

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-373/89012(DRP); 50-374/89012(DRP)

Docket Nos. 50-373; 50-374

Licenses No. NPF-11; NPF-18

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle Site, Marseilles, IL

Inspection Conducted: April 25 through June 9, 1989

Inspectors: R. Lanksbury
R. Kopriva
D. Jones
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Approved By: *W D Shafes for*
J. J. Harrison, Chief
Reactor Projects Section 1B

6-20-89
Date

Inspection Summary

Inspection on April 25 through June 9, 1989 (Reports No. 50-373/89012(DRP); 50-374/89012(DRP))

Areas Inspected: Routine, unannounced inspection conducted by resident and regional inspectors of licensee actions on previous inspection findings; operational safety; surveillance; maintenance; training; Licensee Event Reports; ESF system walkdowns; temporary instruction; spent fuel pool activities; security; and onsite followup of events at operating power reactors.

Results: Of the eleven areas inspected, there was one violation identified. During this inspection period, there were 6 Emergency Notification System (ENS) notifications, one of which was a courtesy call for a problem with the fast cold start of the emergency diesel generators (EDGs). Two ENS calls pertained to entering and exiting Technical Specification 3.0.3 for having 5 inoperable EDGs. The remaining 3 ENS phone calls all concerned the Reactor Core Isolation Cooling (RCIC) system, all of which were different problems with the RCIC system. The one violation identified dealt with the reactor building ventilation isolation dampers and is addressed in detail in paragraph 12 of this report. During this inspection period the modifications to the spent fuel pool to incorporate the use of high density racks continued with resolution of problems associated with the seismic analysis of the racks apparently resolved. The Maintenance Inspection Team completed their

inspection and identified several significant problems. One dealt with the testing of the EDGs (two concerns) as discussed above and resulted in all 5 EDGs being inoperable and the licensee having to request discretionary enforcement in order to prevent shutting down both units. The second dealt with the licensee's handling of a Part 21 on melamine torque switches in Limitorque valve operators. This issue resulted in the licensee preparing a justification for continued operation (JCO) to allow continued operation of both units. Enforcement actions with relation to both of the above issues is documented in the Maintenance Inspection Teams report (373/89010; 374/89010).

The resident inspectors do have a concern associated with the licensee's engineering and technical staff as it relates to supporting the operational staff and the balance of the plant. There were several issues (inadequate testing of the EDGs, Part 21 on melamine torque switches, and concerns with the reactor building ventilation dampers) identified in this report in which the technical staff appears to not have aggressively pursued root cause analysis of problems, corrective actions for problems, and adequacy of testing of systems. Management needs to vigorously pursue resolution of this.

DETAILS

1. Persons Contacted

*G. J. Diederich, Manager, LaSalle Station
*W. R. Huntington, Technical Superintendent
*J. C. Renwick, Production Superintendent
D. S. Berkman, Assistant Superintendent, Work Planning
J. V. Schmeltz, Assistant Superintendent, Operations
J. Walkington, Services Director
T. A. Hammerich, Regulatory Assurance Supervisor
W. E. Sheldon, Assistant Superintendent, Maintenance
J. H. Atchley, Operating Engineer
W. Betourne, Quality Assurance Supervisor
M. G. Santic, Master Instrument Mechanic
*W. J. Marcis, Site BWR Engineering Supervisor
*J. Borm, Quality Assurance
*W. Kirchhoff, Assistant Technical Staff Supervisor
*J. Ahlman, Regulatory Assurance
*J. Roman, Resident Engineer, Illinois Department of Nuclear Safety
*C. Sprunger, Technical Staff

*Denotes personnel attending the exit interview on June 9, 1989.

Additional licensee technical and administrative personnel were contacted by the inspectors during the course of the inspection.

2. Licensee Action on Previous Inspection Findings (92701)

(Closed) Violation (373/85024-02(DRP)): Failure to follow procedure while returning an instrument to service resulting in a reactor scram. Corrective actions taken in October 1985 consisted of disciplinary action to the individual involved and discussion of the event with the Instrument Maintenance Department personnel. This item is considered closed.

(Closed) Unresolved Item (374/85012-05): Miswired switch in the automatic depressurization system caused a Channel B trip. The review of the licensee's corrective actions for the identical Unit 1 item, 373/85012-05, was documented in Inspection Report 86-17. This item was inadvertently overlooked and is now considered closed.

(Closed) Open Items (373/85019-02; 374/85021-04): Provide a method of documenting the relief valve setpoint of hydrostatic test equipment. The licensee issued Nuclear Station Work Procedure NSWP-M-05, Revision 0, Pressure Testing, which requires recording of the set pressure and valve serial number (Par 6.4.1.7) of temporary relief valves on the Pressure Testing Checklist. This item is closed.

(Closed) Open Item (374/85025-02): Proper closure of reference sketches for Engineering Change Notices (ECN's). The licensee found that the necessary design information in the reference sketch was incorporated on the design drawings. Design details were called out

on a particular drawing by using typical detail or descriptive notes and symbols. This item is closed.

(Closed) Open Items (373/85038-01; 374/85039-02): LOA-VP-03 or other administrative controls to prevent overpressurizing VG or VQ system during containment venting following an accident. The licensee performed an investigation and determined that their procedures would allow primary containment integrity to be re-established following venting. The licensee's analysis found that the 26 inch vent valves would remain operable/cyclable at 60 psig primary containment emergency venting pressure. This item is closed.

(Closed) Open Item (374/85039-01): Missed Residual Heat Removal (RHR) SW samples. Personnel error follow corrective actions outlined in Licensee Event Report (LER) LER 85-047. The licensee completed corrective actions associated with the LER in September 1986. Corrective actions included training on the event which stressed the importance of proper shift turnovers. This item is closed.

