

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-373/94002(DRP); 50-374/94002(DRP)

Dockets No. 50-373; 50-374

Licenses No. NPF-11; NPF-18

Licensee: Commonwealth Edison Company  
Executive Towers West III  
1400 Opus Place Suite 300  
Downers Grove, IL 60515


Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle Site, Marseilles, Illinois

Inspection Conducted: January 10 through March 1, 1994

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Date

Inspection Summary

Inspection from January 10 through March 1, 1994 (Reports No. 50-373/94002 (DRP); 50-374/94002(DRP)).

Areas Inspected: A routine, unannounced safety inspection was conducted by the resident inspectors, three region-based inspectors and an Illinois Department of Nuclear Safety inspector. The inspection included followup on previously identified items and licensee event reports; followup on events; review of operational safety, maintenance, surveillance, engineering, and plant support activities; and report review.

Results: Two violations were identified. One violation involved an onsite review which was performed without required participants. The other violation involved improperly stored excess flow check valve poppet assemblies. A non-cited violation involved torque switches in a safety related storage area with expired shelf lives.

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Two examples of a previous violation involving inadequate corrective actions were identified. These dealt with onsite review actions for diesel generator cooling water pump bearing problems and inadequate limiter operator maintenance procedures. One example of a previous violation, involving inadequately performed or failures to perform safety evaluations, was identified. This concerned the failure to perform a safety evaluation when reducing the available radiation monitoring equipment for accident conditions. Notices of violation were not issued in these cases as licensee corrective actions for the previous violations had not yet been completed.

Three unresolved items involved the reactor water cleanup system relief valve discrepancies, calibration checks for specific types of measuring and test equipment, and resolution of the root cause of the reactor core isolation cooling system rupture disc event. Five open items involved licensee actions to address adverse personnel performance trends, inadvertent cycling of main steam bypass valves, feedwater heater relief valves found gagged open, rework on a main steam safety relief valve accumulator check valve, and corrective action tracking deficiencies. Two previously existing inspection items reviewed for routine closure were instead left open pending completion of licensee actions or inspection of additional aspects of the issues.

#### Plant Operations

Another adverse trend in personnel errors was identified. Cyclical performance in this area indicated that previous licensee actions were probably not addressing true root causes. The licensee initiated an investigation of this area. However, the inspectors were concerned that the licensee was not pursuing this issue in a timely manner. Plant labeling remained a concern, especially equipment associated with instrument racks. The high pressure feedwater heater shell side relief valves were found gagged open and appeared to have been in that condition for several years.

#### Maintenance

Good comprehensive troubleshooting involving a malfunctioning reactor core isolation cooling system square root converter was observed.

Continued deficiencies in the corrective action process were noted. Onsite review actions to address proper maintenance of safety related pumps were not tracked or accomplished. A subsequent site quality verification audit to examine the extent of this problem identified several other examples of onsite review action items not being tracked. Corrective actions committed to by the licensee in response to a violation involving an inadequate limiter operator maintenance procedure were either not completed within required time frames or completed in a different manner without informing the NRC. Plant management overview of the problem identification form (PIF) process remained a concern.

The reactor core isolation cooling rupture disc event may have been caused by an improper installation of a drain line orifice and poor foreign material exclusion control.

Another unexpected contaminated water spill was of concern as it was one of several noted in the last two years and represented a potential personnel safety hazard as the system was pressurized. In addition, this particular occurrence was caused by long-term, poor material condition of the reactor water cleanup system.

Continuing examples of preventive maintenance inadequacies (involving the reactor protection system) and unnecessary rework (involving a main steam safety relief valve accumulator check valve) reflected overall concerns noted in previous inspection reports. Hydrometers utilized to measure battery specific gravity were not checked on a periodic basis for accuracy. The licensee was still investigating an occurrence involving inadvertent cycling of main steam bypass valves.

### Engineering

Licensee identification of inaccuracies in piping minimum wall thickness calculations was a case of good licensee overview of contract architect/engineers. In addition, a long standing equipment problem involving a recirculation flow control valve was effectively resolved through good system engineering and mechanical maintenance cooperation.

There was considerable confusion among licensee personnel regarding onsite review administrative requirements. An onsite review for a safety evaluation was not completed by required personnel. A subsequent site quality verification audit to examine the extent of this problem identified numerous additional examples.

Two additional findings reflected examples of previously documented concerns. Another example of the licensee lacking available and pertinent industry information useful for root cause analysis purposes involved a manufacturing defect in HMA relays manufactured in 1974. Another example of the 10 CFR 50.59 safety evaluation process weaknesses involved a reduction in available radiation monitoring equipment for accident conditions. The licensee had not yet completed corrective actions for a previous multi-example 10 CFR 50.59 violation; however, the inspectors emphasized the need to ensure these actions instilled a correct, conservative safety philosophy and approach in personnel performing the evaluations.

### Plant Support

Housekeeping improved since the last refueling outage; however, long term effectiveness was not assured. Repeat problems with power to the main access facility, resulting from original construction deficiencies were addressed.

A followup fire protection inspection did not identify any significant additional concerns and confirmed adequate resolution of previous findings.

An inspection of the main warehouse identified several positive attributes such as reasonable cleanliness, environmental controls, personnel access control, and labelling. However, several deficiencies were also noted, including inconsistent protective wrapping of electronic components, expired shelf life for some torque switches, and improper storage of excess flow check valve poppet assemblies.

