nuclear Licensed Operator Requal Training Examination
Administration Job Aid; Revision 0

TQ-AA-106-0304; Exelon Nuclear Licensed Operator Requal Training Examination
Development Job Aid; Revision 1

TQ-AA-106; Licensed Operator Requal Training Program; Revision 2

Condition Report 00132894; Annual Simulator Exam for Operating Crew Did Not Meet
Requirements; dated November 22, 2002

Condition Report 00125699; LORT Focused Area Self-Assessment; dated October 3, 2002

OP-AA-105-102; NRC Active License Maintenance; Revision 3

Licensee Event Report 374/2001-04; Manual Reactor Scram Due to Heater Drain Isolation;
dated October 26, 2001

AR 0075007; Training on Limitation of Heater Drain Capacities; dated June 28, 2002

ANSI/ANS 3.5; American National Standard Nuclear Power Plant Simulators for Use in
Operator Training; dated 1985

Ten Licensed Operator Medical Records

Licensee's Binder Listing and Describing Training on Multiple Operating Experience Events

List of Design Changes Completed During 2002 and 2003

TQ-AA-201; Examination Security and Administration; Revision 4

TQ-AA-0303; Licensed Operator Training Job Performance Measure Development Job
Aid; Revision 0

NRC Inspection Report 50-373/01-12(DRP); 50-374/01-12(DRP)

LaSalle Station Plant Issue Matrix; dated October 2, 2003

LaSalle Station Written Examination Sample Plan Describing Which Training Areas Were
Tested and Which Crews Were Seeing Which Questions

LaSalle Station Job Performance Measure Sample Plan and Completion Matrix Documenting Which Operators Had Seen Which Job Performance Measures For the Past 2 Calendar Years

LaSalle Station Dynamic Simulator Sample Plan and Completion Matrix Documenting Which Operators Had Seen Which Job Performance Measures For the Past 2 Calendar Years

Action Tracking Item 130964-02; Root Cause Report; Inadvertent Entry Into Region B of the Power To Flow Map of LOA-RR-201 Following Planned Control Rod Maneuvers During Startup From L2P02; dated November 21, 2002

Condition Report 158504; Ineffective LORT [Licensed Operator Requalification Training] CRC [Curriculum Review Committee] Minutes; dated May 13, 2003

Condition Report 00180237; Simulator Core Performance Testing; dated October 9, 2003

WC-AA-114; Unit 1 Shutdown Margin Test; dated February 4, 2002

LTS-1100-1; Shutdown Margin Determination; Revision 13

Simulator Open Work Request Report; dated October 7, 2003

Completed Simulator Work Request Report; dated January 1, 2002 through October 7, 2003

LaSalle Station Emergency Operating Procedure Critical Task List; Revision 1

LORT 2002 Annual Exam Weaknesses and Remediation

ILT-RX-04; Reactivity Scenario, Power Decrease, Optional CRAM Rod Insertion; Revision 00

ILT-RX-01; Reactivity Scenario, Power Ascension by Pulling Control Rods to Increase Fcl, Then Increasing RR Flow; Revision 00

TQ-LA-201; Examination Security and Administration; Revision 4

TQ-LA-201-0113; LaSalle Simulator Security Isolation and Restoration; Revision 4

TQ-AA-301; Simulator Configuration Management; Revision 3

TQ-AA-302; Simulator Testing and Documentation; Revision 3

TQ-AA-303; Controlling Simulator Simulator Core Updates and Thermal-Hydraulic Model Updates; Revision 2

TQ-AB-303-0101; BWR Moderator Temperature Coefficient of Reactivity; Revision 0

TQ-AB-303-0102; BWR Critical Conditions at 220 Degrees Fahrenheit; Revision 0

TQ-AA-302-0101; Simulator Test, Malfunction #252, Loss of MCC 136X-3; dated June 12, 2003

TQ-AA-302-0101; Simulator Test, Normal Plant Shutdown; dated December 9, 2002

TQ-AA-302-0101; Simulator Test, 100 Percent Plant Power Steady State; dated December 12, 2002

TQ-AA-302-0101; Simulator Test, 60 Minute Steady State Stability Test; dated December 12, 2002