(Closed) Open Item (374/85039-05): Missed sample of the residual heat removal service water system. This was a personnel error. Open item assigned to track corrective action as outlined in the LER. The licensee completed corrective actions associated with the LER in September 1986. Corrective actions included training on the event which stressed the importance of proper shift turnovers. This item is closed.

(Closed) Open Item (374/85039-06): Followup investigation into spurious vacuum breaker cycling. The licensee performed an investigation covering cycling requirements, periodic testing, setpoint adjustment and instrumentation. It was determined that no corrective action was necessary since the vacuum breaker is required to cycle and equalize any differential pressure between the suppression pool and drywell. This item is closed.

(Closed) Open Items (373/86007-06; 374/86008-04): Improvements to the F/W system to provide better level control during start-ups and shutdowns. The licensee completed modifications which included motorized feedwater regulation valve isolation valves, and low flow bypass lines. This item is closed.

(Closed) Open Item (373/86033-01): Licensee to evaluate means of resetting RWCU relief valves such that they would not lift as received from vendor. The licensee revised procedure LMP-RT-03, Revision 1, Repair of RWCU Heat Exchanger 1 1/2 inches x 2 1/2 inches Relief Valves, to change the methodology of setting the setpoint. Operating pressure at the discharge of the RWCU pump is 1200 psi.

Valve set pressure is 1425 psig \pm 42 psi and since the valve is not a true pop type relief, it will start to weep at 90% of set pressure (approximately 1285 psi). Long term corrective action includes replacement of the valves with a pop type relief (one that will not weep) as the valves wear-out. This item is closed.

(Closed) Open Item (374/86034-02): Change to LAP-240-6 to better control wiring diagrams and post-installation testing. The inspector reviewed LAP-240-6, Revision 18, Temporary System Changes (TSCs). The procedure requires the use of station wiring diagrams when making electrical temporary system changes. Additionally, the Shift Engineer is directed to determine if additional post installation tests are required, to verify the TSC accomplishes its purpose, and to verify the effect on nearby systems. This item is closed.

(Closed) Open Items (373/86046-03; 374/86046-05): Licensee is evaluating the actions to be taken when using the manual operator on valves with a limitorque operator. The licensee completed its evaluation and modified procedure LAP-1600-2, Conduct of Operations, to provide more specific guidance in the manual operation of remote motor operated valves. LAP-1600-2, Paragraph F.1.ad.10 states that when a motor operated valve is closed using the handwheel, it is considered incapable of being remotely actuated. The valve must be hand cranked off its seat prior to remote operation. This item is closed.

(Closed) Open Item (373/89008-01(DRP)): Completion of investigation of the failure of the 1VR05YA damper on April 5 and 19, 1989, and resolution of inspector questions. The licensee has completed their investigation into the failures and the inspector has completed a review of these events. The review of these events has resulted in a violation. The detail of this are contained in Paragraph 12 of this report. This item is closed.

3. Operational Safety Verification (71707)

- a. The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators during the inspection period. The inspectors verified the operability of selected emergency systems, reviewed tagout records, and verified proper return to service of affected components. Tours of Unit 1 and 2 reactor, auxiliary, and turbine buildings were conducted to observe plant equipment conditions. These tours included checking for potential fire hazards, fluid leaks, and excessive vibrations, and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspectors, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the station security plan. This included verification that the appropriate number of security personnel were on site; access control barriers were operational; protected areas were well maintained; and vital area barriers were well maintained. The inspector verified the licensee's radiological protection program was implemented in accordance with the facility policies and programs and was in compliance with regulatory requirements.
- b. The inspectors performed routine inspections of the control room during off-shift and weekend periods; these included inspections between the hours of 10:00 p.m. and 5:00 a.m.. The inspections

were conducted to assess overall crew performance and, specifically, control room operator attentiveness during night shifts. The inspectors also reviewed the licensee's administrative controls regarding "Conduct of Operations" and interviewed the licensee's security personnel, shift supervisors and operators to determine if shift personnel were notified of the inspectors' arrivals onsite during off-shifts.

The inspectors determined that both licensed and non-licensed operators were attentive to their duties, and that the inspectors' arrivals on site appeared to have been unannounced. The licensee has implemented appropriate administrative controls related to the conduct of operations. These include procedures which specify fitness for duty and operator attentiveness.

- c. On May 2, 1989, at approximately 8:00 a.m. (CDT), a member of the NRC Maintenance Team on site informed the Senior Resident Inspector (SRI) that an Emergency Diesel Generator (EDG) surveillance test, LOS-DG-SA3 (1B (2B) Diesel Generator Operability Test With Response Time), that he had observed on May 1 did not appear to fully comply with the required Technical Specification (TS) surveillance testing. In addition, his review of the EDGs indicated that one of the required 18 month TS surveillances may not have been adequate. LOS-DG-SA3 is performed to satisfy TS 4.8.1.1.2.a.4 and 5 requirements to semi-annually (once per 184 days) verify that the 1B and 2B EDGs can be started from ambient conditions and can accelerate to rated speed, voltage, and frequency within 13 seconds and can then be synchronized and loaded to greater than or equal to 2600 KW within 60 seconds. The surveillance procedure, however, required the EDG to be started and run for an unspecified period of time and then shutdown prior to doing the start to satisfy the TS timing requirements. At 3:50 p.m., after discussion with the licensee, the SRI informed the licensee that he considered all 5 EDGs to be inoperable due to lack of a current TS required surveillance and that they were, therefore, in TS 3.0.3 which required that within 1 hour action be initiated to be in startup within 6 hours, Hot Shutdown within the following 6 hours, and Cold Shutdown within the following 24 hours for both units. Subsequent to this the licensee requested a conference call with Region III. During the call the licensee requested discretionary enforcement to allow them time to perform the surveillance testing of the EDGs prior to having to enter the TS action statement. The Region approved discretionary enforcement for a period of 12 hours from May 2 at 5:00 p.m. until May 3 at 5:00 a.m. to allow the ambient quick starts of the EDGs to be performed.