## DETAILS

### 1. Persons Contacted

W. Murphy, Site Vice President  
D. Ray, Plant Manager  
J. Giesecker, Site Engineering and Construction Manager  
\*C. Sargent, Support Services Director  
\*D. Farr, Technical Services Superintendent  
\*J. Lockwood, Regulatory Assurance Supervisor  
\*M. Santic, Maintenance Superintendent  
R. Crawford, Work Planning Assistant Superintendent  
\*J. Schmeltz, Operations Manager  
\*C. Sargent, Services Superintendent  
\*J. McIntyre, Audit Supervisor, Site Quality Verification  
\*R. Ragan, System Engineer Supervisor  
\*D. Leggett, Operating Engineer  
\*D. Berkman, Modification Design Supervisor  
\*E. McVey, Regulatory Assurance  
\*M. Cray, Master Instrument Mechanic  
\*M. Martinovich, Materials Management Supervisor  
\*R. Coen, IAA, Site Quality Verification  
\*J. Shaffer, Executive Assistant to Site Vice President  
W. Steffes, Fire Marshall

\*Denotes those attending the exit interview conducted on March 1, 1994.

The inspectors also talked with and interviewed several other licensee employees during the course of the inspection.

### 2. Licensee Action on Previously Identified Items (92701 and 92702)

(Open) Violation (50-374/92028-02(DRP)): Inadequate Limitorque Operator Maintenance Procedures. In February 1992, the work package (WR L13363) to reassemble the low pressure core spray injection "A" full flow test valve (2E12-F024) did not include instructions to ensure the gear box was full of grease. The licensee's response to the violation, dated February 2, 1993, stated that a General Information Notice (GIN) would be distributed to appropriate station personnel by March 25, 1993. The corrective actions also stated that several procedures would be revised by August 1, 1993. Finally, the lesson plans for the training of personnel who performed work on limitorque actuators were to be evaluated to determine the need to incorporate the methodology for installing grease in horizontally mounted motor operated valves by August 1, 1993.

The licensee actually accomplished none of these corrective actions. The licensee did not distribute a GIN as committed. Instead, all three maintenance departments were trained in communication meetings and the completion of this training was documented in Action Item Records (AIR). The licensee did not revise the indicated procedures. Instead, a

maintenance memo was produced to be included in all limitorque work packages to track progress of the work. One step of the maintenance memo prompted personnel to check for the correct amount of grease for the valve work in progress. Finally, the lesson plans were not evaluated and revised. The licensee committed to completing the evaluations and revising the lesson plans by June 30, 1994. The failure to take prompt corrective action was an additional example of a violation (50-374/93031-02(DRS)). This was not cited as a separate violation because of a lack of time to implement corrective actions in response to the previous violation.

The method of training and the maintenance memo were not the actions committed to in the licensee's response to the violation. The inspectors informed the licensee that trading one form of corrective action committed to in a violation response for another, without NRC notification, was unacceptable. This item remained open until the evaluation and revision of the training department's lesson plans is completed as committed to in response to the violation. This was scheduled for completion by June 30, 1994. Overall concerns with the licensee's corrective action program will continue to be tracked by the existing violation (50-374/93031-02(DRS)).

(Closed) Unresolved Item (50-374/93020-04(DRP)): Evaluate adequacy of the safety evaluation for a high pressure feedwater heater emergency drain valve out-of-service. The safety evaluation received an incomplete on-site review in that it was not reviewed and signed by all positions required in accordance with LaSalle Administrative Procedure (LAP)-1200-1, "Onsite Review and Investigative Function". This was a violation (50-374/94002-01(DRP)) of 10 CFR Appendix B, Criterion V. As a result of inspectors' concerns of potential generic applicability, site quality verification (SQV) performed a surveillance of a sample of on-site reviews conducted since 1992. In addition, 21 station procedures, that could result in the requirement to perform an on-site review, were examined. Examples included the out-of-service (OOS) procedure and the temporary system change (TSC) procedure. Small samples of OOSs and TSCs were audited for compliance with those procedures.

SQV concluded that the station's performance in the area of on-site reviews was substandard and issued a level II finding. Of the 25 on-site reviews inspected, there were 15 that had documentation problems. These included missing signatures and individuals signing for areas of expertise for which they were not qualified. There were examples of two exempt changes, nine OOSs, six operability evaluations, and one new procedure that had no on-site review as required by the governing procedure.

The last SQV audit of the on-site review process (required by the technical specifications every two years) was reviewed by the inspectors. The audit checklist included a review of this area and no

problems such as the ones listed above were recorded. Further licensee actions will be tracked through the notice of violation. Therefore, this item is closed.

(Closed) Unresolved Item (50-373/93019-04(DRP)): Inadequate Engineering Evaluation of the Applicability of Information Notice 87-10. In response to the problem, the licensee revised operating and surveillance procedures to place the residual heat removal (RHR) pumps in the manual start mode when the system was cooling the suppression pool. Concerns regarding this action as it related to increased frequency of suppression pool cooling due to leaking safety relief valves were discussed in Inspection Report 50-373/93040. These concerns will be followed through that report and therefore, this item is closed.