TQ-AA-302-0103; Simulator Transient Test, Transient #5, Single Recirculation Pump Trip; dated October 22, 2002/10/22/02

TQ-AA-302-0101; Simulator Transient Test, Transient #1, Manual Scram with no Operator Action; dated May 21, 2002

BWR-REAC-CR-02; Core Reactivity Test Series, Steady State Conditions at Power; Revision 0; dated January 7, 2002

BWR-REAC-CR-02; Core Reactivity Test Series, Critical Conditions at 170 Degrees Fahrenheit; Revision 0; dated March 11, 2002

BWR-REAC-CR-04; Core Reactivity Test Series, Moderator Temperature Coefficient of Reactivity; Revision 0; dated March 10, 2002

NRC Form 398; 17 Records; LaSalle 2002 License Applicants

LaSalle System Lesson Plan; Reactor Core Isolation Cooling

5 LaSalle Written Examination Remediation Packages including 2 Performance Review Committee Data Sheets

10 LaSalle Simulator Examination Remediation Packages

LaSalle 2002 Simulator Certification Report Update

1R12 Maintenance Effectiveness

Maintenance Rule Expert Panel Scoping Determinations:

- DC System; 10/20/2003
- Feedwater System; 12/2/2003

Maintenance Rule Performance Criterion:

- DC System; 10/20/2003
- Feedwater System; 12/2/2003

Engineering Documents:

- EC 346110; Determination of Availability of the Unit 2 Station Air Compressor with the Thrust Bearing Installed Backwards; Revision 0

Condition Reports:

- 180069; Potentially Large Offsetting Division 1 Grounds; 10/9/2003
- 180459; Multiple Annunciator R-Points Grounded; 10/15/2003
- 180649; LOP-DC-04 System Ground Report; 10/15/2003
- 180311; Division 1 Action Level 3 Ground; 10/14/2003
- 180754; Corrosion on Annunciator Circuit Cards; 10/17/2003
- 090306; Received Unit 1 Division 1 125 Vdc Ground of 112 Volts; 1/14/2002
- 090518; Received Momentary Unit 1 Division 1 dc Ground Alarm; 1/15/2002
- 095882; Spurious Division 1 Ground; 2/20/2002
- 119789; Division 1 125 Vdc Ground; 8/19/2002
- 120336; Unit 1 Division 1 dc Ground; 8/23/2002
- 129274; Division 1 Ground – Action Level 1; 10/28/2002
- 170118; Division 1 125 Vdc Ground – Traced to R-Point R0493; 8/3/2003
- 177122; Intermittent Grounds on Unit 1 Division 1 125 Vdc; 9/23/2003
- 167560; Unit 2 Station Air Compressor Declared Unavailable; 7/14/2003
- 170044; Repeat Maintenance – Missing O-Ring on 2SA01C; 8/1/2003
- 169572; Mechanical Maintenance Department Human Performance Reset; 7/30/2003
- 183508; Thrust Bearing Found Installed Backwards; 10/29/2003
- 184013; Bearings Damaged When Installing; 10/31/2003
- 190091; 1B TDRFP Minimum Flow Valve Failed Open; 12/10/2003

Procedures:

- LMP-SA-01; Disassembly and Assembly of Service Air Compressor (Performed on Unit 2 SAC During February-March, 2003); Revision 6
- LMP-SA-01; Disassembly and Assembly of Service Air Compressor (Performed on Unit 2 SAC During July, 2003); Revision 7

Work Orders:

- 00594967-01; Steady Oil Stream From 4th Stage Drain During 2SA01C Run; 7/12/2003

NRC IN 2003-17; Reduced Service Life of ASCO Solenoid Valves with Buna-N Material; 9/29/2003

Maintenance Rule (MR) Periodic Assessment LaSalle Station; June 2000 - June 2002; dated December 2002

Maintenance Rule Periodic Assessment LaSalle Station; June 1998 - June 2000; dated December 2000