On May 2 at approximately 5:25 p.m., the licensee commenced the ambient quick start testing of the EDGs. The testing of the last EDG was completed on May 3 at 4:08 a.m.. In all cases the ambient quick starts were successful, however, the last EDG to be tested, 2B, failed to stop from both the control room and the local panel even when the emergency stop button was pushed. The licensee subsequently stopped the EDG by manually racking out the fuel rack. At 4:15 a.m., the 2B EDG was declared inoperable

for this reason. The licensee investigated the cause of the failure and initially believed it to be a problem with a solenoid in the stop mechanism. Upon completion of their investigation, the licensee found that the solenoid in the stop mechanism was the problem. The licensee repaired the solenoid and after testing the trip mechanism declared the 2B EDG operable.

A second problem identified by the Maintenance Team inspector dealt with the licensee's failure to test a contact in the EDG lockout relay that automatically bypasses certain EDG trip signals upon receipt of an Emergency Core Cooling System (ECCS) actuation signal. The Region extended the length of the discretionary enforcement until May 3 at 5:00 p.m. to allow the licensee sufficient time to write a test procedure and to test the contacts in question. Subsequently, the licensee successfully completed all testing of the relays.

On May 2 at 8:14 p.m. the licensee made a courtesy Emergency Notification System (ENS) notification that indicated that there was a discrepancy in the testing methodology for the EDG start testing. The licensee did not indicate that all 5 EDGs were inoperable.

On May 3 at 10:50 a.m. the licensee made an ENS notification informing the NRC duty officer that they had declared all the EDGs inoperable and were in Technical Specification 3.0.3 which requires that the plant start a controlled shut down. The licensee informed the duty officer of the discretionary enforcement action approved by Region III. At 3:50 p.m. on May 3 the licensee made an ENS update notification informing the NRC that the EDG testing had been completed satisfactorily.

Enforcement action on this issue is being pursued by the maintenance team that found this problem and their findings can be found in Inspection Report 373/89010; 374/89010.

- d. On May 15, 1989, at 6:03 p.m. (CDT), the licensee noted that when they started the Unit 1 A Residual Heat Removal (RHR) system in suppression pool cooling mode that the common (0) Emergency Diesel Generator (EDG) cooling water pump breaker did not close to allow the pump to start. After approximately a 30 second wait, the operator made a second attempt to start the cooling water pump. This attempt was successful. However, the licensee declared the cooling water pump inoperable until the cause of the original failure to start could be determined. With the 0 EDG cooling water pump inoperable the Division 1 Emergency Core Cooling Systems (ECCS), the 0 EDG, and the Reactor Core Isolation Cooling (RCIC) systems for both units were considered inoperable since the cooling water pump provides cooling for the Unit 1 and 2 Low Pressure Core Spray (LPCS) motor coolers, the Unit 1 and 2 RCIC room coolers, the 1A and 2A RHR room coolers, as well as the 0 EDG.

At 8:00 p.m., the licensee started the Unit 2 LPCS pump to mix the suppression pool and to test the Unit 2 auto start relay for

the 0 EDG cooling water pump. The 0 EDG cooling water pump started as required, thus verifying that the Unit 2 auto start relay worked satisfactorily. Based upon this the licensee declared the Unit 2 RCIC, LPCS, A RHR, and 0 EDG functions to be operable. At 9:37 p.m., the licensee made the required four hour Emergency Notification System (ENS) notification for the Unit 1 RCIC system being inoperable. The licensee subsequently removed the 0 EDG cooling water pump breaker for inspection and testing. The inspection revealed several pitted contacts in the breaker closing circuitry that prevented the breaker from closing on the initial attempt. The breaker was repaired, reinstalled, and tested to verify proper operation. On May 16 at 4:00 a.m., the licensee declared the Unit 1 RCIC, Division 1 ECCS, and the Unit 1 functions of the 0 EDG to be operable.

- e. On May 15, 1989, at 9:56 p.m., the licensee received a Unit 1 Reactor Core Isolation Cooling (RCIC) system high steamline flow isolation signal. At the time of the event, the Unit 1 RCIC system was already inoperable and the licensee was in the process of returning the system to normal valve lineup after completing a routine system surveillance LIS-RI-301, Unit 1 Steam Line High Flow RCIC Isolation Functional Test. The operator was cracking open the outboard isolation valve, 1E51-F008, to warm the steamline and sufficient steam flow was apparently admitted to cause the high steam flow isolation signal to occur. The licensee reset the isolation signal and at 10:45 p.m. returned the RCIC system to normal status. At 11:45 p.m., the licensee made the required Emergency Notification System (ENS) notification. The licensee is reviewing options to prevent recurrence of this event. Because there have been several isolations of various systems due to high flow signal actuations, the resident inspectors are interested in the licensee's investigation and resolution of this subject. The residents will, therefore, be following the licensee's actions on this item.