(Open) Open Item (50-373/93030-01(DRP)): Review cause of relay contact problems in reactor core isolation cooling (RCIC) system. The inspectors noted two failures of RCIC system relays within the last few months. Both occurrences, during testing on Unit 1 on October 22, 1993, and later on Unit 2 on December 25, 1993, involved the tracking control relay, 1(2)E51-AK049. Following the first failure, the relay on that unit was replaced and the contacts on the other unit's relay were refurbished. Although resistance readings on the Unit 1 relay were not consistent, those measured on the Unit 2 relay (after its failure) were acceptable, indicating intermittent failures. During later discussions with General Electric representatives, the licensee became aware of a service advisory letter (SAL) (SA 721-PSM-171.1) which had been issued by General Electric in 1982. This document indicated certain HMA relays manufactured in 1974 had insufficient clearance between the armature tail piece and the molded posts on either side of the tail piece. Measurements of the Unit 2 relay confirmed this deficiency. The licensee could not find this document in its files.

This item is to remain open pending further review of several aspects. First, considering the NRC had noted a previous lack of pertinent vendor information not available to individuals investigating equipment failures (such as ITE breakers), an expanded review of this area is warranted. The licensee indicated other HMA relays would be checked for this deficiency. However, a schedule for this was not yet clear. The reportability aspects of this still needed review. In addition, the inspectors planned to review service life requirements of these relays and how it was being controlled.

(Closed) Unresolved Item (374/93035-02(DRP)): Electrical maintenance department tested the wrong breaker during post maintenance testing. This was considered a personnel error on the part of the electrician and his foreman. This was not cited for the reasons specified in paragraph 4.a.1. The inspector reviewed the corrective actions for this specific problem and broader corrective actions will be followed in the open item discussed in that paragraph. This item is closed.

(Closed) Violation (373/93010-01A; 374/93010-01A): Three fire doors remained inoperable for an extended period of time: fire door 406 since October 31, 1990, and fire doors 262 and 393 since April 11, 1991. The licensee's compensatory action during this time period was an hourly fire watch as required by Technical Specifications. During this period (12 to 23 months), the replacement fire doors remained in the plant's warehouse because the administrative process was not adequate to resolve problems with the purchase, inspection, and correction of paperwork discrepancies. This was a violation of 10 CFR 50, Appendix B, Criterion XVI for conditions adverse to quality that had not been promptly corrected.

The licensee took a number of steps to resolve the above problems. Doors and hardware are now ordered separately so a quality control rejection of any one line item on the receiving document does not put the entire door on hold to resolve problems with the vendor and to perform an engineering evaluation. In addition, the licensee had required the vendor to be more responsive in resolving problems when the door is manufactured and more timely in supplying the doors. The ordering of doors was prioritized to ensure that safety related doors were ordered first. High usage doors were also stored as a stock item, so the doors are immediately available for replacement. Received parts are required to be labeled by the vendor to ensure that quality control staff can more easily identify the inspected parts. The plant staff were also more proactive and cooperative in identifying problems for timely resolution.

The doors, noted in the violation, were verified replaced and in good condition. A review of work requests indicated that the plant was timely in replacing other fire doors since inspection report 93010. All other doors observed in the plant were in good condition. The corrective actions for the door problem was considered adequate and this violation is closed.

(Closed) Violation (373/93010-01B; 374/93010-01B): This violation was for inadequate corrective action for two fires. One fire occurred when sparks from welding and grinding activities fell down a shaft and caused a fire. A second fire occurred within 35 feet of grinding activities when sparks ignited a mop.

The licensee made a procedural change to ensure that all combustibles are removed or protected below work areas. No additional fires of this type had occurred since the previous inspection. These actions appeared to be adequate to prevent a recurrence of this problem. This item is closed.

(Closed) Violation (373/93010-02; 374/93010-02): This violation related to inadequate funding and installation of emergency lighting for Modification M-1-2-89-031. The modification, which commenced in September 1990, to comply with 10 CFR 50, Appendix R, to illuminate safe shutdown equipment and access/egress routes, was cancelled in 1992.



The licensee had installed all emergency lighting indicated in this modification by December 28, 1993, as required in their commitment for the violation. All work packages had been signed as closed. This violation is closed.

One violation and no deviations were identified in this area.

3. Licensee Event Reports Followup (92700)

The following licensee event reports were reviewed to ensure that reportability requirements were met, and that corrective actions, both immediate and to prevent recurrence, were accomplished or planned in accordance with the technical specifications:

(Closed) LER 373/94001, 1B Reactor Protection System Motor Generator Set Underfrequency Trip

(Closed) LER 374/94001, Unit 2 Reactor Scram When in Shell Warming on the Main Turbine Due to Personnel Error

(Closed) LER 373/94002, Single Control Rod Scram Due to Bad Fuse Clip

(Closed) LER 373/94003, Limiting Condition for Operation Due to Freezing Weather

(Closed) LER 374/93009, Reactor Water Cleanup High Differential Flow Isolation Due to Filter Demineralizer Operations During Startup

In addition, recent problem identification forms (PIF) were reviewed in order to monitor conditions related to plant or personnel performance and to detect potential development of trends.

No violations or deviations were identified in this area.