Monthly Ship System Report; High Pressure Core Spray; dated September 2003

Monthly Ship System Report; Low Pressure Core Spray; dated September 2003

Monthly Ship System Report; Residual Heat Removal; dated September 2003

Monthly Ship System Report; Core Standby Cooling System; dated September 2003

Focused Area Self-assessment; LaSalle 10 CFR 50.65; The Maintenance Rule; dated October 10, 2003

ER-AA-310; Implementation of the Maintenance Rule; Revision 2

ER-AA-310-1001; Maintenance Rule - Scoping; Revision 1

ER-AA-310-1002; Maintenance Rule - SSC Risk Significance Determination; Revision 1

ER-AA-310-1003; Maintenance Rule - Performance Criteria Selection; Revision 2

ER-AA-310-1005; Maintenance Rule - Dispositioning Between (a)(1) and (a)(2); Revision 1

ER-AA-310-1006; Maintenance Rule - Expert Panel Roles and Responsibilities;
Revision 1

ER-AA-310-1007; Maintenance Rule - Periodic (a)(3) Assessment; Revision 2

ER-AA-310-1004; Maintenance Rule - Performance Monitoring; Revision 1

System Description; High Pressure Core Spray (HPCS); Revision 0

System Description; Low Pressure Core Spray (LPCS); Revision 0

System Description; Core Standby Cooling/System Equipment Cooling Water (VY);
Revision 0

Recommendation Letter to the Expert Panel; Cathodic Protection; June 1, 1999

LGA-001; RPV Control; Revision 4

LGA-002; Secondary Containment Control; Revision 3

LGA-003; Primary Containment Control; Revision 4

LGA-005; ATWS Blowdown; Revision 4

LGA-006; ATWS Blowdown; Revision 3

LGA-0010; Failure to Scram; Revision 4

LGA-0011; Hydrogen Control; Revision 6

Expert Panel Meeting Minutes; dated January 20, 2000

Expert Panel Meeting Minutes; dated March 15, 2000

Expert Panel Meeting Minutes; dated May 20, 2000

Expert Panel Meeting Minutes; dated July 19, 2000

Expert Panel Meeting Minutes; dated December 15, 2000

Expert Panel Meeting Minutes; dated January 10, 2001

Expert Panel Meeting Minutes; dated February 20, 2001

Expert Panel Meeting Minutes; dated March 14, 2001

Expert Panel Meeting Minutes; dated April 18, 2001

Expert Panel Meeting Minutes; dated May 16, 2001

Expert Panel Meeting Minutes; dated June 16, 2001

Expert Panel Meeting Minutes; dated July 11, 2001

Expert Panel Meeting Minutes; dated September 11, 2001

Expert Panel Meeting Minutes; dated October 17, 2001

Expert Panel Meeting Minutes; dated December 19, 2001

Expert Panel Meeting Minutes; dated February 20, 2002

Expert Panel Meeting Minutes; dated April 16, 2002

Expert Panel Meeting Minutes; dated May 28, 2002

Expert Panel Meeting Minutes; dated September 18, 2002

Expert Panel Meeting Minutes; dated November 20, 2002

Expert Panel Meeting Minutes; dated December 11, 2002

Expert Panel Meeting Minutes; dated February 26, 2003

Expert Panel Meeting Minutes; dated April 17, 2003

Expert Panel Meeting Minutes; dated May 21, 2003

Expert Panel Meeting Minutes; dated June 25, 2003

Expert Panel Meeting Minutes; dated July 29, 2003

Expert Panel Meeting Minutes; dated August 14, 2003

Maintenance Rule (a)(1) Action Plan for CW-01; dated November 10, 2003

Maintenance Rule (a)(1) Action Plan for LD-17; dated November 10, 2003

Maintenance Rule (a)(1) Action Plan for ZS-10; dated November 10, 2003

Maintenance Rule (a)(1) Action Plan for FW-03; dated November 10, 2003

Maintenance Rule (a)(1) Action Plan for RR-02; dated November 10, 2003

Maintenance Rule (a)(1) Action Plan for VD-01; dated November 10, 2003

LaSalle Station Proactive Maintenance Report; 2nd Quarter 2003

Maintenance Percent PM vs CM Man-Hrs; July 1995 - October 2003

LaSalle Station Maintenance Rule Performance Criteria; 2003

Status of Maintenance Rule Systems; 2003

Maintenance Functional Failures from June 2000 to June 2002

CR 00141895; 2E12-B001B Heat Exchanger Does Not Completely Drain; January 26, 2003