- f. On May 17, 1989, the Maintenance Inspection Team identified a potential problem with the licensee's handling of a Part 21 issued by Limatorque Corporation on November 3, 1988, regarding reported failures of Melamine torque switches installed in some Limatorque motor operators. Of primary concern was the licensee not recognizing the issue as a potential Environmental Qualification (EQ) deficiency and, therefore, implementing the requirements of Generic Letter 88-07, Modified Enforcement Policy Relating to 10 CFR 50.49, Environmental Qualification of Electrical Equipment Important to Safety For Nuclear Power Plants. The licensee's engineering group was in the process of assessing the impact and validity of the Part 21 report but, as of May 18, had not made a prompt determination of operability nor established a justification for continued operation as discussed in the Generic Letter. The licensee's engineering group indicated that this had not been done because they did not believe the issue to be EQ related. A total of approximately 90 motor operated valves were affected.

Subsequent to the identification of the potential problem, after several meetings with the licensee, it was determined that the issue at least needed to be treated as a potential EQ deficiency. Therefore, the licensee needed to make a prompt determination of operability, take immediate steps to establish a plan with a reasonable schedule to correct the deficiency, and establish a justification for continued operation (JCO) of Units 1 and 2. The licensee was also informed that they needed to review this problem at their other 5 facilities and take the same actions. The licensee had a JCO for LaSalle by 10:00 p.m. (CDT) on May 19, 1989. The maintenance team that discovered this concern followed the licensee's actions and have investigated any potential enforcement actions pertaining to this issue. These are documented in Inspection Report 373/89010; 374/89010.

- g. On May 29, 1989, at approximately 8:45 p.m. (CDT), Unit 1 received a 250 VDC system ground alarm. The licensee commenced trouble-shooting in accordance with their ground isolation procedure (LOP-DC-03, 250 VDC System Ground Location and Isolation). As part of LOP-DC-03, the Unit 1 250 VDC system was cross-tied with Unit 2. When an attempt was made to close the main feed breaker (121Y) to the Reactor Core Isolation Cooling (RCIC) system, as part of uncross-tying Unit 1 and 2, the breaker failed to reclose. In response to this, the licensee secured the RCIC system by stopping the water leg pump and closing all AC and DC valves. The Unit 1 and 2 250 VDC systems were then uncross-tied. The RCIC system was declared inoperable at 8:51 p.m.. The licensee made the required 4 hour Emergency Notification System (ENS) notification at 10:38 p.m. on May 29, 1989. Inspection of the breaker revealed that a portion of the closing mechanism had warped and was preventing the breaker from being closed. The damaged parts were replaced and the breaker tested and returned to service on May 30 at 6:05 a.m.. The licensee could not find any obvious ground associated with the breaker. Upon placing the breaker back in service the ground disappeared. After successful completion of testing, the breaker and the RCIC system were returned to service.

No violations or deviations were identified in this area.

4. Monthly Surveillance Observation (61726)

The inspectors observed Technical Specification required surveillance testing and verified for actual activities observed that testing was performed in accordance with adequate procedures. The inspectors also verified that test instrumentation was calibrated, that Limiting Conditions for Operation were met, that removal and restoration of the affected components were accomplished and that test results conformed with Technical Specification and procedure requirements. Additionally, the inspectors ensured that the test results were reviewed by personnel other than the individual directing the test, and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspectors witnessed portions of the following test activities:

LOS-DG-SA1 Units 1 & 2 Diesel Generators Simultaneous Start Test
LOS-DG-SA2 Units 1 & 2 'O' Diesel Generator Action Statement
Operability Test
LOS-DG-SA3 1A(2A) Diesel Generator Action Statement Operability Test
LOS-SC-Q1 Unit 1 Standby Liquid Control Pump Operability/Inservice
Test and Explosive Valve Continuity Check
LIS-NB-405B Unit 2 Reactor High Pressure Scram Channels B and D
Monthly Functional Test

On June 9, 1989, at 9:33 p.m. (CDT), the Reactor Core Isolation Cooling (RCIC) system outboard steam isolation valve (1E51-F008) controller tripped on thermal overload while the licensee was attempting to restore the RCIC steam supply to its normal configuration. The licensee had just completed routine surveillance LIS-RI-101, Unit 1 Steam Line High Flow RCIC Isolation Calibration, when the event occurred. The licensee made the required 4 hour Emergency Notification System (ENS) notification at 11:45 p.m..

Investigation by the licensee revealed that the stem nut on the valve had galled threads with small pieces broken loose that were jamming the stem. In addition, the grease in the motor operator had been cooked. The cause of this appears to have been a packing leak. The licensee repaired the valve, replaced the grease in the motor operator, and tightened the packing nut. The valve was subsequently tested and the RCIC system returned to service and declared operable on June 12, 1989, at 1:00 a.m..

No violations or deviations were identified in this area.

5. Monthly Maintenance Observation (62703)

The monthly maintenance observations for this inspection period were performed by the maintenance team during their time on site. The results of their inspection are documented in Inspection Report 373/89010; 374/89010.

6. Training (41400)

The inspector, through discussions with personnel, evaluated the licensee's training program for operations and maintenance personnel to determine whether the general knowledge of the individuals was sufficient for their assigned tasks.

No violations or deviations were identified in this area.

7. Licensee Event Reports Followup (93702)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent

recurrence had been accomplished in accordance with Technical Specifications.

The following reports of nonroutine events were reviewed by the inspectors. Based on this review it was determined that the events were of minor safety significance, did not represent program deficiencies, were properly reported, and were properly compensated for. These reports are closed:

373/89013-00 - Suppression chamber high level alarm exceeded due to procedural inadequacy.

374/89004-01 - 2A residual heat removal minimum flow bypass switch found greater than reject limit during surveillance testing. This is a revision of this LER pertaining to the results of the disassembly of the SOR switch.

No violations or deviations were identified in this area.