4. Followup on Events (92700)

a. Reactor Core Isolation Cooling (RCIC) System Rupture Disc Burst Event Description

On February 21, 1994, at 11:27 (CST) during the performance of a routine Unit 2 quarterly RCIC surveillance test, "RCIC Valve Inservice Test for Operating, Startup, and Hot Shutdown Conditions" (LOS-RI-Q1), the exhaust line rupture discs burst filling the RCIC room with steam. At the time of the event three individuals were in the vicinity of the turbine and two other individuals were on the stairway outside of the room. The three individuals in the room were not injured, however, they were contaminated. One individual outside of the room was also contaminated. All contaminations were external and were corrected by standard decontamination processes.

Approximately eight seconds after the rupture discs burst, the RCIC room fire and high radiation alarms were received in the control room. The turbine was manually tripped by the control room operator approximately 30 seconds after the turbine start. Neither the rupture disc leakage alarm nor the exhaust line high pressure alarm were received in the control room and no automatic isolations or trips occurred.

The apparent cause of the event was an overpressure condition due to the collection of condensate in the exhaust line resulting in the RCIC rupture discs bursting. Condensate accumulated in the exhaust line as a result of a plugged drain line which may have been caused by an incorrectly installed drain orifice.

b. RCIC System Component Evaluations

Rupture Discs

Both rupture discs were removed and examined by the licensee. The discs appeared to have ruptured due to a normal gaseous overpressure condition and not due to any impingement from foreign material or water. These discs had been installed during the last Unit 2 refueling outage in late 1993 in response to corrective actions resulting from the Quad Cities High Pressure Coolant Injection system rupture disc event. The burst discs are being sent to an off-site facility for testing and analysis.

Spare discs, located in storage, were examined and found to be in good condition. All discs, used and in stores, were purchased in 1983. After discussion with the disc vendor, it was determined that there was no concern for shelf-life associated with these discs provided they were inspected prior to use. The licensee does not plan to burst test any spare discs at the present time.

Rupture Disc Leak Detection Pressure Switches (NO12A, B, C, & D)

These four pressure switches tap off a common point located between the two rupture discs. None of the pressure switches actuated during the event. The calibration of all four switches was checked by the licensee and all were found to be working properly. The sensing lines were also inspected and found to be free from obstructions and all instruments were properly aligned. It appears that the speed at which the event occurred exceeded the instruments' response time. Initial system inspection also showed that the sensing point was, at least partially, blocked by one of the inner disc segments, and that the sensing point tap was 3/8 inch pipe vs. 1 inch pipe in the rest of the line. This may have interfered with the instrument response.

### RCIC Exhaust Line High Pressure Switches (N009A and B)

The two exhaust line pressure switches (25 psig) have independent sensing points and instrumentation. Neither pressure switch actuated during the event. The calibration of these instruments was checked and found to be approximately one psig out of allowable tolerance (approximately 28 psig). Although the instruments were found out of calibration, this slight deviation should not have hampered the instrument's ability to function. It appears that these instruments did not actuate because the water in the exhaust line formed a loop seal which prevented the instruments from sensing the pressure increase.

### RCIC Exhaust Line Drain

The 5/32" orifice on the exhaust line condensate drain was removed and found to be installed backwards and plugged by a small metal shaving. This was a knife-edged orifice with an opening of 5/32" on one side and a concave bore resembling a counter sink on the other. The counter sunk side should face downstream of fluid flow, however, this was not the case. This installation allowed the counter sunk side to act as a funnel directing the shaving into the orifice center thus plugging the hole. The 3/4" tap from the exhaust line upstream from the orifice was also found to be blocked. This blockage was determined to be piping scale and may have accumulated as a result of the blocked orifice. The orifice had been removed approximately six months earlier during a RCIC turbine inspection and was found clear.

Orifices on the steam supply drain lines were also removed and found to be installed backwards. Both of these orifices, however, were clear of any obstructions.

The system design shows all drain system orifices to be square and not knife-edged, the licensee is evaluating this change in design.

#### c. Currently Planned Corrective Actions

The licensee has a multi-discipline team investigating this event. Current corrective actions include: Complete evaluation of the event; inspection of the Unit 1 RCIC system for similar problems; evaluation of drain system design; review of operating and maintenance procedures; and dissemination of findings with the industry. The resolution of the root cause of this event is considered an unresolved item (50-373/94002-02(DRP)).

#### 5. Plant Operations (40500 and 71707)

The inspectors reviewed the facility for conformance with the license and regulatory requirements.

a. Control Room Observations

On a sampling basis the inspectors observed control room activities for proper control room staffing; coordination of plant activities; adherence to procedures or technical specifications; operator cognizance of plant parameters and alarms; electrical power configuration; and the frequency of plant and control room visits by station managers. Various logs and surveillance records were reviewed for accuracy and completeness.

Significant observations were:

1. Adverse Trend in Personnel Errors

The inspectors noted another adverse trend in personnel errors involving operators. Examples from January 1994 included partial movement of an incorrect control rod, a scram during turbine warming caused by inadequate cognizance over a changing parameter, an inadvertent reactor cleanup system isolation caused by inadequate knowledge of system conditions, and a turbine trip during startup due to an out-of-service on a moisture separator reheater emergency drain valve. The inspectors have periodically noted similar trends in the past with the licensee taking actions followed by short term improvement. This cyclical performance indicated that previous licensee actions were probably not addressing true root causes.

