

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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Report Nos: 50-373/98021(DRP); 50-374/98021(DRP)

Licensee: Commonwealth Edison Company

Facility: LaSalle County Station, Units 1 and 2

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

Dates: September 1 - October 9, 1998

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## EXECUTIVE SUMMARY

### LaSalle County Station, Units 1 and 2 NRC Inspection Report 50-373/98021(DRP); 50-374/98021(DRP)

This inspection included aspects of licensee operations, maintenance, engineering and plant support. The report covers a 6-week period of inspection conducted by the resident staff.

#### Plant Operations

- Inspectors observed that operators were attentive to the main control room panels, knowledgeable of various system configurations, and aware of activities in the plant. (Section O1.1)
- The licensee's classification of an Unusual Event involving transfer of a contaminated individual to a hospital was appropriate and the required event notifications were timely. (Section O1.1)
- An operator, while removing a potentially contaminated primary containment chiller from service, drained the chiller to a non-contaminated fire sump without first obtaining a sample for radioactivity. This incident involved a lack of a questioning attitude by the operator and ineffective communication between operators. The licensee later verified through sampling that no actual release of radioactivity occurred. A minor violation was identified for failure to follow an approved procedure. (Section O1.2)
- Operators responded appropriately to an actuation of the reactor core isolation cooling (RCIC) system rupture discs during a surveillance test. The operators promptly identified the problem, isolated the system, and declared RCIC inoperable. The licensee completed the corrective actions for the rupture disc actuation and operators restored the RCIC system to service within the Technical Specification Limiting Condition for Operation (LCO) requirements. (Section O2.1)
- Operators did not use the appropriate procedural guidance for draining of the nonsafety-related 1A reactor water cleanup pump when removing it from service which caused the pump motor internals to become exposed to excessive temperatures. (Section O4.1)
- The licensee's response to the elevated temperatures in the 1A reactor water cleanup pump motor internals was adequate. These actions included removal of the pump from service, an engineering evaluation, and a root cause evaluation. (Section O4.1)
- Operators placed the incorrect out-of-service (OOS) cards on the 1A reactor building closed cooling water pump motor switches. This error was later identified by maintenance personnel before work actually commenced and there was no nuclear or industrial safety impact. The operators' actions resulted from inattention to detail and inadequate self-check when placing OOS cards. (Section O4.2)

- Operators responded appropriately to a residual heat removal (RHR) minimum flow valve that failed stroke time testing in the open direction by declaring the valve inoperable and taking timely actions prescribed by Technical Specifications. (Section O4.3)
- Operators concluded that the failure of an RHR minimum flow valve during stroke time testing in the open direction did not impact the primary containment isolation function. However, operators declared the valve operable for that function prior to receiving the documented analysis which supported that conclusion. The safety significance was minimal as more accurate stroke time testing proved the valve opened within the required time. (Section O4.3)
- The inspectors verified that the licensee had implemented the LaSalle Site Communications Plan in accordance with Nuclear Generation Group Strategic Reform Initiative No. 10, Step 5. (Section O8.1)

#### Maintenance

- Ineffective communication between personnel supporting the Unit 2 outage resulted in contractors commencing to excavate two fence post holes for relocation of the security fence prior to an approved maintenance work request being issued. There was no safety impact of this incident and the licensee's response appeared appropriate. (Section M1.1)
- Maintenance personnel generally performed work on the RCIC system in a proficient manner. The work instructions and documentation were clear and appropriate for the work being performed. (Section M4.1)
- Following modifications, the licensee determined through radiographic examination that welds on the RCIC system turbine exhaust piping were of poor quality. Mechanical maintenance department welders who performed the welds had limited experience on welds requiring radiographic examination. The delay caused by the need to reweld the piping resulted in additional time in a Technical Specification LCO. (Section M4.1)
- A foreign material exclusion cover was drawn into the fuel pool cooling and demineralizer system because it was not properly secured. The dislodged cover did not represent a safety-significant condition and the licensee's corrective actions appeared appropriate. (Section M4.2)
- The Nuclear Oversight organization's review and assessment regarding plant material condition was thorough and indicated the ability to identify broad performance issues. (Section M7.1)

#### Engineering

- The licensee did not perform adequate corrective actions to address an event in August 1996 during which the rupture discs on the Unit 1 RCIC system actuated. Consequently, the RCIC rupture discs actuated on September 17, 1998, during a test. The licensee implemented several corrective actions for the 1996 event, but considered

relocation of the rupture disk assembly as an enhancement that they planned to implement during the next refueling outage. They did not consider this an action that needed to be completed before startup of Unit 1 to preclude another rupture disk event. Consequently, the RCIC rupture discs actuated again on September 17, 1998. (Section E2.1)

- The root cause evaluation performed by engineering personnel following the September 17, 1998, RCIC rupture disk event was detailed and thorough, and corrective actions were appropriate. (Section E2.1)
- Engineering personnel had not revised stroke time requirements for an RHR minimum flow valve contrary to their intent following a test failure. Timely completion of this action could have precluded this valve from being documented as a failure during a subsequent stroke time test and eliminated the resultant distraction to plant personnel. (Section E2.2)

#### Plant Support

- Radiation protection technicians provided effective coverage during routine activities and during the testing and work involving the RCIC system. This performance resulted in a minimization of personnel radiation exposure and no personnel contaminations following actuation of the rupture discs. (Section R4.1)

## Report Details

### Summary of Plant Status

During this inspection period, the licensee operated Unit 1 at or near full power for the entire period. Unit 2 remained shut down for a refueling outage with all fuel removed from the reactor.