8. ESF System Walkdown (71707)

The operability of selected engineered safety features was confirmed by the inspectors during walkdown of the accessible portions of the following systems. The following items were considered during the walkdowns: verification that procedures match the plant drawings, equipment conditions, housekeeping, instrumentation, valve and electrical breaker lineup status (per procedure checklist), and verification that items including locks, tags, and jumpers were properly attached and identifiable. The following systems were walked down this inspection period:

Unit 1 - 0, 1A, 2A Emergency Diesel Generator
Unit 1 - High Pressure Core Spray
Unit 2 - Standby Gas Treatment System

No violations or deviations were identified in this area.

9. Temporary Instructions (25017, 25599, 255100)

a. (Closed) TI 2500/17 - "Inspection Guidance For Heat Shrinkable Tubing"

During the inspection period, an inspection was performed to verify that the licensee reviewed IE Information Notice (IN) 86-53, Improper Installation of Heat Shrinkable Tubing, for applicability on EQ terminations and electrical splices. 10 CFR 50.49 requires that electrical equipment important to safety that may be exposed to a harsh environment during an accident, be qualified to perform the safety function.

The inspector verified that the licensee's actions in response to IN 86-53 satisfactorily addressed the major areas of concern involving improper installation of heat shrinkable tubing manufactured by Raychem and discrepancies found in Okonite taped splices. The inspector reviewed the applicable documentation

regarding the licensee's approach to resolving the above discrepancies. Raychem splices with less than the manufacturer's recommended overlap lengths were taped over with Okonite tape and Raychem splices on Kapton wire that were installed without the shim required by the Raychem criteria were de-terminated and reinstalled. Qualification testing of various Raychem and Okonite field installed non-normal configurations, as well as more deficient configurations, were performed at Wyle Laboratories. The inspector reviewed EQ binder no. EQ-LS028, Work Request L59133, Cable Acceptance and Repair Procedure LEP-GM-112, Wyle Laboratories Test Reports 17852-2, 17856-P-1, 17856-2, 17856-3, 17864-1, and 17864-2, Cable Terminations and Taping Procedure LEP-GM-113, and Raychem Heat Shrink Installation Procedure LEP-GM-136, Revision 2.

The inspector discussed the above issues with the licensee. The licensee took a conservative approach in mid 1986 to correcting these discrepancies by immediately starting repairs in the plant and also contracting Wyle to test the as-installed non-normal configurations, as well as more severely deficient specimens. Test anomalies resulting from the Wyle test were reviewed by the inspector and found acceptable. Raychem Heat Shrink Installation Procedure LEP-GM-136 was subsequently modified to incorporate the manufacturer's installation procedures. This procedure is required to be followed for any future Raychem splice installations per EQ binder no. EQ-LS028.

The inspector discussed the training received by the installers and QC personnel regarding the installation method for Raychem heat shrink tubing and termination kits and found it to be acceptable. LEP-GM-136, Revision 2, has QC hold points to verify that all steps were satisfactorily completed.

The inspector conducted a field inspection of the Unit 2 Hydrogen Recombiner (2HG01A). Various configurations of Raychem splices taped over with Okonite tape were observed and no discrepancies were identified. The overlap criteria for cable splices using Okonite tape over Raychem heat shrink tubing (CDQ No. 030754, 7/2/86) was properly used.

TI 2500/17 is considered closed.

- b. (Closed) TI 2515/99 - Inspection of Licensee's Implementation of Requested Actions of NRC Bulletin 88-07, BWR Power Oscillations.

The purpose of this instruction was to verify that licensee's have satisfactorily completed the actions requested in NRC Bulletin No. 88-07, Power Oscillations in Boiling Water Reactors.

In preparation for the inspection several reports were reviewed, among them the current reactor core reloads, the AIT Report on LaSalle's core oscillations, copies of Generic Letters 86-02, 86-09, Information Notice No. 88-39, and Bulletin No. 88-07, all pertaining to reactor core power oscillations.

The inspection required several interviews, review of procedures and training, and a tour of the control room. The following are the questions stated in the temporary instruction requirements and their corresponding answers:

- Q1. Verify, by interviews, that Shift Technical Advisors (STAs), Senior Reactor Operators (SROs,) and Reactor Operators (ROs) have been thoroughly briefed regarding the March 9, 1988, event at LaSalle Unit 2.
- A1. All of the operators on shift for both LaSalle units were aware of the circumstances and activities that produced the oscillation event on Unit 2. Also, the remaining shift crews were briefed and trained on all of the details and parameters that lead to the Unit 2 event. The residents attended portions of these briefings.
- Q2. Verify that the licensee has reviewed procedures and training programs and has determined that they are adequate or has implemented changes to make them adequate.
- A2. Several of LaSalle's procedures were revised to reflect the Technical Specification changes which incorporated General Electric's Service Information Letter (SIL) 380 and a requirement to immediately scram (shutdown) the plant if they were to enter the restricted region on the power to flow map. The Technical Specification requirement to immediately scram the plant has recently been revised to delete that requirement since the completion of the second refueling outage. However, the procedure requirement is still in place.

The licensee had a program developed for the LaSalle simulator to simulate the reactor core power oscillations experienced at the site. The simulator training for the licensed personnel at the plant has included training on the oscillation event.

- Q3. Review the licensee's evaluation of procedures and training programs to assure the following:
- Q3.a. Procedures should provide for prompt corrective action to terminate power oscillations observed in the detect and suppress region of the operating map. Experience has indicated that rod insertion should effectively terminate oscillations due to marginal instability within about two minutes; otherwise scram may be prudent.
- A3.a. The inspectors have reviewed the licensee's revised procedures in which the procedures do reflect prompt operator action for mitigating and terminating potential power oscillations.