Unlike some previous similar trends, the licensee noted the trend on its own and instituted a more in-depth investigation without NRC prompting. This investigation, conducted by an offsite human performance expert, was oriented toward root cause, human performance, and the cyclical nature of these human performance problems. The inspectors discussed preliminary conclusions with the licensee investigator to ensure important aspects were being considered and that recommendations would address long term performance. A licensee report was expected (by March 31, 1994) at which time the inspectors planned to discuss in detail, planned corrective actions with licensee management. The licensee also planned to expand this review to other departments within the next few months. This is considered an open item (50-373/94002-03(DRP)) pending review of these actions and NRC evaluation of long term effectiveness. The inspectors emphasized the need for timely actions to address this issue. The licensee investigator had been assigned to other duties and as of the end of the inspection period had not discussed the results with plant management.

2. Cycling of Main Steam Bypass Valves

On February 13, 1994, three Unit 1 main steam bypass valves cycled open and closed in less than one-half second. Reactor power, pressure, steam flow and level remained unchanged. The licensee believed the problem to be an electro-hydraulic control electrical malfunction but had not identified the root cause. The identification of the root cause and the resolution of this problem is an open item (50-373/94002-04(DRP)). No date was committed to for resolution, however, the unit was shutdown on February 18, 1994 to remain in that condition until completion of the refueling outage.

b. Plant Tours

On a routine basis the inspectors toured accessible areas of the facility to assess worker adherence to radiation controls and the site security plan, housekeeping or cleanliness, and control of field activities in progress. Although housekeeping had improved significantly since the last refuel outage, long term effectiveness was not yet ensured. The inspectors once again noted plant labeling concerns, this time concentrating on equipment associated with instrument racks. The licensee was in the process of evaluating labeling concerns.

c. Engineered Safety Feature Walkdowns

Walkdowns of select engineered safety features (ESF) were performed. The ESFs were reviewed for proper valve and electrical alignments. Components were inspected for leakage, lubrication, abnormal corrosion, ventilation and cooling water supply availability. Tagouts and jumper records were reviewed for accuracy where appropriate.

In January 1993, the licensee discovered that the high pressure feedwater heater shell side (extraction steam) reliefs were gagged. It appeared to have been a condition that existed for several years. The licensee was performing an evaluation to determine safety significance. This is considered an open item (50-373/94002-05(DRP)) pending completion expected by March 31, 1994, and NRC review of the evaluation.

No violations or deviations were identified in this area.

6. Maintenance (40500 and 62703)

Station maintenance activities affecting the safety-related and important to safety systems and components listed below were observed or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and did not conflict with technical specifications.

The following maintenance activities were observed and reviewed:

- Overhaul of the 2A Condensate/Condensate Booster Pump
- Rebuild of the 2B Residual Heat Removal (RHR) Service Water Pump

Significant observations included:

a. Inadequate Preventive Maintenance of the Reactor Protection System

Another example of inadequate preventive maintenance regarding the reactor protection system (RPS) was noted. On January 17, 1994, the RPS-motor generator (MG) set 1B output breakers tripped. The non-safety related output circuit breakers (CB) on each MG-set (immediately down stream of the generator assembly) were solely for the protection of the generator itself. The safety related electrical protection monitoring assemblies (EPMA) (downstream of the CBs) were designed to protect the loads supplied by the MG-set. The CBs were found not to be under any form of preventive maintenance (PM) program. The licensee committed to add the CBs to a regularly scheduled preventive maintenance program. Due to the non-safety related nature of this component, the lack of PM is not being cited as a violation. However, licensee's actions being developed for similar previously identified deficiencies will be evaluated to address the broader PM program adequacy issue.

b. Maintenance Rework Concerns

Rework of a check valve indicated rework concerns expressed in a previous inspection report, regarding equipment problems coming out the Unit 2 refueling outage, were still appropriate. On January 24, 1994, the licensee found the non-safety related accumulator for safety relief valve 1B21-F013E depressurized after isolating it from the compressor. After replacing the check valve internals, the system failed a pressure drop test. The licensee subsequently found the seating surface O-ring not evenly pressed into a groove in the valve body. Although the licensee discovered this through post-maintenance testing, the rework did result in additional unnecessary accumulated dose (investigating for air leaks and fixing the valve). This is an open item (50-373/94002-06(DRP)) pending review of resulting licensee actions (expected by March 31, 1994).

c. Resolution of a Flow Transmitter Drift Problem

An example of good troubleshooting by instrument maintenance (IM) personnel was a structured attempt to prevent recurrence of an instrument drift problem. On January 25, 1994, the Instrument Maintenance Department (IMD), while performing a Unit 2 LaSalle Instrument Surveillance (LIS)-RI-202, "Reactor Core Isolation Cooling (RCIC) Pump Discharge Flow Indication Calibration", found the 2E51-K601 (square root converter) output out-of-calibration high. The converter was removed, calibrated, and re-installed.

Further voltage readings taken on the flow transmitter and in the remainder of the wiring loop suggested that the shunt resistor was in a location that was too far from the square root converter. The IMD recommended moving the resistor from the auxiliary electric equipment room, to a location just prior to the square root converter terminal box. This would lower voltage losses in the wire to the converter. The licensee planned to perform this modification on each unit's RCIC System during the respective unit's refuel outage.

d. Contaminated Water Spill

The inspectors noted an additional example of an unexpected contaminated water spill during maintenance. Several previous inspection reports detailed similar occurrences. This trend is of particular concern due to the inherent personnel safety hazard. This event differs from the previous noted events as it also related to the long-term, poor material condition of the reactor water cleanup (RWCU) system. There were typically numerous work requests open on the RWCU system on both units for valve and pump seal leaks, even shortly following refuel outages.