### I. Operations

#### **O1 Conduct of Operations**

##### O1.1 General Comments

###### a. Inspection Scope (71707)

The inspectors conducted frequent reviews of ongoing plant operations by performing system walkdowns and observing operator performance.

###### b. Observation and Findings

Overall, the licensee operated safely and performed activities in accordance with procedures. The inspectors observed that the operators were attentive to the main control room panels, knowledgeable of various system configurations, and aware of activities in the plant. The Shift Manager conducted pre-shift briefings for oncoming shift personnel which were thorough and effective in communicating plant operational and work activity status.

The inspectors observed and evaluated the response of site personnel to an October 5, 1998, event in which a diver was injured while performing maintenance in the Unit 2 suppression pool. During the recovery of the diver from the suppression pool, the diver became unconscious and was contaminated by suppression pool water when his diving helmet was removed by rescue personnel. Following the removal of the diver's helmet, the diver regained consciousness. However, the diver was transferred to a local hospital while he was still contaminated. The Shift Manager declared an Unusual Event due to the transfer of a contaminated person to an offsite hospital and completed the required notifications within one hour. The licensee terminated the Unusual Event on October 5, 1998, when the diver was decontaminated and radiation protection personnel returned all contaminated materials to the station.

###### c. Conclusions

Operators were attentive to the main control room panels, knowledgeable of various system configurations, and aware of activities in the plant. The licensee's classification of an Unusual Event involving transfer of a contaminated individual to a hospital was appropriate and the required event notifications were timely.

O1.2 Primary Containment Ventilation (VP) Chiller Drained to the Unit 1 Fire Sump Without Obtaining a Water Sample

a. Inspection Scope (71707)

The inspectors reviewed the circumstances surrounding the licensee's September 22, 1998, draining of the 1C VP chiller to the Unit 1 fire sump, while removing it from service, without first obtaining a water sample required by the plant procedures.

b. Observation and Findings

On September 22, 1998, a non-licensed operator rerouted a drain hose on the 1C VP chiller from a contaminated floor drain to the Unit 1 fire sump which was not contaminated. The operator relocated the drain hose without reviewing the procedural requirements which specified that the VP chiller be drained to the contaminated floor drain. The licensee drained approximately 275 gallons of potentially contaminated service water from the 1C VP chiller to the Unit 1 fire sump without first obtaining a water sample to verify that there was no radiological contamination present.

When reviewing the completed procedure, the work control center (WCC) senior reactor operator (SRO) discovered that the water from the 1C VP chiller was not sampled. Subsequently, the Shift Manager directed plant chemistry technicians to analyze a sample of the service water from the 1C VP chiller. Sample analysis determined that the water was not radiologically contaminated.

Factors which contributed to the event included:

- The non-licensed operator rerouted the hose without contacting his supervisor, without reviewing LaSalle Administrative Procedure (LAP)-500-14, "Chemical Control Program," Revision 14, Attachment F, and without verifying that the water was analyzed for radioactive contamination.
- The WCC SRO did not provide clear direction to the operator. Specifically, the WCC SRO did not review the requirements specified in LAP-500-14 with the operator.
- The turnover between the non-licensed equipment operators did not fully address the specifics of the draining evolution in progress.

The licensee initiated corrective actions which included:

- Training of all operations personnel on the event, emphasizing the importance of a thorough pre-job brief and how a questioning attitude could have prevented the event.
- Creating a corrective action program item requiring training of all applicable departments on the use of LAP-500-14. The licensee scheduled this training to be completed in December 1998.

- Clarifying LAP-500-14, Attachment F, to include clear instructions for obtaining required samples, documenting the sample results, and taking action when sample results indicated the presence of radioactive contamination.

The inspectors considered the licensee's completed and planned corrective actions to be adequate. There were no adverse consequences to this event because the water drained into the sump was not contaminated. Consequently, there was no spread of, or unmonitored release of, radioactive contamination. Technical Specification (TS) 6.2.A.a required procedures recommended in Appendix A, of Regulatory Guide 1.33, Revision 2, February 1978, which included procedures for control of radioactivity, be implemented. The operator's failure to follow the requirements of LAP-500-14 constituted a violation of minor significance and was not subject to formal enforcement action.

c. Conclusions

An operator, while removing a potentially contaminated primary containment chiller from service, drained the chiller to a non-contaminated fire sump without first obtaining a sample for radioactivity. This incident involved a lack of a questioning attitude by the operator and ineffective communication between operators. The licensee later verified through sampling that no actual release of radioactivity occurred. The licensee's corrective actions appeared appropriate. A minor violation was identified for failure to follow an approved procedure.

**O2 Operational Status of Facilities and Equipment**

O2.1 Unit 1 Reactor Core Isolation Cooling (RCIC) System Rupture Disc Event

a. Inspection Scope (67126, 71707)

The inspectors observed the licensee perform LaSalle Operating Surveillance (LOS)-RI-Q5, "Reactor Core Isolation Cooling (RCIC) System Pump Operability, Valve Inservice Tests In Conditions 1,2,3 and Cold Quick Start," Revision 9, and reviewed subsequent activities related to the relieving of the rupture discs which occurred at the start of the test. The inspectors also reviewed the licensee's root cause, corrective actions, and related maintenance activities.

b. Observations and Findings

On September 17, 1998, the inspectors observed operators performing LOS-RI-Q5 when almost immediately at the start of the test, the rupture discs on the turbine exhaust plenum actuated. Steam began to fill the RCIC room as the turbine continued to operate for approximately 17 seconds before operators isolated the RCIC system. No one was injured or contaminated during the event and the licensee immediately began a root cause investigation. Plant operators responded appropriately to the event and isolated the system when they identified that steam from the RCIC turbine exhaust was filling the RCIC room. Also, equipment operators and their supervisor were near the RCIC room and communicated with the control room operators.