CR 00181334; Deficiencies Identified During FASA on Maintenance Rule; dated October 10, 2003

CR L2001-05044; 2E21-C001 LPCS Seal Leak at Start - NOT CBM; dated September 1, 2001

CR L2001-05761; Air Found in U2 LPCS Pump Suction Piping During LOP-LP-01; dated October 7, 2001

CR 00090886; LPCS Loss of Indication due to Feed Water Mod; dated January 15, 2002

CR 00114683; Failed Surveillance; dated July 8, 2002

CR 00092542; 1E22-F024, HPCS Pump Discharge Valve Failed Acceptance Test; dated January 26, 2002

CR 00098280; HPCS Pump Discharge Valve Failed its Seal Check; dated March 7, 2002

CR 00140389; HPCS Injection Valve Breaker Trip during ECCS Injection test; dated March 7, 2002

CR L2001-05954; 1E22-N006 Switch HPCS Min Flow Switch was found out of tolerance; dated October 19, 2001

CR L2001-056070; 1E22-N006 Found out of tolerance and LCO Criteria; dated October 26, 2001

CR L2001-03875; 2E12-F068A is Leaking Approximately 1 Gallon per Minute; dated July 3, 2001

CR L2001-04942; 1E12-N010BA Press switch OOT; Exceeded LCO (Trend Code B2); dated August 27, 2001

CR L2001-05888; Elevated Pressure in RHR SW System; dated October 15, 2001

CR L2001-05949; Untimely Station Response; dated October 19, 2001

CR 00107443; Degraded 1B RHR Pump Seal Cooler SW Flow; dated May 9, 2002

CR 00108663; 1B RHR Pump Seal Leaks ½ gpm When Running in Shutdown Cooling; dated May 18, 2002

CR 00134065; 2A RHR Pump Seal Cooler Flow Outside Acceptance Criteria; dated December 12, 2002

1R13 Maintenance Risk Assessments and Emergent Work Control

Condition Reports:

- 168895; TIP probes would not electrically withdraw; 7/24/2003
- 168973; Work Request Prioritization for Unit 2 TIP Failure; 7/24/2003
- 169113; 3½ Hours of a 4 Hour Technical Specification Time Clock During TIP Recovery; 7/25/2003
- 180112; 2A TIP Stopped Beyond the Shield; 10/9/2003
- 186823; Report for 'A' DFP per TLCO 3.7.j, Required Action A.2; 11/16/2003
- 188393; Closure Failure of the 1A TDRFP Discharge Check Valve; 11/28/2003

Apparent Cause Evaluations:

- 168895; 2A and 2D Transversing In-Core Probes (TIP) did not electrically Withdraw; 10/23/2003

Prompt Investigations:

- 188345; Unit 1 Scram During Transfer from 1A TDRFP to MDRFP; 11/27/03

Work Orders:

- 599468-01; A and D Stuck in Core, Handcrank Out of Core – IM A and D Stuck in Core, Handcrank Out of Core
- 599468-02; A and D Stuck in Core, Handcrank Out of Core – IM Troubleshoot 2A TIP Channel
- 599468-03; A and D Stuck in Core, Handcrank Out of Core – IM Troubleshoot 2D TIP Channel
- 554297-01; Replace Radiator Fill Neck 'A' DFP
- 610692-02; Engine Piping Supports Restoration
- 610692-01; Replace Driveshaft on 'A' DFP
- 99205591-01; Remove/Replace 'A' DFP

Troubleshooting Plans:

- Per Work Request 111570; Unit 2 Transversing In Core Probe System

Engineering Changes/Evaluations:

- 334921; Review of the Effects of Debris Found in 16B FW Heater (ATI 90313), with Respect to Potential Sources of Transport to Vessel
- 346036; Review Effects of Lost Parts and Their Potential for Transport to RPV Specifically the Disc Cushion Backstop (Pin & Socket) from TDRFP Disch Check Valves 1FW001A/B; 11/29/03
- 345890; Flow and Velocity in Service Water Tunnel Inlet Lines; Revision 0