On February 16, 1994, during maintenance on the RWCU "B" filter demineralizer post strainer backwash cycled condensate isolation valve (1G33-Z001-45B), approximately 100 gallons of contaminated water spilled onto the floor as the system was still pressurized with water. The licensee determined that internal valve leakage through the isolation points caused the system to repressurize following draining. The RWCU system was isolated to stop the water spray.

As the system was returned to service, the "A" train regenerative heat exchanger shell side relief lifted on two separate occasions. In addition, although the relief valve was hard piped to the reactor building equipment drain tank, water leaked out of the valve onto the floor. This was noticed the first time the relief valve lifted but was not repaired. The second time the relief valve lifted water again came out of the valve and contaminated portions of four levels within the reactor building to greater than 100,000 disintegrations per minute. An observation was made by the system engineer that the relief valve required a bolt in

the gag hole to prevent leakage because the valve had no bellows to prevent water from escaping. Further investigation showed that several other relief valves within the RWCU system on both units were missing these bolts.

The adequacy of the procedure to restore the system to operation, the reason the relief valve was not repaired between times it lifted, and the reason the relief valves were missing components are an unresolved item (50-373/94002-07(DRP)).

e. Repair of the Residual Heat Removal Service Water Pump

Poor communications between engineering and maintenance and lack of effective corrective actions resulted in an inadequate procedure for repair of residual heat removal (RHR) service water pump 2B. In October 1993, the 1A diesel generator cooling water pump inboard bearing failed due to a lack of lubrication. The licensee's on-site review (93-057) indicated that the lack of a clearance between the bearing housing and the oil deflector was the most likely cause for the failure and the clearance requirement was not included in the procedure. The corrective actions in the on-site review were not assigned tracking numbers. The on-site review indicated that further root cause analysis was necessary. A level 3 problem identification form (PIF) was written to perform root cause analysis and initiate additional corrective actions. The due date of this PIF was November 16, 1993.

On January 13, 1994, the inspectors observed the rebuild of RHR service water pump 2B. This pump was of the same design and manufacturer as the diesel generator cooling water pump. The procedure used to repair the pump did not mention the clearance requirement. Mechanical maintenance was not aware of the lack of a clearance as a potential problem. The PIF at the time of the repair of the pump was not complete and no clear corrective actions were designated or assigned for completion. The inspector later determined the reason the PIF was not complete was that the assigned system engineer was not aware of its existence. The failure to take prompt corrective action was an additional example of a violation (50-374/93031-02(DRS)). This is not being cited as a separate violation because of a lack of time to implement corrective actions in response to this previous violation.

Following notification to the licensee, RHR service water pump 2B work was stopped until the need for and amount of a clearance was determined for the pump. Because of the failure to assign tracking numbers to corrective actions spelled out in the on-site review, the licensee committed to an audit of ten selected (selection was based on likelihood of requiring corrective actions) on-site reviews to determine if other corrective actions



were outstanding. The results of the audit were that two of the ten on-site reviews were found to have corrective actions that did not have tracking numbers assigned. Further review found that the corrective actions had actually been completed.

The licensee initiated a level 3 PIF to determine why the corrective actions did not prevent the use of the procedure, why corrective actions in the on-site review were not assigned tracking numbers, why an item in the on-site review which was given a tracking number was not entered into the nuclear tracking system, and whether that item was completed. This is an open item (50-373/94002-08(DRP)) pending completion (expected June 30, 1994) of the licensee's review.

The inspectors expressed overall concern regarding licensee management overview of the PIF process. This reflected concerns expressed in previous inspection reports including proper perspective in screening and assigning PIFs, ensuring adequate investigations, and critical management oversight of the results. The inspector determined the number of PIFs outstanding greater than 30 days were 53. Of those 53, 39 were overdue with no reason given. The PIF that was related to the above problem was greater than 60 days overdue. The inspectors requested that regulatory assurance verify that those responsible for the overdue PIFs were aware of their existence. Regulatory assurance checked the overdue PIFs and determined that there were no others lost. The plant manager recently took personal ownership of the PIF process to address these concerns.

No violations or deviations were identified in this area.

7. Surveillance (61726)

Surveillance testing required by technical specifications, the safety analysis report, maintenance activities, or modification activities were observed or reviewed. Areas of consideration while performing observations were procedure adherence, calibration of test equipment, identification of test deficiencies, and personnel qualification. Areas of consideration while reviewing surveillance records were completeness, proper authorization and review signatures, test results properly dispositioned, and independent verification documented. The following activities were observed or reviewed:

- LaSalle Electrical Surveillance (LES)-GM-109, "480V Klockner-Moeller Motor Control Center Cubicle Inspection"
- LaSalle Technical Surveillance (LTS)-200-11, "2A Diesel Generator Heat Exchanger Performance Test"
- LaSalle Operating Surveillance (LOS)-DG-M2, "2A Diesel Generator Monthly Operability Surveillance"

Significant observations included:

After completion of the quarterly equalize charge for the Unit 2, Division 1, 125 VDC battery, specific gravity readings were less than the technical specification category B limit of 1.205. Further licensee review revealed that the hydrometer used was providing erroneous information. The faulty hydrometer was certified on April 1, 1992 and never checked again. The safety significance of the problem was small in that the specific gravity of the battery was actually within the required limit even though the battery was declared inoperable. The licensee planned to perform a check of other maintenance and test equipment to determine if items not having calibration adjustments are checked on a periodic basis. The licensee expected to complete this check by April 30, 1994. This is an unresolved item (50-373/94002-09(DRP)) pending completion of NRC review of this action.