The licensee performed a root cause analysis and implemented corrective actions within the 14-day Limiting Condition for Operation (LCO) requirement for RCIC prescribed in the TSs. In addition, the licensee inspected safety-related equipment in the RCIC room following the event and found it to be acceptable. However, problems developed during the maintenance activities which delayed completion of the corrective actions and system testing (see Section M4.1). In addition, the corrective actions for a similar rupture disc event in 1996 are discussed in Section E2.1.

c. Conclusions

Operators responded appropriately to an actuation of the RCIC rupture discs. The operators isolated the system and declared RCIC inoperable. The licensee completed the corrective actions and restored the RCIC system to service within the TS LCO requirements.

**O4 Operator Knowledge and Performance**

~ O4.1 Improper Draining of the 1A Reactor Water Cleanup (RWCU) Pump

a. Inspection Scope (71707)

The inspectors reviewed the circumstances surrounding the licensee's improper draining of the 1A RWCU pump on September 16, 1998, which resulted in pump temperatures exceeding the vendors recommended limits.

b. Observations and Findings

On September 16, 1998, operators were taking a portion of the RWCU system out-of-service (OOS) to repair a flange leak on the 1A RWCU pump. Operators drained the pump using the valve manipulations specified in the OOS instructions instead of using the system draining procedure, LaSalle Operating Procedure (LOP)-RT-12, "Reactor Water Cleanup System Draining", Revision 14, Section E.6. Consequently, high temperature water was drawn through the pump to the motor resulting in bearing temperatures of 265 degrees F for approximately 25 minutes, which exceeded the vendor recommended limit of 135 degrees F. The operator draining the pump observed the high temperature fluid being vented from the pump motor heat exchanger so he shut the vent valves and informed the main control room operators.

The inspectors interviewed operations shift personnel and management involved with the improper draining of the 1A RWCU pump and found that they did not know that there was a specific draining sequence in LOP-RT-12 for the recently modified RWCU pumps.



Several factors contributed to the improper draining of the pump:

- Operations personnel responsible for the preparation, approval, and execution of the OOS instructions allowed the use of the OOS sequence for performing a task governed by approved operating procedures.
- Operations personnel responsible for the preparation and approval of the OOS instructions did not perform an adequate search for an appropriate procedure for placing the equipment in the desired configuration.
- Operations shift personnel responsible for the execution of the OOS instructions did not consider how the required valve manipulations would effect plant equipment until the elevated temperatures were observed.

The licensee's corrective actions included the proper removal of the pump from service in accordance with the procedure, LOP-RT-12, and completion of an engineering analysis in consultation with the vendor to determine potential damage to the pump motor winding insulation and bearing adhesive. In addition, the licensee subsequently completed the planned maintenance and testing of the 1A RWCU pump. The licensee also commenced a root cause investigation scheduled for completion on October 22, 1998. The licensee's actions in response to the elevated temperatures in the 1A RWCU pump were appropriate. The safety significance of exposing the RWCU pump motor internals to elevated temperatures was minimal since the RWCU pumps do not perform a safety-related function.

c. Conclusions

Operations personnel did not use the appropriate procedural guidance for draining of the nonsafety-related 1A reactor water cleanup pump while removing it from service which caused the pump motor internals to become exposed to excessive temperatures. The licensee's response to the elevated temperatures in the 1A RWCU pump motor internals was adequate. These actions included removal of the pump from service, an engineering evaluation, and a root cause evaluation.

O4.2 Placement of Incorrect OOS Cards for the Reactor Building Closed Cooling Water (RBCCW) Pump Switches

a. Inspection Scope (71707)

Inspectors reviewed the licensee's actions taken to address an OOS error on the 1A RBCCW system. In addition, the inspectors reviewed the OOS documentation and interviewed operations personnel.

b. Observations and Findings

On September 1, 1998, operators placed the wrong OOS cards on RBCCW control switches when removing the 1A RBCCW pump from service. Two of the five cards used in the OOS instructions were for the pump motor control switches. One switch was located in the main control room and the other switch was located on the Unit 1

remote shutdown panel in the auxiliary building. The licensed operator in the control room placed the card for the remote shutdown panel control switch on the main control room switch. He then completed the OOS documentation and indicated that the main control room card was placed. A non-licensed equipment operator was then assigned to complete the OOS instructions and affixed the OOS card for the main control room switch to the remote shutdown panel switch. He then completed the OOS documentation to indicate that the correct tag was placed on the remote shutdown panel. Subsequently, mechanical maintenance personnel discovered the error during a walkdown of the OOS boundaries prior to commencing work on the 1A RBCCW pump.

The licensee performed the following corrective actions :

- Maintenance personnel stopped all work on the RBCCW system until operations personnel corrected the incorrectly placed OOS cards.
- Corporate management issued a memo requiring independent verification of all OOS activities (previously only safety-related activities required independent verification).
- Operations department management issued a daily order which communicated the details of the improper placement of the OOS cards and stressed the importance of a thorough self-check when performing activities affecting equipment configuration.

The safety significance of the operators placement of the incorrect OOS cards was minimal since the RBCCW pumps do not perform a nuclear safety function. In addition, there was no personnel safety impacts since both switches were in the required position for the maintenance activity and the error was detected by maintenance personnel prior to commencing work.

c. Conclusions

Operators placed the incorrect OOS cards on the nonsafety-related 1A reactor building closed cooling water pump motor switches. This error was later identified by maintenance personnel before work actually commenced and there was no nuclear or industrial safety impact. The operators' actions resulted from inattention to detail and inadequate self-check when placing OOS cards.