- Q3.b. Procedures should identify and compensate for deficiencies in control room instrumentation used for operator decisions. Instrumentation deficiencies identified in the AIT inspection report should be addressed in the evaluation by the licensee.
- A3.b. The licensee has revised their procedures such that the Average Power Range Monitors (APRM) recorders are left in the fast response position so that the Nuclear Station Operators (NSO's) will have a better knowledge of possible reactor core power changes. Also, there is a predetermined group of control rods that can be selected for which certain Local Power Range Monitors (LPRM's) meters can be monitored. These would aid the NSO in ascertaining if there would be any out-of-phase power fluctuations.
- Q3.c. Technical Specification changes are not required by Bulletin 88-07. However, procedures and Technical Specifications must be consistent.
- A3.c. Technical Specifications at LaSalle were changed after the oscillation event with the procedures reflecting the changes. Since then both Units 1 and 2 have completed refueling outages including new core reload analysis. By mid-March, the Technical Specifications and procedures were again revised incorporating the General Electric SIL 380 instructions into the procedures and Technical Specifications.
- Q3.d. A walk through of pertinent procedures should be executed with control room operators. This will contribute to the evaluation of procedures and training adequacy.
- A3.d. The licensee has programmed their plant specific simulator to simulate the oscillation event. All of the licensed personnel are receiving simulator training on the oscillation event. The inspectors have witnessed portions of this training. The inspectors have reviewed the station procedures with the control room operators and what their responses and responsibilities would be.
- Q4. Verify that procedures and operator training programs have been developed to address uncontrolled power oscillations for conditions of two loop, single loop, and natural circulation operation regardless of calculated decay ratios.
- A4. As stated in answer 3.d., the licensee has had a program developed for their simulator to actually simulate the

oscillation event. Also, a review of the procedures and discussions with the operators indicate that the licensee has changed their training and procedures to incorporate the knowledge and experience learned from the LaSalle oscillation event.

After further review of the licensee's response to Bulletin 88-07, Supplement 1, the NRC has not fully accepted the licensee's response to Item 3. The licensee's revised BWR operating restrictions for regional instabilities state:

The Bulletin supplement states that intentional operation in Regions A or B shall not be allowed. However, Commonwealth Edison Company believes it may be in the interest of overall plant safety to enter these regions in the event of unforeseen problems that challenge vital equipment or fuel (e.g., tripping recirculation pumps in response to mechanical problems or reducing load with recirculation flow to mitigate preconditioning overpower). Once these regions are entered, the appropriate actions will be implemented as outlined in the Bulletin supplement. It should be noted that this interpretation of the restriction on intentional operation is also being generically pursued by the BWR Owners Group (BWROG) with NRR.

The NRC's response to the licensee's position is as follows:

"It is our position that you cannot unilaterally take this exception. Rather, we require that you adopt for the Dresden, LaSalle and Quad Cities plants the provisions of Supplement 1 without exception and without interpretation. You should note that the provisions required in Supplement 1 to Bulletin 88-07 are interim and will be replaced by the long-term measures to be submitted by the BWROG in mid-1989."

Dialogue between the licensee, the BWROG and the NRC is continuing pertaining to this concern. Since the issue is still ongoing, the residents will follow this issue as open item 373/89012-01, 374/89012-01. The remainder of Bulletin 88-07 and Supplement 1 are closed.

TI 2515/99 is considered closed.

- c. (Closed) Temporary Instruction TI 2515/100 - Proper Receipt, Storage, and Handling of Emergency Diesel Generator (EDG) Fuel Oil

The purpose of this TI was to assess the licensee's program for receipt, storage, and handling of fuel oil and to verify the program implemented satisfies the requirements of the Technical Specifications (TS). The program for purchasing and receiving fuel oil was previously reviewed and was documented in Inspection Reports 373/88015 and 374/88014.

The inspector verified that the licensee has in place procedures for ensuring the operability of the fuel oil system. The day tanks are sampled monthly and after each diesel generator operation lasting one hour or longer and are analyzed for water accumulation per procedures LOS-DG-M1, M2, and M3 "O, 1A, 2A, 1B and 2B Diesel Generator Operability Test". The fuel oil in the storage tanks is tested in accordance with ASTM-D975-77 and analyzed to meet the specifications of ASTM-D270-1975 as required by TS 4.8.1.1.2(c). The licensee has replaced the oil in the storage tanks during both units previous refueling outages to satisfy the requirements of TS 4.8.1.1.2(f) (clean and inspect the tanks every 10 years). The inspector verified that the strainers and filters which are prone to fouling are cleaned and inspected periodically per procedure LMS-DG-01, Main Emergency Diesel Unit Surveillances. The inspector had no concerns with the licensee's program to maintain the fuel oil system.

The inspector discussed the questions contained in Appendix A of this TI with the licensee. The completed questionnaire was forwarded to the Quality Assurance Section of NRR as requested.

TI 2515/100 is considered closed.

One open item was identified in this area.

10. Spent Fuel Pool Activities (86700)

During the report period, the resident inspectors observed the licensee's spent fuel pool and refueling floor activities. The purpose of the observations were to ascertain that the licensee's activities were in conformance with the requirements of the Technical Specifications and Title 10 of the Code of Federal Regulations.

On January 30, 1989, the licensee commenced transfer of all the spent fuel and other materials being stored in the Unit 2 spent fuel pool to the Unit 1 spent fuel pool. This was in preparation for cleaning and removal of the Unit 2 spent fuel racks which are to be replaced by high density spent fuel racks. Transfer of all spent fuel and materials from Unit 2 spent fuel pool to Unit 1 spent fuel pool was completed on February 6, 1989.