1R14 Personnel Performance During Non-Routine Plant Evolutions and Events

Unit 1 Licensee Event Reports:

- 2003-001-00; Enforcement Discretion Required to Repair Division 2 125 Vdc Battery

- Charger; 6/6/2003
- 2003-002-00; 1A and 0 Diesel Generators Inoperable Simultaneously Due to Inadvertent Partial CO₂ Actuation; 6/16/2003
- 2003-002-01; 1A and 0 Diesel Generators Inoperable Simultaneously Due to Inadvertent Partial CO₂ Actuation; 9/3/2003
- 2003-003-00; Reactor Core Isolation Cooling High Steam Flow Isolation Differential Pressure Switches Failed Due to Torn Diaphragm; 9/4/2003

Unit 2 Licensee Event Reports:

- 2003-001-00; Manual Scram Due to Lowering Reactor Water Level as a Result of the Trip of the 2B Condensate/Condensate Booster Pump; 3/11/2003
- 2003-002-00; Average Power Range Monitor Flow-Biased Scram Inoperable Due to Inadequate Procedure; 4/16/2003
- 2003-003-00; Main Steam Safety Relief Valves As-Found Safety Mode Set Pressure Found Out-of-Tolerance; 5/8/2003
- 2003-004-00; Unit 2 Scram Due to Main Power Transformer 'B' Phase Disconnect Failure; 9/2/2003

Condition Report:

- 188345; Unit 1 Reactor Scram; 11/27/2003

LAP-200-7; Post Event Review Program; Revision 8

1R15 Operability Evaluations

Operability Evaluations:

- OE03-016; Unit 1 & Unit 2 Reactor Vessel Pressure/Temperature Curves; Revisions 1 and 2

Engineering Changes/Evaluations:

- 334921; Review of the Effects of Debris Found in 16B FW Heater (ATI 90313), with Respect to Potential Sources of Transport to Vessel
- 346036; Evaluation of Lost Parts From 1FW001A; Revision 0
- 346095; 1A EDG Output Breaker Failed to Close on Demand; Revision 0

Issue Resolution Documentation (OP-AA-106-101-1006):

- Turbine Driven Feedwater Pump Discharge Check Valves 1(2)FW001A(B); 11/28/2003

Condition Reports:

- 188345; Unit 1 Reactor Scram; 11/27/2003
- 184507; Unit 2 Fuel Pool Liner Leakage Limits Not Stated Clearly in UFSAR; 11/3/2003
- 188262; 1A EDG Output Breaker Failed to Close on Demand; 11/26/2003
- 188681; ACB 1423 Failed to Close During LOP-DG-02; 12/2/2003

Deviation Report:

- 374-200-89-06801; Unit 2 Fuel Pool Liner Leakage Investigation; 1/10/1990

Quad Cities Unit 1 CR 167736; Unit 1/2 EDG Output Breaker Failed to Close; 7/15/2003

1R19 Post-Maintenance Testing

Work Orders:

- 00600957-02; 1B RHR Seal Cool Flowrate Test – MM 1B RHR Pump Seal Cooler Flowrate Test Remove Insulation
- 00600957-03; 1B RHR Seal Cool Flowrate Test – MM RHR Pump Seal Cooler Flowrate Test Reinstall Insulation
- 00605081-01; Disassemble and Clean Heat Exchanger Internals – MM Disassemble and Clean Heat Exchanger Internals
- 00605081-02; Disassemble and Clean Heat Exchanger Internals – MM Remove Insulation, 1B RHR Pump Seal Cooler Flowrate Test
- 00605081-03; Disassemble and Clean Heat Exchanger Internals – MM Reinstall Insulation, RHR Pump Seal Cooler Flowrate Test
- 00510734-02; 'A' DFP Engine Fall Surveillance
- 00484121-01; Replace the 1A MTSV; 11/27/2003
- 00558232-09; Retorque Hydrogen Cooler Bolting; 11/28/2003
- 00558232-10; Replace Hydrogen Cooler End Gasket; 11/28/2003
- 00558232-11; Remove Hydrogen Spool for Generator Purging; 11/27/2003
- 00558232-12; Reinstall Hydrogen Spool Piece; 11/28/2003
- 00558232-13; Remove CO2 Spool for Generator Purging; 11/27/2003
- 00558232-12; Reinstall CO2 Spool Piece; 11/28/2003
- 00631417-01; Electrical Troubleshooting Package for 1A EDG Output Breaker; 12/2/2003
- 00642124-01; Valve Possibly Sticking in the Open Position; 11/27/2003
- 00642124-06; Valve Possibly Sticking in the Open Position – MM Tack Welds for Plunger Stop and Hinge Retainer Pins; 11/28/2003
- 00642124-07; Valve Possibly Sticking in the Open Position – MM Hot Torque; 12/2/2003

Drawings and Prints:

- M-54, Sheet 6; ASME Section XI ISI Classification Descriptions; Revision A
- M-57, Sheet 1; Unit 1 Feedwater and Zinc Injection; Revision F

Procedures:

- LTS-200-9; RHR Pump Seal Cooler Service Water Side Flowrate Test; Revision 12
- LOS-FP-M6, Attachment A; DFP 0A (0FP01KA) Operational Check; Revision 5
- LOS-DG-M1; '0' Diesel Generator Operability Test; Revision 47
- LOP-VD-03; Startup and Operation of Ventilation Systems for Diesel Generator Room '0' and Associated Diesel Fuel Storage Room; Revision 10
- LOP-DG-04; Diesel Generator Special Operations, Revision 34
- LOP-DG-02; Diesel Generator Startup and Operation; Revision 33
- LOP-DG-01; Preparation for Standby Operation of Diesel Generators; Revision 29
- MA-MW-736-600; Torquing and Tightening of Bolted Connections; Revision 0
- LMP-SA-01; Disassembly and Assembly of Service Air Compressor (Performed on Unit 2 SAC During February-March, 2003); Revision 6
- LMP-SA-01; Disassembly and Assembly of Service Air Compressor (Performed on Unit 2 SAC During July, 2003); Revision 7

Engineering Changes/Evaluations:

- 346095; 1A EDG Output Breaker Failed to Close on Demand; Revision 0

Condition Reports:

- 188262; 1A EDG Output Breaker Failed to Close on Demand; 11/26/2003
- 188681; ACB 1423 Failed to Close During LOP-DG-02; 12/2/2003
- 167560; Unit 2 Station Air Compressor Declared Unavailable; 7/14/2003
- 170044; Repeat Maintenance – Missing O-Ring on 2SA01C; 8/1/2003
- 169572; Mechanical Maintenance Department Human Performance Reset; 7/30/2003
- 183508; Thrust Bearing Found Installed Backwards; 10/29/2003
- 184013; Bearings Damaged When Installing; 10/31/2003

1R20 Outage Activities

Condition Reports:

- 188345; U1 Reactor Scram; 11/27/2003

Issue Resolution Document:

- 2003-037; Unit 1 Main Generator Hydrogen Cooler; 10/3/2003

Engineering Change/Analysis:

- 346036; Loose Parts From TDRFP Discharge Check Valves; 11/29/2003
- 334921; Debris Found in 16B Feedwater Heater; 1/21/2002

Procedures:

- LGP-1-S2; Minimum Startup Checklist; Revision 41
- LAP-200-7; Post Event Review Program; Revision 8

Work Orders:

- 558232; Replace 1TG01AA/AB H₂ Coolers End Gasket

1R22 Surveillance Testing

Condition Reports:

- 189668; 2UR-RF002 Recorder Erratic During LIS-PC-412; 12/09/2003

Procedures:

- LIS-NB-101A; Unit 1 Reactor Vessel Low Water Level 3 SCRAM Trip Logic A1 & A2 and RHR (Shutdown Cooling Mode) Isolation Calibration; Revision 11
- LOS-DG-MI; '0' Diesel Generator Operability Test; Revision 47
- LIS-PC-412; Unit 2 Drywell Floor Drain Sump Fillup Rate Functional Test; Revision 5

Engineering Changes:

- 346343; DWFDS Lift Leads from Drywell Due to Noise Induction; 12/18/03

HLA Briefing for Unit 1 Variable Instrument Leg (1NB07C/7B) Potential Instrumentation Spike Due to Instrument Valving and the Associated Impact on Digital Feedwater Operation, Rx Recirculation Downshift, and Rx Protection System (RPS)

1R23 Temporary Plant Modifications

Engineering Changes:

- 343896; Install Temporary Air Movers to Cool 1APD1E/2E/3E/4E/5E/7E Voltage Regulating Transformers (VRT); Revision 0
- 344894; Evaluations for RCIC System Connections for Troubleshooting; 9/26/2003

LaSalle Calculations:

- L-001369; Seismic Sliding; Page 26-27; Revision 0

Work Orders:

- 618824-02; Equipment Connections for RCIC Testing; 10/02/2003

Engineering Change Request:

- 361462; Request Using a Rubber Mat When Installing Temp Fans per TCCP 343897 & TCCP 343896; 8/21/03

10 CFR 50.59 Screenings:

- L03-0279; Install Temporary Air Movers to Cool 1APD1E/2E/3E/4E/5E/7E Voltage Regulating Transformers (VRT)/ EC 343896; Revision 0

Condition Reports:

- 00183692; Notified by NRC Resident of Temp Fan Mis-Oriented for VRT; 10/29/2003

LaSalle Procedures:

- LAP-100-56; Equipment and Parts Storage in Plant Areas Containing Safety-Related Equipment; Revision 2

LaSalle Drawings:

- M-2101; Details RCIC System "RI"; Revision J
- M-101; P & ID Reactor Core Isolation Coolant System (R.C.I.C.); Revision AJ

1EP4 Emergency Action Level and Emergency Plan Changes

Exelon Nuclear Radiological Emergency Plan Annex for LaSalle Station; Revisions 13, 14, and 15

1EP6 Drill Evaluation

LaSalle 4th Quarter PI Mini Drill Guide

October 23, 2003, Mini Drill Findings and Observations Report; 10/24/2003

EP-MW-114-100, Attachment1; Nuclear Accident Reporting System Form (Completed forms from the drill dated 10/23/03); Revision 3

Condition Report:

- 182688; EP - Areas for Improvement From GSEP Drill Run on 10/23/03; 10/23/2003

2OS1 Access Control to Radiologically Significant Areas

RP-AA-460; Controls for High and Very High Radiation Areas; Revision 2

RP-AA-460; Attachments 1,2,4 and 5 for Selected Periods in 2003

RP-AB-460; TIP Area Access Controls; Revision 0

LAP-900-45; Drywell Entry (Initial or at Power); Revision 8

RP-LA-300-1003; Drywell Entry; Revision 0

Weekly Surveillance Records of High, Locked High, and Very High Radiation Posting and Barricade Checks for Selected Periods in 2003

RP-AA-210; Dosimetry Issue, Usage, and Control; Revision 4

INPO 91-014; Draft Guidelines for Radiological Protection Organization and Administration; Revision 1

LFP 100-5; Control of Material/Equipment on the Refuel Floor; Revision 6

LFP-100-5; Attachments E & F; Fuel Pool, Fuel Vault and Caskwell Inventories; October 2003

RWP 10001702 and Associated ALARA Plan; U-2 TIP Drive Activities (L2R09) Including Handcranking TIPs, TIP Tubing Repair, and Drive Work Approved by RP; Revision 0

LOP-NR-06; Traversing In-core Probe Operation; Revision 19

Root Cause Investigation Report; Unscheduled TIP Drive Movement Reveals Weakness in Radiological Control; March 2003

Survey of Unit 2 TIP Detectors; February 7, 2003

RWP 10003583 and Associated ALARA Plan; Replacement and Rebuild of Unit 1 "G" CP Pre-filter; Revision 1

Focused Area Self-Assessment Report; Occupational Radiation Safety Performance Indicator and Access Control to Radiologically Significant Areas; dated October 24, 2003

RP Operational Area Self-Assessment Report; Radiological Surveys; dated July 8, 2003