O4.3 Operator Actions During Residual Heat Removal (RHR) Testing

a. Inspection Scope (71707)

The inspectors reviewed the licensee's response to the failure of 1A RHR pump minimum flow valve to open within the required time during testing. The inspectors reviewed documents related to the valve failure including:

- Control room operator logs
- Surveillance test procedure LOS-RH-Q2, "RHR (LPCI) [Low Pressure Coolant Injection] and RHR Service Water Valve Inservice Test for Operating, Startup and Hot shutdown Conditions," Revision 27
- LAP-300-46, "ASME [American Society of Mechanical Engineers] Section XI, Inservice Testing of Pumps and Valves," Revision 0
- IST [Inservice Testing] Technical Review of Valve Performance (V98-116) for the failed valve

b. Observations and Findings

On September 10, 1998, operators stroke time tested the 1A RHR minimum flow valve, 1E12-F064A, in accordance with LOS-RH-Q2, Attachment 1A. The valve operated acceptably in the closed direction but failed to stroke open within the required time. Specifically, the valve opened in 11.2 seconds but the LaSalle IST Acceptance Criteria Manual required that the valve open within 11 seconds. The operators opened the valve a second time in 11.1 seconds. Subsequently, the operators declared the valve inoperable in accordance with LAP-300-46, and entered TS LCO Action Requirements 3.6.3 for primary containment isolation valves and 3.5.1 for the LPCI system. Operators closed the valve and de-energized it to isolate the primary containment penetration within the required LCO action statement time.

Following discussions with operations management, regulatory assurance personnel, and engineers, the operators later determined that the valve could be considered operable in the closed direction. This conclusion was based on the fact that the closed stroke time was satisfied even though the valve remained inoperable in the open direction. The operators exited LCO 3.6.3 and removed the required compensatory actions.

Maintenance personnel retested the minimum flow valve using a more accurate valve stroke testing method and determined that the valve opened in 10.7 seconds. The operators also timed the valve from the control room during this testing using a stop watch and recorded a stroke time of 11 seconds. The IST Coordinator completed an evaluation and determined that the valve met its opening design requirements delineated in the Updated Final Safety Analysis Report Table 6.2-21, Note 50, and was operable. The operators exited LCO 3.5.1 for LPCI.

The inspectors questioned the licensee's decision to declare the valve operable in the closed direction without a completed engineering analysis. The station procedures, specifically LAP-300-46, required the operators to declare the valve inoperable when the required action range was exceeded and take corrective action, which may be an analysis. In addition, the licensee indicated the operators should have ensured that an analysis was completed and documented prior to declaring the valve operable. However, operators separated the open and closed design functions of the valve and declared the valve operable in the closed direction seven hours prior to the completion of the engineering analysis. The IST engineering personnel determined that the code

required declaring a valve as either inoperable or operable and did not provide exception for operability in one direction while inoperable in the other. The IST engineer planned to initiate a code inquiry for a fall 1998 submittal to the ASME Section XI valve testing working group regarding dual function valves and operability determinations.

c. Conclusions

Operators responded appropriately to an RHR minimum flow valve that failed stroke time testing in the open direction by declaring the valve inoperable and taking timely actions prescribed by TSs. However, since the valve stroked properly in the closed direction, the operators later declared the valve operable for the primary containment isolation function prior to receiving the documented analysis which supported that conclusion. The safety significance was minimal as more accurate stroke time testing proved the valve opened within the required time.

**O8 Miscellaneous Operations Issues (92700, 71707)**

\* O8.1 Implementation of Nuclear Generation Group (NGG) Strategic Reform Initiative (SRI) No. 10, Action Step 5

a. Inspection Scope (71707)

The inspectors evaluated the licensee's implementation at LaSalle of NGG SRI No. 10, "Enhance Communications," Action Step 5, "Implement annual site communications plan." The inspectors reviewed the LaSalle Station Site Communication Plan, discussed the plan and its implementation with the Site Communication Coordinator, and interviewed other station personnel regarding the implementation of this action step.

b. Observations and Findings

The inspectors verified that the licensee implemented the LaSalle Station Site Communication Plan on March 31, 1998, to improve communication at the station. The plan contained the goals and expectations that would support the communication improvements that were the objective of NGG SRI No. 10. The plan also addressed the methods that managers and supervisors would be required to use to meet the plan's goals. In addition, the licensee established performance measures in the plan to evaluate its effectiveness.

The inspectors determined that a Face-to-Face Communication Workshop, one aspect of the plan, had been canceled and rescheduled due to lack of participation by managers and supervisors. The licensee established the workshop to improve understanding of roles in face-to-face communications and develop the skills necessary to have effective face-to-face communicators. Plant management re-emphasized the expectation that managers and supervisors attend the workshop.

The inspectors determined through interviews of station personnel that they were implementing the plan, understood the goals of the plan, and were cognizant of their roles and responsibilities towards achieving the plan's objectives. However, the Site

Communication Coordinator identified in an assessment of the NGG SRI No. 10 implementation that some barriers to communication between workers and management still existed. In particular, some station personnel indicated a climate which stifled feedback and prevented personnel from making decisions existed and that it was difficult to get the information needed to perform their duties better.

c. Conclusions

The inspectors verified that the licensee had implemented the LaSalle Site Communications Plan in accordance with NGG SRI No. 10, Step 5.

O8.2 (Closed) Licensee Event Report (LER) 50-374/98001-00: Unit 2 "B" Reactor Protection System (RPS) Motor-Generator (MG) Set Trip D Subcomponent Failure In MG Set Protective Circuitry.