No violations or deviations were identified in this area.

8. Engineering (37828, 62703, and 71707)

a. Licensee Review of Engineering Calculations

The inspectors noted an example of good licensee overview of architect/engineering work. While preparing a spot in the Unit 1 low pressure core spray piping for nondestructive examination (to be done next refuel outage), the licensee observed a 7/8 inch indication. The licensee's architect engineer performed calculations to show, following grinding out of the indication, the piping wall still above required minimum code thickness. The licensee's subsequent review of the calculations determined the methodology utilized was not as conservative as needed in this application. The calculations were reperfomed and showed, although slightly closer to minimum wall thickness, the piping still met acceptance criteria.

b. Failure to Perform a Safety Evaluation

On January 18, 1994, the licensee noted that only three of the five PING-3 particulate, iodine, and noble gas monitoring systems described in Attachment 1 to Unit 1 license NPF-11 were available on site. Although references to Attachment 1 (which described initial startup items that had to be completed prior to operational mode 2) were previously deleted from the license, the attachment itself was not deleted. The inspectors noted that the Updated Final Safety Analysis Report (UFSAR) Appendix L.78, "Inplant Radiation Monitoring," indicated Three Mile Island Action Item III.D.3.3 was met as detailed in Appendix L of the Final Safety Analysis Report (FSAR). The FSAR and NRC Safety Evaluation Report (SER) both stated the plant had five monitors. The licensee had removed two of the monitors in 1993 without performing a written safety evaluation as required by 10 CFR 50.59. This is considered another example of a previous violation

(50-373/93020-01(DRP)) for which the licensee had not yet completed corrective actions described in the response to the violation. Therefore, another notice of violation is not being issued. However, the inspectors re-emphasized to the licensee that as the described corrective actions (procedure reviews and training) are implemented, it was imperative to instill a correct, conservative safety philosophy and approach in personnel performing the evaluations. The inspectors will continue to monitor this area for effectiveness. The licensee was in discussions with the Office of Nuclear Reactor Regulation (NRR) to determine any necessary licensing actions. Review of significance will be performed through that process.

c. Resolution of the Recirculation Flow Control Valve Drift Problem

A long standing equipment problem regarding drifting of the Unit 2 reactor recirculation flow control valve (FCV) was resolved. The licensee was unable to lock the "B" rCV in position without it drifting. Conventional root cause analysis was not successful. It was only through cooperation between system engineering and mechanical maintenance that determined that a field adjustment of a set screw was necessary. Although this was a minor victory, it was an example of the necessity for cooperation and communication between departments.

No violations or deviations were identified in this area.

9. Plant Support

a. Main Access Facility Power Supply Problems

The inspectors noted repeated problems with power supplied to the main access facility (MAF). An underground cable fault had previously (late 1993) caused an electrical outage to this building. This cable was located between a transformer and the MAF outside the protected area. While excavating in the area to provide upgraded services to a new main processing center (converted warehouse), the licensee believed the cable had been nicked. The fault was repaired. On February 1 and 2, 1994, two additional faults were noted, causing planned outages on the building to repair the line. The licensee determined the cable had been laid incorrectly by a contractor approximately two years ago. The cable had not been imbedded in sand. In addition, the cable had been left for several months in the open trench which allowed water to seep under the cable jacket. Both deficiencies caused premature deterioration of the cable. The licensee relaid the cable in conduit.

b. Main Warehouse Inspection

On February 10-15, 1994, the inspectors performed a limited inspection in the main warehouse facility. The inspection effort was prompted by two recent events where materials or parts may have been issued from the warehouse that were inconsistent with their application or specification. These events were under investigation by the licensee (Reference PIFs 373-201-94-00192 and 00196).

During the course of the inspection, the warehouse was found to be reasonably clean, environmentally controlled, with unencumbered access to parts and materials. Material storage shelves were found to be labeled by aisle and shelf number which provided a direct cross reference between item number and physical warehouse location. Control of personnel access to the parts storage areas was also checked and found to be at a level consistent with procedural requirements.

Storage of large components such as pumps, motors, and valves were also inspected and found to be at the proper level of storage and protection requirements. Preventive maintenance requirements for such components were also checked and found to be performed at the required intervals.

However, certain components that were inspected were found to be either inconsistent with overall levels of material storage or in direct violation with procedural and/or code related material storage requirements.

- Several electronic components, such as power converters and traversing in-core probe ball shear valve power units, were exposed to air without a protective wrap. The accumulation of deleterious material was present on the circuit boards on the interior of these components. This lack of protection, appeared to be inconsistent with the protective wrapping of other sensitive electronic components in adjacent storage areas.
- A number of differential pressure transmitters and switches (instruments) were also found not to be wrapped in a protective plastic bagging sealed with tape. Some instruments were labeled with a shelf life expiration sticker, while identical instruments on the same shelf had no expiration sticker.
- Three safety related limit torque switches were found in the safety related storage area with an expired shelf life dated December 31, 1992. The improper storage of safety related components is a violation of 10 CFR Part 50, Appendix B, Criterion VIII and contrary to LaSalle Administrative Procedure (LAP) 500-11, "Control of Items

With Limited Shelf Life." Significance of the limit switches being stored beyond the expiration period was minimal since there were redundant measures to prevent issuance of the expired material. In addition, the licensee took immediate actions to remove the expired material from the active storage area and scheduled periodic walkdowns of the warehouse storage areas in order to physically verify the removal of all expired material from storage. Therefore, in accordance with the criteria specified in Section VII.B.2 of 10 CFR Part 2, Appendix C satisfied, the violation is not being cited.

Ten safety related excess flow check valve magnetic poppet assemblies were found improperly stored in a manner such that special magnetic properties of the assemblies were subject to deterioration. The ten poppet assemblies were found stored within one inch of the back wall of the metal storage shelf.

Specific vendor recommendations were established following a January 21, 1989, warehouse discrepancy record which rejected 12 safety related magnetic poppet assemblies for excess flow check valves due to deteriorated magnetism of the poppet assembly. The vendor's recommendation was to store the assemblies in such a manner to be at least three inches away from any ferrous or magnetic materials including other poppet assemblies. Letters to the licensee's station management from the licensee's architect/engineer dated January 23, 1989, and from the licensee's project engineering group dated January 26, 1989, concurred with the vendor's storage recommendation. On April 24, 1989, an action item request (AIR) was generated by the licensee that requested that all assemblies received thereon shall be inspected to meet the magnetic properties per the manufacturer's requirements. In addition, the assemblies were to be stored and periodically inspected so that the poppet assemblies maintained satisfactory magnetic properties. The magnetic force was required to operate a reed switch used for valve position indication.

The failure to store the poppet assemblies in the determined configuration and to implement the prescribed inspection or test activities is a violation (50-373/94002-10(DRP)) of 10 CFR 50, Appendix B, Criterion II and V.

c. Fire Protection Observations

During the previous fire protection inspection, it was noted that some fire doors did not close and latch. During that inspection, the licensee stated that this condition was acceptable to prevent damage from doors slamming shut. The licensee had not been proactive in ensuring that doors self-latch. Plant personnel were

trained to ensure that fire doors are shut, but self closure is considered the primary mechanism, followed by plant personnel, to ensure doors are closed. Since the previous fire protection inspection, the licensee had taken steps to ensure that all doors close and latch. During a plant walkdown only one door did not close and latch. This was the result of the differential pressure between two areas of the plant.

The plant was clean and housekeeping was excellent with respect to fire protection concerns. There were few transient combustibles and tags had been hung for those items found in the plant allowing them to be tracked. The emergency lights inspected were operable.

One concern during the previous fire protection inspection was that the fire protection group had not received root cause training. One member of the fire protection group had received root cause training since that inspection.

The staffing in the fire protection group is adequate. However, one concern was that the fire protection system engineer was attempting to resolve plant thermo-lag issues which left little time to resolve other engineering fire protection problems.

The diesel generator room carbon dioxide suppression system was declared inoperable due to a faulty voltage regulator on February 4, 1994. A fire watch toured the diesel room on an hourly basis which met the compensatory measures requirement. The system was repaired in a timely manner. The licensee wrote a PIF to address two problems that occurred during the maintenance on the CO<sub>2</sub> system. Those problems were whether more spare parts should be stocked for the CO<sub>2</sub> system so they are more readily available and whether additional training should be given to the maintenance staff for the CO<sub>2</sub> system. The inspector had no concerns for maintenance on this system.

The site quality verification (SQV) staff appeared to be performing an adequate job of monitoring the fire protection group. The field monitoring reports issued since the previous fire protection inspection contained few fire protection problems. Previously noted fire protection problems were being followed-up. A SQV inspector was assessing a fire drill during the inspection. The SQV inspector noted several procedure problems for the response of the backup staff for the fire brigade. Most plant related areas of fire protection were being monitored by SQV.

One cited violation, one non-cited violation, and no deviations were identified in this area.

10. Report Review (90713)

During the inspection, the inspector reviewed selected licensee reports and determined that the information was technically adequate, and that it satisfied the reporting requirements of the license, technical specifications, and 10 CFR as appropriate.

No violations or deviations were identified in this area.

11. Management Meetings

The Director, Division of Radiation Safety and Safeguards; the Chief, Division of Reactor Projects Branch 1; and the resident inspectors met with station management on February 3, 1994. The purpose of the meeting was to determine the progress the station made in preparing a corrective action plan for the issues discussed in the licensee's Business Development Team assessment. In addition to station management, the NRC met with bargaining unit members of the corrective action development teams. Of particular concern was the apparent lack of faith of the bargaining unit members that certain problems would be solved. These and several other NRC managers and inspectors interviewed numerous first line supervisors and bargaining unit personnel on February 10-11, 1994 to ascertain attitudes and expectations toward the action plan.

12. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 5 and 6.

13. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 4, 6, and 7.

14. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) during the inspection period and at the conclusion of the inspection period on March 1, 1994. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.