Nuclear Oversight Field Observation; Review of HRA Apparent Cause Evaluation; dated February 16, 2003

Nuclear Oversight Field Observation; Access Control to High Radiation Areas; dated April 9, 2003

Nuclear Oversight Field Observation; Radiological Hazard Communication; dated June 10, 2003

Nuclear Oversight Field Observation; ALARA Controls; August 4 -7, 2003

CR No. 00151788; Worker Received ED Dose Rate Alarm When Working on 2WX203A; dated March 26, 2003

CR No. 0091869; Posting of HRA on the Hotwell Platform; dated January 23, 2002

CR No. 00107811; Unposted Access Established to High Radiation Area; dated May 13, 2002

CR No. 00141242; High Radiation Area Created During Hydrolazing; dated January 27, 2003

CR No. 00185232; Contamination Spread in the Mechanical Maintenance Shop; dated November 6, 2003

Common Cause Analysis Report; LaSalle Station Radiation Protection Procedure Adherence; dated August 6, 2003

2OS3 Radiation Monitoring Instrumentation & Protective Equipment

SA-AA-114; Confined Space Entry; Revision 3

RP-AA-440; Respiratory Protection Program; Revision 3

4OA1 Performance Indicator Verification

Database Listing of Radiation Protection Program Related CRs; January 2002 - October 2003

CR No. 00169794; Locked High Rad Door Failure; dated July 31, 2003

CR No. 00088688; Potential NCV for Unlocked High Rad Door; dated January 2, 2002

CR No. 00144763; Technical Specification 5.7 High Radiation Area; dated February 15, 2003

CR No. 00144948; Dose Rate Greater Than 1000 millirem/hr Discovered; dated February 17, 2003

Electronic Dosimeter Dose Alarm Investigation Reports; Various Reports for February 2002 - October 2003

Radiation Exposure Investigation Reports; Various Reports for February 2002 - October 2003

RP (main desk) Logbook; Various Entries Reviewed for 2003

LS-AA-2140, Attachment 1; Monthly PI data Elements for Occupational Exposure Control Effectiveness; February 2002 - September 2003

4OA3 Event Follow-up

Condition Reports:

-190091; 1B TDRFP Minimum Flow Valve Failed Open; 12/10/2003

-188345; Unit 1 Reactor Scram; 11/27/2003

-190125; Unexpected Level 7 During Feed Pump Swap; 12/11/2003

LAP-200-7; Post Event Review Program; Revision 8

LIST OF ACRONYMS USED

ALARA	As-Low-As-Is-Reasonably-Achievable
CDF	Core Damage Frequency
CFR	Code of Federal Requirements
CR	Condition Report
CY	Calendar Year
DFP	Diesel Fire Pump
DG	Diesel Generator
DRP	Division of Reactor Projects
EDG	Emergency Diesel Generator
FSAR	Final Safety Analysis Report
HPCS	High Pressure Core Spray
HRA	High Radiation Area
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
IR	Inspection Report
JPM	Job Performance Measures
LER	Licensee Event Report
LERF	Large Early Release Frequency
LHRA	Locked High Radiation Area
LOIA	Loss of Instrument Air
LORT	Licensed Operator Requalification Training
MDRFD	Motor-Driven Reactor Feed Pump
MTSV	Master Trip Solenoid Valve
NCR	Non-Conformance Report
NCV	Non-Cited Violation
NRC	U.S. Nuclear Regulatory Commission
PI	Performance Indicator
PRA	Probable Risk Assessment
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RP	Radiation Protection
RPS	Reactor Protection System
RWP	Radiation Work Permit
SAC	Station Air Compressor
SDP	Significance Determination Process
SFD	Spent Fuel Pool
SLC	Standby Liquid Control
SNAP	Snap Acting Relays
SRA	Senior Reactor Analyst
SRI	Safety Review Item
SSC	Systems, Structures, and Components
TDRFP	Turbine Driven Reactor Feed Pump
TEDE	Total Effective Dose Equivalent
TIP	Traversing Incore Probe
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
Vdc	Volts Direct Current

VHRA
VRT
]

Very High Rad Area
Voltage Regulating Transforms