On January 6, 1998, the 2B RPS MG set output breaker tripped causing numerous RPS and primary containment isolation system isolations and alarms. The licensee determined that the trips were caused by a broken solder joint on a circuit board in the MG set overvoltage relay and that all systems had responded as designed. The broken joint created a high resistance (open) contact in the MG set protective circuitry and caused the MG set output breaker to trip. The licensee installed, calibrated, and successfully tested a new circuit board. In addition, the licensee satisfactorily tested the MG set output circuit breaker, inspected the Unit 1 and 2 RPS MG set overvoltage relays and their associated circuit boards, replaced the same circuit board in the Unit 1 MG sets prior to unit restart, and scheduled the replacement of the circuit board for the 2A MG set prior to the completion of the current Unit 2 refueling outage (L2R07). The inspectors determined the licensee's response and corrective actions were appropriate. This LER is closed.

O8.3 (Closed) LER 50-373/98015-00: Manual Reactor Scram following Level Control Transient.

The inspectors reviewed the circumstances related to this LER in Inspection Report 50-373/98019(DRP). This item is closed.

O8.4 (Closed) Violation (VIO) 50-373/374-98010-01: Failure to perform an apart-in-time independent verification when removing out-of-service tags.

On April 23, 1998, two non-licensed operators were directed to return two control room ventilation system dampers to service. The operators inappropriately removed the two OOS cards and repositioned the incorrect ventilation dampers without properly performing an independent verification. Specifically, the operators did not ensure that the OOS card information was correct by comparing the cards to the OOS checklist. The plant procedure established by the licensee to address independent verification requirements and methods, LAP-100-30, required the operators to perform an apart-in-time verification when installing or removing OOS cards on the equipment. In addition, the procedure defined apart-in-time verification as an action that was to be performed by two individuals acting independently. Both operators were together when they removed the incorrect cards and opened the wrong dampers. The licensee took

actions to restore the ventilation system to the correct configuration and verified that other OOS work performed by the two operators was properly performed. Also, the licensee discussed independent verification requirements in communication meetings with each operating crew.

The licensee revised LAP-100-30 to clarify the requirement that the apart-in-time method of independent verification be used for safety-related OOS activities. Also, to ensure operations personnel understood the expectations regarding independent verification, the licensee issued General Information Notice 98-61, "Clarification of Independent Verification when Performing Out-of-Services and Changes to LAP-100-30" and trained operations personnel on these expectations. The inspectors determined these corrective actions had been completed. This violation is closed.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### **M1.1 Contractor Performed Work Without Proper Authorization**

##### **a. Inspection Scope (62707)**

The inspectors reviewed the circumstances surrounding the licensee's discovery that a fencing contractor was in the process of excavating holes for the installation of two fence posts to relocate the security fence without having an approved maintenance work request.

##### **b. Observations and Findings**

On September 10, 1998, contractor personnel began excavating two holes to relocate a section of the internal security fence. Due to ineffective communication between meeting participants at the licensee's Unit 2 project status meeting the preceding day, the project manager incorrectly believed the fence relocation work package had been issued. Approximately 1 hour after the work commenced, the project manager identified that there was no approved work package and directed all work associated with the fence relocation to be stopped.

The licensee suspended construction work and briefed the entire contractor work force on the incident and management expectations on controlling work activities. In addition, the licensee initiated a root cause investigation which was scheduled for completion on October 29, 1998.

The safety significance of the event was minimal. Security personnel were monitoring the activity to ensure that physical security was not compromised. There were no nuclear safety consequences since the fence post holes did not impact any plant nuclear safety equipment.

c. Conclusions

Ineffective communication between personnel supporting the Unit 2 outage resulted in contractors commencing to excavate for two fence post holes for relocation of the security fence prior to an approved maintenance work request being issued. There were no safety impacts of this incident and the licensee's response appeared appropriate.

**M4 Maintenance Staff Knowledge and Performance**

M4.1 Welding Problems During RCIC Maintenance

a. Inspection Scope (62707)

The inspectors observed maintenance activities on the RCIC system including:

- Work Request (WR) 980097550-02, Relocate Magnetrol
- WR 980097549-02 & 03, RCIC turbine exhaust upstream rupture disc

In addition, the inspectors reviewed other associated documentation and discussed the maintenance activities with licensee personnel.

b. Observations and Findings

Maintenance personnel modified the RCIC system as part of the corrective actions for the rupture disc event (See Section O2.1). The modifications included moving a level instrument and relocating the RCIC rupture disc assembly. Maintenance personnel performed the specified work in accordance with the procedures. In addition, the work requests and other documentation appeared appropriate for the work performed. The workers were generally knowledgeable of and skilled in the work they performed.

However, one exception was the mechanical maintenance department welders who were not proficient with respect to welds performed on the RCIC system turbine exhaust piping. The licensee determined through radiographic examination that the welds were of poor quality. The licensee completely removed the welds and contractors experienced with the required type of weld reformed the welds with only minor rework. Although the mechanical maintenance department welders were certified to perform the welds, they had not performed a significant number of welds that required radiographic examination.

c. Conclusions

Maintenance personnel generally performed work on the RCIC system in a proficient manner. The work instructions and documentation were clear and appropriate for the work being performed. Following modifications, the licensee determined through radiographic examination that welds on the RCIC system turbine exhaust piping were of

poor quality. Mechanical maintenance department welders who performed the welds had limited experience on welds requiring radiographic examination. The delay caused by the need to reweld the piping resulted in additional time in a TS LCO.

#### M4.2 Foreign Material Exclusion (FME) Cover Not Secured

##### a. Inspection Scope (62707)

The inspectors reviewed the circumstances surrounding the loss of an FME cover used to prevent the intrusion of foreign material into the fuel pool cooling filter and demineralizer system during maintenance.

##### b. Observations and Findings

On September 10, 1998, prior to installing valve 1FC066B following maintenance, mechanical maintenance personnel discovered that a 6-inch plastic FME cover was not in position over the pipe end. The cover could not be located in the vicinity external to the system on which it was installed. The licensee initiated an investigation and concluded that the cover had not been properly installed and was inside the system as a result of a pressure drop in the system. The licensee located the missing FME cover from in the system using a boroscope and subsequently recovered it.

The licensee's additional corrective actions included briefing mechanical maintenance personnel on the event and emphasizing the requirement to properly secure FME devices. In addition, the licensee performed an inspection of other work activities in progress for similar deficiencies in FME control. No other discrepancies were identified. The inspectors considered licensee's corrective actions adequate.

##### c. Conclusions

A foreign material exclusion cover was drawn into the fuel pool cooling and demineralizer system because it was not properly secured. The dislodged cover did not represent a safety-significant condition and the licensee's corrective actions appeared appropriate.

#### M7 **Quality Assurance in Maintenance Activities**

##### M7.1 Material Condition Issue Identified by Nuclear Oversight (NO)

##### a. Inspection Scope (71707)

The inspectors observed the NO issues meeting and reviewed the September NO Issues Report.

##### b. Observations and Findings

The licensee's NO organization identified that material condition at LaSalle continued to be adversely impacted from such issues as rework and the amount of work in the



non-outage maintenance backlog. In addition, NO identified that operator work-arounds, main control room distractions, and temporary alterations continued to challenge plant operations at LaSalle. The NO organization concluded that operations had not taken a leadership role in resolving the material condition problem, engineering was not fully effective at resolving long-standing equipment problems, and work planning problems adversely impacted the ability to get work done.

The licensee's review was thorough and the conclusions were based on several examples of material condition issues which impacted the station during startup, as well as other material condition problems which continued to occur that the licensee had not resolved. One example the NO provided to support these conclusions was the RCIC rupture disc event discussed in this report. The inspectors reviewed other issues identified in the NO report and did not identify any immediate safety issues and the overall assessment appeared appropriate. The plant manager was reviewing the NO concerns and planned to generate a coordinated action plan.

c. Conclusions

The Nuclear Oversight organization's review and assessment regarding plant material condition was thorough and indicated the ability to identify broad performance issues.

### III. Engineering

#### **E2 Engineering Support of Facilities and Equipment**

##### **E2.1 Corrective Actions for 1996 RCIC Rupture Disc Event**

a. Inspection Scope (37551)

The inspectors reviewed the licensee's root cause and corrective actions for the RCIC rupture disc events that occurred in August 1996 and on September 17, 1998.

b. Observations and Findings

In August 1996, the Unit 1 RCIC rupture discs actuated during testing. The licensee determined that the most probable cause for the rupture disc actuation was water in the turbine exhaust drain line. The drain line design was insufficient because expected corrosion products or foreign material were unable to pass through the drain line. When the licensee inspected the drain line piping, they did not find any significant amount of corrosion products or foreign material. The licensee assumed that the overpressure condition cleared any obstruction of the drain line. The licensee completed most of their identified corrective actions for the 1996 event; however, some corrective actions were considered as long-term and had not been scheduled for implementation. One of the corrective actions, planned for the next refueling outage, included relocating the rupture disc assembly from the exhaust drain pot to the exhaust line downstream of the plenum. The licensee's review processes did not identify this as an action that should be taken before startup of Unit 1 from the extended two-year outage.

The licensee determined that the root cause for the September 17, 1998, event was the location of the rupture discs which were too close to the turbine exhaust. The licensee postulated that when RCIC started, condensate in the steam supply line entered the RCIC turbine which combined with additional condensed steam. When the combination of steam and condensate was exhausted from the RCIC turbine, it impacted the exhaust drain pot at a high velocity. Some of the high velocity condensate impacted the rupture disc which, combined with the pressures generated in the drain pot during startup of the turbine, caused the rupture disc to blow.

Other contributing factors resulted in additional condensate in the steam supply drain pot, which was then available to enter the RCIC turbine when the system was started. An installed drain trap also did not allow an adequate amount of water to drain from the steam supply line drain pot. In addition, the steam supply drain pot level switch had been installed seven inches higher than specified by the design during initial construction. The decreased drain rate of the steam supply drain pot due to the problematic steam trap and the higher water level in the steam supply drain pot resulted in increased water in the steam supply drain pot.

The root cause investigation for the September 1998 event was thorough and detailed. The licensee personnel used a disciplined approach, performing the root cause investigation by evaluating each component in the RCIC system to determine its potential contribution to the actuation of the rupture discs. In addition to the site personnel evaluating the failure, personnel from the licensee's corporate office independently assessed the site efforts.

Corrective actions for the September 1998 event included the following:

- Modifying the RCIC steam supply drain pot drain line steam trap to allow for adequate draining.
- Relocating the steam supply drain pot level switch.
- Relocating the rupture discs to eliminate the effect of the transient pressure pulses and moisture impingement on the discs.