Removal of the Unit 2 spent fuel pool racks commenced on April 25, 1989. The initial work effort included cleaning of the fuel pool and old spent fuel racks by divers in the spent fuel pool. Items verified by the resident inspectors during their observations of fuel movements and removal of the old spent fuel racks were:

- ° The spent fuel pool water level was higher than the minimum level established.
- ° The spent fuel pool ventilation system was maintaining the building at the specified negative pressure.

- The spent fuel pool cooling and cleanup system was maintaining pool temperature within the prescribed limits.
- Personnel handling fuel are properly qualified and supervised.
- An accurate record or map of fuel location changes was being maintained.
- Verifying that spent fuel pool activities were being conducted in accordance with approved procedures.
- Radiological and ALARA concerns for the divers in the spent fuel pool.
- Handling and storage of the old spent fuel racks.

The new high density spent fuel storage rack installation is expected to be completed around August 1, 1989. The only problem or anomaly observed during the inspection was the licensee's implementation of a temporary system change to the spent fuel pool ventilation system. The temporary system change allowed all but 5 of the 26 vents to be blocked off. The inspector noted during a tour of the refuel floor that only 3 vents were full open and 2 were partially blocked off with tape. The inspector brought this to the attention of the Shift Engineer who took immediate corrective action to restore the system to the configuration intended by the temporary system change.

No violations or deviations were identified in this area.

11. Security (71707)

- a. The licensee's security activities were observed by the inspectors during routine facility tours and during the inspectors' site arrivals and departures. Observations included the security personnel's performance associated with access control, security checks, and surveillance activities, and focused on the adequacy of security staffing, the security response (compensatory measures), and the security staff's attentiveness and thoroughness. The security force's performance in these areas appeared satisfactory.
- b. On May 18, 1989, at approximately 2:17 p.m. (CDT), the inspector received a telephone call from an onsite Burns security guard who would not identify himself. The security guard wanted to know if it was acceptable for Burns and Commonwealth Edison (CECo) management to intentionally alarm security doors in the plant for the purpose of testing the security guards response to the associated alarm. He indicated that his training was that this was not the proper methodology. Rather than actually alarming the door, he was under the impression that they were supposed to call in the alarm. He indicated that he was personally aware of Burns and CECo management alarming the doors on May 12 and May 18. The inspector indicated that he would consult with the Region III security inspectors on his question,

however, since the caller would not give his name, there would be no way to get a response back to him. The security guard indicated that he would call back and then hung up. The inspector subsequently consulted with the Region III security staff and was told that what the licensee was doing (alarming doors to test guard response) was acceptable and was in fact encouraged. As of the end of this inspection period, the security guard who had called with the question had not called back.

No violations or deviations were identified in this area.

12. Onsite Followup Of Events At Operating Power Reactors (93702)

On April 5, 1989, at 10:10 a.m. (CDT) during a scheduled performance of LaSalle operating surveillance LOS-CS-Q1, Secondary Containment Operability Test, the Unit 1 reactor building ventilation system inboard exhaust damper 1VR05YA failed to close within the 10 second time period required by Technical Specification (TS) 4.6.5.2.c. and specified in the surveillance. The next three attempts also resulted in slow closing times. After the initial failure, the licensee declared damper 1VR05YA inoperable and entered the appropriate TS action statement which required the other isolation damper in the affected penetration be maintained operable and, within 8 hours, that either the inoperable damper be restored to operable status, or the affected penetration be isolated. Since the VR system provides cooling for the steam tunnel, having to isolate the system would ultimately force the unit to shutdown on high steam tunnel temperature. Subsequently, the licensee cycled the damper five additional times, all of which resulted in satisfactory closing times. At 2:00 p.m., the licensee declared damper 1VR05YA operable and exited the TS timeclock. The licensee increased the surveillance frequency for damper 1VR05YA from monthly to weekly, for two weeks, then once biweekly, and then back to monthly.

On April 12, 1989, the first of the increased frequency surveillances was successfully completed. On April 19, 1989, at 10:10 a.m., damper 1VR05YA again failed to cycle during performance of surveillance LOS-CS-Q1. The licensee again declared the damper inoperable and entered the appropriate action statement. Subsequently, the damper was cycled two more times with each closure occurring in 5 seconds or less. Even though the licensee had believed after the first failure on April 5 that mechanical binding at the damper or air actuator were the most likely cause of the slow closing times, based upon not hearing any binding noises and the previous history of slow closure times being caused by the solenoid valves, the licensee decided to replace the solenoid valves. The solenoid valves were replaced on April 19, the damper cycled and demonstrated to close within the required 10 seconds, and was again declared operable prior to the expiration of the 8 hour timeclock.

On April 21, 1989, the solenoid valves from damper 1VR05YA were disassembled and inspected for damage or degradation. While signs of some minor residue was found inside of the valve body, nothing that would cause the valve to fail or stick was noted. This inspection

was witnessed by the inspector. Subsequent to determining that the solenoid valves were not the apparent cause of the previous failures, the licensee decided to replace the damper actuators to ensure continued operability of the damper. On April 24, 1989, both air actuators of damper 1VR05YA were replaced per Work Request (WR) L89255. The removed actuators were disassembled and inspected. During the inspection, clear indications of a mechanism for actuator failure were found. The lubricant in the actuator was found to be degraded, having become gummy in consistency and contaminated with dirt. This would likely cause increased resistance to the actuators' piston movement. The licensee has hypothesized that the warm, dry environment in which the actuators function is a likely contributor to the degradation. Additionally, dirt and particulate matter have access to the actuator intervals through an unused port on the actuator body. This port was designed for a damper speed regulator. However, the licensee has removed the speed regulators from all the actuators because they were found to restrict damper closing time. Since all the VR damper actuators operate in similar environments and all have had the speed regulators removed, it would appear likely that other actuators will fail for the reasons that the 1VR05YA damper actuators failed as noted above. This issue was discussed with the licensee and they have indicated that it is their intention to replace the remaining actuators at the first opportunity, which is likely to be the next scheduled refueling outage (Unit 1 scheduled to commence September 2, 1989, and Unit 2 scheduled to commence March 3, 1990) and then every refueling outage thereafter with this interval subject to review based upon future damper performance. The licensee has also indicated that they are reviewing other options that would resolve having an opening in the actuator body that allows the lubricant to become contaminated.