The licensee evaluated their failure to implement sufficient corrective actions for the August 1996 event. The licensee determined that the root cause investigation for that event had focused on the most apparent cause of the event and therefore had not identified the location of the rupture disk assembly as a root cause. As a result, relocating the rupture disk assembly was viewed a long-term corrective action that they planned to implement but not as an action that should be completed before startup of Unit 1 to preclude another rupture disk event. The licensee implemented extensive improvements to the root cause investigation and corrective action program during the extended shutdown as prescribed in their LaSalle Station Restart Plan. In addition, the Nuclear Oversight organization conducted a review of the adequacy of previous root cause investigations during the extended shutdown and did not identify any significant problems. However, the August 1996 rupture disk event was not included in the sample for that review.

The inspectors determined that this event, although presenting potential challenges to personnel industrial safety, was not significant with respect to plant safety. Subsequent to the event, the licensee performed modifications to the RCIC system and returned it to service prior to the expiration of the TS LCO allowed outage time. The RCIC system is designed to ensure adequate core cooling in the event of a reactor isolation accompanied by a loss of feedwater flow. However, the RCIC system is redundant to the emergency core cooling system.

The licensee failed to implement all pertinent identified corrective actions following the August 1996 event, including relocation of the rupture disk assembly in the turbine exhaust line, in sufficient time to preclude another actuation in September 1998. However, the RCIC system is not a safety-related system at LaSalle and is not subject to enforcement action consistent with the NRC enforcement policy.

c. Conclusions

The licensee did not perform adequate corrective actions to address an event in August 1996 during which the rupture discs on the Unit 1 RCIC system actuated. Consequently, the RCIC rupture discs actuated on September 17, 1998, during a test. The licensee implemented several corrective actions, but considered relocation of the rupture disk assembly as a long-term corrective action that they planned to implement during the next refueling outage. They did not consider this an action that needed to be completed before startup of Unit 1 to preclude another rupture disk event. Consequently, the RCIC rupture discs actuated again on September 17, 1998. The root cause evaluation performed by engineering personnel following the September 17, 1998, event was detailed and thorough and corrective actions were appropriate.

E2.2 Untimely Revision to Valve Stroke Time

a. Inspection Scope (37551)

The inspectors reviewed the licensee's response to the failure of 1A RHR pump minimum flow valve to open within the required time during testing.

b. Observations and Findings

As discussed in Section O4.3, the 1A RHR minimum flow valve did not operate acceptably during a test. During the subsequent review of the test failure, the licensee determined that the IST coordinator was evaluating increasing the open stroke time requirement as the valve had stroked near the 11 second limit on several previous tests. Also, the valve had opened in 11.1 seconds in January 1997 during a post-maintenance test. The engineering analysis following the January test included corrective actions which indicated that the site engineering modification engineer would evaluate revising the required opening time to support a longer opening time. However, this evaluation was not performed and engineering personnel had not revised stroke time requirements for this valve. Timely completion of this action could have precluded this valve stroke test being documented as a failure and eliminated the resultant distraction to plant personnel.

c. Conclusions

Engineering personnel had not revised stroke time requirements for an RHR minimum flow valve contrary to their intent following a test failure. Timely completion of this action could have precluded this valve from being documented as a failure during a subsequent stroke time test and eliminated the resultant distraction to plant personnel.

**E8 Miscellaneous Engineering Issues (92902)**

- E8.1 (Closed) URI 50-373/374-98019-05: Incorrect piping configuration used in calculation in support of a design change to address NRC Generic Letter 96-06 issues.

In NRC Inspection Report 50-373/98019(DRP); 50-374/98019(DRP), the inspectors discussed a calculation performed by the licensee in response NRC Generic Letter 96-06 to address a potential overpressurization condition. Specifically, the licensee identified that a calculation on the RHR system was incorrect and the inspectors were concerned about the potential impact to the operability of the RHR system. Also, the inspectors were concerned about other potential calculation errors related to the licensee's response to GL 96-06. The inspectors reviewed the licensee's operability evaluation completed during this inspection period and did not identify any concerns. The extent of condition review was in progress and was effective in identifying an additional calculation requiring enhancement. An operability evaluation was completed satisfactorily for the additional calculation which required a revision. This issue is closed.

- E8.2 (Closed) LER 50-373/98016-00: Flow Biased Average Power Range Monitor (APRM) Reactor Scram and Rod Block Monitor (RBM) Setpoints Found to be Incorrect.

On August 23, 1998, a qualified nuclear engineer noted that rod block alarms appeared to be set abnormally high and determined that the APRM flow biased rod block and scram setpoints and the RBM setpoints were incorrect. This issue was discussed in NRC Inspection Report 50-373/98019(DRP); 50-374/98019(DRP), Section E4.2, and resulted in a non-cited violation. Additional corrective actions specified in the LER not previously reviewed by the inspectors included procedural changes. The licensee revised procedures to require that independent verification be performed for calculations in procedures used for adjusting plant components that could affect nuclear safety or plant reliability. All procedures identified requiring revision were revised or have been placed on administrative hold until the required changes have been implemented. This issue is closed.

## IV. Plant Support

### **R4 Staff Knowledge and Performance in Radiological Protection and Chemistry (RP&C)**

#### **R4.1 General Comments**

##### **a. Inspection Scope (71750)**

The inspectors observed the radiation protection (RP) personnel in the performance of their duties during maintenance and testing activities.

##### **b. Observations and Findings**

Radiation protection personnel were cognizant of plant radiological conditions and performed their work acceptably. An RP technician was present for the testing of the RCIC system (see Section O2.1). When the rupture discs relieved during the test, the RP technician isolated the area and took appropriate action to assess and identify the extent of the contamination resulting from the steam release. In addition, the inspectors noted that the RP coverage of the maintenance activity involving the relocation of the RCIC rupture discs were thorough. The RP technicians ensured that all personnel present were cognizant of the various dose rates in the work area.

##### **c. Conclusions**

Radiation protection technicians provided effective coverage during routine activities and during the testing and work involving the RCIC system. This resulted in a minimization of personnel radiation exposure and no personnel contaminations following the rupture discs actuation.

### **R8 Miscellaneous RP&C Issues (92904)**

#### **R8.1 (Closed) VIO 50-373/374-97007-05: Improper labeling of potentially contaminated tygon tubing.**

As stated in a letter dated September 29, 1997, in response to the subject violation, the licensee properly labeled the potentially contaminated tubing. In addition, the licensee conducted a walkdown of the Unit 1 and Unit 2 reactor and turbine buildings to identify and properly mark additional instances of unmarked tygon hose or tubing.

Furthermore, the licensee's Nuclear Generating Employee Training and Advanced Radiation Worker Training were enhanced to include labeling requirements for tygon hoses and tubing. The licensee's corrective action was effective and no further instances of improperly marked tubing were identified by the inspectors. This violation is closed.

## **S2 Status of Security Facilities and Equipment**

### **S2.1 General Comments**

#### **a. Inspection Scope (71750)**

The inspectors performed a walkdown of the station's North Access Facility (NAF). In addition, the inspectors discussed personnel ingress/egress and personnel security with the licensee.

#### **b. Observations and Findings**

The licensee reactivated the NAF on October 5, 1998, to support the personnel traffic being utilized for the Unit 2 outage. The general integrity of the protected area barriers and the physical security provisions were adequate. The inspectors did not identify any deficiencies in the physical security provisions established at the facility.

#### **c. Conclusions**

The inspectors did not identify any concerns with the security provisions at the licensee's recently reactivated NAF.

## **V. Management Meetings**

### **X1 Exit Meeting Summary**

The inspectors presented the results of these inspections to licensee management listed below at an exit meeting on October 9, 1998. The licensee acknowledged the findings presented. The inspectors asked the licensee if any materials examined during the inspection should be considered proprietary. The licensee identified none.

## PARTIAL LIST OF PERSONS CONTACTED

### ComEd

- \*C. Crane, Vice President, BWR Operations
- \*F. Dacimo, Site Vice President
- T. O'Connor, Plant Manager
- \*G. Campbell, Unit 1 Engineering Manager
- W. Riffer, Nuclear Oversight Manager
- G. Heisterman, Unit 1 Maintenance Manager
- D. Sanchez, Site Training Manager
- D. Boone, Site Support Manager
- D. Farr, Unit 1 Operations Manager
- \*P. Barnes, Regulatory Assurance Manager
- R. Palmieri, System Engineering Supervisor
- J. Pollock, Support Engineering Supervisor
- \*E. Connell, Design Engineering Supervisor
- G. Putt, Work Control Supervisor
- T. Halliday, Unit 1 Health Physics Supervisor
- D. Bowman, Chemistry Supervisor
- \*R. Stachniak, Nuclear Oversight Assessment Manager
- \*R. McConnaughay, Shift Operations Supervisor

\* Present at exit meeting on October 9, 1998

## INSPECTION PROCEDURES USED

IP 37551	Onsite Engineering
IP 61726	Surveillance Observation
IP 62707	Maintenance Observation
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92700	Onsite Follow-up of Written Reports of Nonroutine Events
IP 92901	Followup - Plant Operations
IP 92903	Followup - Engineering
IP 92904	Followup - Plant Support

## ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Closed

50-373/374-97007-05	VIO	Improper labeling of potentially contaminated tygon tubing
50-373/374-98010-01	VIO	Failure to perform an apart-in-time independent verification when removing out-of-service tags
50-374/98001-00	LER	Unit 2 "B" Reactor Protection System(RPS) Motor-Generator (MG) Set Trip D Subcomponent Failure In MG Set Protective Circuitry
50-373/98015-00	LER	Manual Reactor Scram following Level Control Transient
50-373/98016-00	LER	Flow Biased Average Power Range Monitor Reactor (APRM) Scram and Rod Block Monitor (RBM) Setpoints Found to be Incorrect.
50-373/374-98019-05	URI	Incorrect piping configuration used in calculation in support of a design change to address NRC Generic Letter 96-06 issues.

### Discussed

None



## LIST OF ACRONYMS USED

APRM	Average Power Range Monitor
ASME	American Society of Mechanical Engineers
DRP	Division of Reactor Projects
FME	Foreign Material Exclusion
HPCS	High Pressure Core Spray
IDNS	Illinois Department of Nuclear Safety
IR	Inspection Report
IFI	Inspection Follow-up Item
IST	Inservice Testing
LAP	LaSalle Administrative Procedure
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LOP	LaSalle Operating Procedure
LOS	LaSalle Operating Surveillance
LPCI	Low Pressure Coolant Injection
MG	Motor Generator
NAF	North Access Facility
NCV	Non-Cited Violation
NGG	Nuclear Generator Group
NO	Nuclear Oversight
NRC	Nuclear Regulatory Commission
NSWP	Nuclear Station Work Procedures
OOS	Out-of-Service
PIF	Problem Identification Form
PDR	NRC Public Document Room
RBCCW	Reactor Building Closed Cooling Water
RBM	Rod Block Monitor
RCIC	Reactor Core Isolation Cooling System
RHR	Residual Heat Removal
RP	Radiation Protection
RP&C	Radiological Protection & Chemistry
RPS	Reactor Protection System
RT	Radiographic Examination
RWCU	Reactor Water Cleanup
SRI	Strategic Reform Initiative
SRO	Senior Reactor Operator
URI	Unresolved Item
VIO	Violation
VP	Primary Containment Ventilation
WCC	Work Control Center
WR	Work Request