Further review of the history of the Unit 1 dampers by the inspectors revealed the following. Damper 1VR04YA had previously failed twice (December 17, 1987, and August 23, 1987), damper 1VR04YB had no history of failures, damper 1VR05YA had failed four times (February 2, 1985, September 8, 1988, April 5, 1989, and April 19, 1989), and damper 1VR05YB had failed twice (February 2, 1985, and August 23, 1988). With the exception of the two recent (April 1989) failures of damper 1VR05YA and one failure (August 1988) of damper 1VR04YA, all of the failures were attributed to embrittlement of the diaphragm in the valve. The inspector also noted in a review of the Deviation Reports (DVRs) for these failures that the service life of the solenoid valves was listed as 5 years on some and 3.6 years (or 43 months) on others (the more recent). The inspector questioned the licensee as to the basis for the service life and was informed that it was based upon a September 1979 letter that indicated the service life (as the licensee conservatively interpreted it) was 30,000 hours, or 3.4 years (approximately 41 months). The licensee could not explain where the 5 year service life had come from but believed that the 3.6 years, versus 3.4 years, was the result of a math error. The licensee indicated that they would use 3.4 years as the service life. An analysis of the length of time between failures revealed that in two cases (dampers 1VR05YA and 1VR05YB) that the failure

intervals were 43 months and 42.5 months respectively. The inspectors questioned the licensee about why the solenoid valves were being left in place for the entire length of their service life, and in a number of cases longer, instead of being changed out before that point. The licensee could not provide a response as to previous performance but indicated that the solenoid valves would be replaced during each refueling outage (approximately every 18 months). The inspector also noted that after the failure of damper 1VR04YA on December 17, 1987, the problem was attributed to the upper of the two solenoids on the damper. In DVR 01-01-87-110, the licensee indicated that WRs had been written to rebuild those solenoid valves that had exceeded the recommended service life. These included the bottom solenoid valve for damper 1VR04YA. This work was scheduled to be performed during the next refueling outage. That outage occurred between March 3 and July 8, 1988. The inspector's review of work performed on the dampers during that outage revealed that all of the solenoid valves scheduled to be rebuilt, as noted in DVR 01-01-87-110, were done with the exception of the lower solenoid valve for damper 1VR04YA. Subsequently, that solenoid failed to operate properly on August 23, 1988.

Further review of the history of VR isolation damper problems indicates that after the failure of both the 1VR05YA and 1VR05YB dampers on February 2, 1985, as documented in DVR 1-1-85-28, the licensee committed (see LER 85-008-00) to replace the ASCO HT 8316-65 solenoid valves (which are a commercial grade valve) with a new model, NP 8316-65, which is designed specifically for nuclear power plant conditions. While this component replacement had been scheduled several times, as of the end of this inspection period it had not occurred. The licensee indicated that the replacement is scheduled to occur in each of the units upcoming refueling outages. However, the licensee very recently received a Part 21 from ASCO concerning the rebuild kits used on the new NP series of valves. At the time of this report, it was not clear if this would effect the above schedule.

10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, states in part: Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the conditions is determined and corrective action taken to preclude repetition. The licensee's failure to promptly identify the cause of the failure of the 1VR05YA damper in April 1989, and to take measures to prevent recurrence as discussed above is considered a violation 373/89012-02(DRS).

The inspector's concerns with relation to the above are:

- a. The licensee's declaring the 1VR05YA damper operable on April 5, 1989, after four consecutive failures followed by five consecutive satisfactory closures with no work performed on the system to determine the root cause.

- b. The licensee assuming the failure on April 19, 1989, to be caused by the solenoid valve and not promptly disassembling the valve to determine if it was the cause of the failure prior to declaring the damper operable.
- c. The licensee's failure to promptly take action (i.e., declare the damper inoperable and pursue corrective action) when the disassembly of the solenoid valve revealed it was not the cause of the failures.
- d. The licensee's failure to adequately determine the service life of the solenoid valves and the failure to ensure that the solenoid valves were changed out prior to the end of what they thought the service life to be.
- e. When the lower solenoid valve for damper 1VR04YA was scheduled for replacement due to its service life having expired the replacement did not occur as scheduled and damper 1VR04YA^A subsequently failed.
- f. The licensee committed to a component change in 1985 for the solenoid valves. To date this change has not occurred. The licensee does not appear to have been very aggressive in pursuing this change.

No deviations were identified in this area. However, one violation was identified.

13. Management Meeting (30703)

On May 15, 1989, Dr. Thomas Murley, Director, Office of Nuclear Reactor Regulation, visited the site. Dr. Murley toured the facility, met with the resident and licensee. Eileen McKenna, Acting Branch 1 Chief, from Region III also participated.

14. 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. One open item disclosed during the inspection is discussed in Paragraph 9.

15. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection period and summarized the scope and findings of the inspection activities. The licensee acknowledged these findings. The inspectors also discussed the likely informational contents of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary.