

U.S. NUCLEAR REGULATORY COMMISSION  
REGION III

Report No. 50-373/92027(DRP); 50-374/92027(DRP)

Docket Nos. 50-373; 50-374

License Nos. NPF-11; NPF-18

Licensee: Commonwealth Edison Company  
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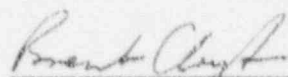
Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: LaSalle Site, Marseilles, Illinois

Inspection Conducted: October 14 through November 25, 1992

Inspectors: D. Hills  
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Approved By:

  
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Reactor Projects Section 1C

12/3/92  
Date

Inspection Summary

Inspection from October 14 through November 25, 1992 (Reports No. 50-373/92027 (DRP); 50-374/92027(DRP)).

Areas Inspected: A routine, unannounced safety inspection was conducted by the resident inspectors and an Illinois Department of Nuclear Safety inspector. The inspection included followup on previously identified items and licensee event reports; review of operational safety, monthly maintenance, surveillance activities; safety assessment and quality verification; and report review.

Results: Three violations were identified concerning the following:

Two examples of failure to follow fuel handling procedures caused by inattention to detail (paragraphs 4.d(3)(a) and 4.d(3)(b)). Two additional examples of failing to follow procedure caused by inattention to detail involving the reactor water cleanup (RWCU) and liquid radioactive waste systems (paragraphs 4.a(2)(a) and 4.a(2)(b)).

- . Three examples of inadequate procedures, all involving surveillances (paragraph 6.a).
- . Failure of the out-of-service (OOS) program to ensure an adequate review of potential impacts prior to implementing an OOS (paragraph 4.a(3)(a)).

Two non-cited violations were identified involving the following:

- . An inadequate work package for reactor vessel disassembly (paragraph 2).
- . Modifying the plant without ensuring updating of applicable design drawings (paragraph 2).

#### Plant Operations

Performance declined in this area. Several examples of operational personnel failure to follow procedure due to inattention to detail were noted. Two of these examples involved fuel handling activities. Similar problems were noted in the two most recent, previous refuel outages. Additional management attention was warranted in this area. Failures of operating personnel to follow procedure were noted as a concern earlier this year. However, licensee actions to address this previous concern appeared to be effective as the prior examples were due to a different root cause. In addition, operating shift management knowledge of OOS effects prior to implementation was lacking in some cases. This was contributed to by a programmatic deficiency. Implementation of the licensee's shutdown risk guidelines was progressing well.

#### Maintenance/Surveillance

Performance remained steady in this area. The quality of procedures remained a concern as three examples were identified which resulted in adverse events or inadequate testing during surveillances. An inadequate work package for reactor vessel disassembly was also identified. However, a repeat verification by a mechanical maintenance shift supervisor was conscientious and a good example of self-checking. The absence of actions to address a power line with minimal vehicle clearance did not reflect an aggressive attitude toward problem identification and resolution. Although licensee actions to address control room ventilation radiation monitor spiking were lacking previously, actions taken in 1992 were aggressive and showed a marked improvement in sensitivity toward problem resolution. Likewise, licensee actions to address reactor core isolation cooling (RCIC) system failures were much more aggressive than in previous years. Actions to prevent spurious RCIC initiations during surveillances were ineffective and not aggressive. However, the licensee appeared to be addressing this problem in a more reasonable manner following a recent September 1992 RCIC initiation. The licensee continued to successfully reduce an already low backlog of corrective maintenance. Plant management remained committed to keeping control room equipment in good working condition. Plant management was developing enhanced indicators to better manage maintenance backlog.

### Engineering/Technical Support

Performance remained steady in this area. A weakness in the licensee's document control system was identified which allowed plant modifications without ensuring updating of applicable design documents. Licensee actions in response to a series of fuel pool cooling pump trips were reasonable and further corrective actions will be monitored for effectiveness. Some nonoutage corrective work requests assigned to the technical staff were not addressed in a timely manner. Actions taken to address spurious RCIC initiations through a modification were reasonable but not particularly aggressive until this year.

### Radiological Controls

Performance remained steady in this area. The licensee took more aggressive dose reduction initiatives than in the previous Unit 2 refuel outage. However, radworker performance and cyclical housekeeping remained a problem.

### Safety Assessment/Quality Verification

The inspectors noted some progress being made but additional improvement was still necessary in the timeliness of procedure revisions. This adversely impacted on the timeliness of corrective actions for quality verification findings. The implementation of event screening meetings was a positive step toward problem identification and resolution. Recent quality verification staff reductions did not appear to have an initial adverse effect but will continue to be evaluated for the longer term.

## DETAILS

### 1. Persons Contacted

G. J. Diederich, Manager, LaSalle Station  
\*W. R. Huntington, Technical Superintendent  
\*J. V. Schmeltz, Production Superintendent  
D. S. Berkman, Assistant Superintendent, Work Planning  
H. Hentschel, Assistant Superintendent, Operations  
\*J. Walkington, Services Director  
J. Lockwood, Regulatory Assurance Supervisor  
M. Santic, Assistant Superintendent, Maintenance  
\*K. Kociuba, Quality Verification Superintendent

\*Denotes those attending the exit interview conducted on November 25, 1992.

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

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

(Closed) Unresolved Item (50-373/92021-02 (DRP)): During reactor vessel disassembly, the extension legs for the steam separator lifting rig were installed and in the work package the latching mechanism was verified to function properly. Following shift turnover, the day-shift mechanical maintenance supervisor decided to recheck the latching mechanism operation despite the completed verification step. He identified that the latches did not operate properly and that the air actuation lines were improperly connected. The inspectors regarded the repeat verification to be a conscientious effort on the part of the day shift supervisor.

The supervisor who signed the verification step in error had completed a prerequisite step on the preceding page of the work package which was similar to the verification step in question. The supervisor believed the verification step was a repeat of the prerequisite step and therefore signed the step. While the work package steps were correct as written, the steps were insufficiently clear as to ensure proper comprehension by the workers. Failure to provide instructions appropriate to the circumstances is a violation of 10 CFR Part 50, Appendix B, Criterion V. The licensee planned to incorporate clearer instructions into the work package. The licensee identified this violation and it is not being cited because the criteria specified in Section VII.B.2. of the "General Statement of Policy and Procedures for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C (1992)) were satisfied.

(Closed) Unresolved Item (373/92021-01): Review concerns with reactor core isolation cooling (RCIC) system steam line leak detection instrumentation. The inspectors verified the existence of diverse RCIC leak detection and isolation methods including ambient and differential



temperature and low steam line pressure. In addition, the concern involved only one division of the primary containment and reactor vessel isolation control system. Adequate assurance existed that a RCIC steam line leak would be detected and the system would automatically isolate. Therefore, the inspector has no further concerns regarding the lack of multiple differential pressure instruments to provide isolation of specific valves upon high steam line flow rate.

However, the inspectors noted that a failure of a single switch would necessitate closure of the isolation valve in accordance with technical specifications, rendering RCIC inoperable and having a negative impact on system availability. A review of licensee event reports (LER) indicated that this occurred three times in 1990-1991.

Through a review of licensing basis documents, the inspectors could not find any references or credit taken for the differential pressure detection of a RCIC instrument line break and resulting automatic isolation of RCIC. Therefore, the inspectors have no further concerns regarding an out-of-service isolation of these instruments.

The inspector determined that differential pressure switches 1E31-N013BB, 1E31-N007AB, and 1E31-N007BB had been entirely removed in the field to be used as spares elsewhere in the plant. This was accomplished through work requests in August 1990. This process was in accordance with LaSalle Administrative Procedure (LAP)-300-7, "Preparation and Control of Nuclear Work Requests," Revision 7, step F.1.W and LAP-240-6, "Temporary System Changes," Revision 25, step E.1. However, the process did not ensure corresponding plant drawings including M-2101, sheets 1 and 3, 1E-1-4226AD, and 1E-1-4226AF were revised to match the plant configuration. The licensee planned to remove all RCIC instrument line break switches including these through a modification which ultimately would have caused the drawings to be revised. However, this modification still had not been implemented at the time of the inspection.

ANSI N18.7-1976, "Administrative Controls and Quality Assurance For the Operational Phase of Nuclear Power Plants," section 5.2.15, required procedures for control of documents and changes thereto to preclude the possibility or use of outdated or inappropriate documents. The licensee's practice of modifying the plant (deleting plant equipment) through work requests and the out-of-service program without ensuring revision of the design documents is contrary to ANSI N18.7-1976 as it allows the use of inappropriate documents which no longer reflect plant design. This is considered a violation of 10 CFR 50, Appendix B, Criterion VI as implemented by Regulatory Guide 1.33, Revision 2, which endorses ANSI N18.7-1976. The licensee initiated a revision to LAP-300-7 to require a temporary system change in similar cases. Safety significance was minimal in this particular case as these particular switches were not required. The violation was categorized as a Severity Level V and it is not being cited because the criteria specified in Section VII.B.1 of the "General Statement of Policy and Procedures for NRC Enforcement Actions," (Enforcement Policy, 10 CFR 2, Appendix C, (1992)) were satisfied.

(Closed) Open Item (373/83-29-01): IE Notice 82-49, "Correction For Sample Condition For Air and Gas Monitoring," was closed in inspection report 50-373/83-29; 50-374/83-28. However, certain modifications were determined to be necessary and the completion of these modifications were assigned the tracking numbers 373/83-29-01 and 374/83-28-04. Inspection report 50-373/89021; 50-374/89021 closed 374/83-28-04 administratively. Due to an oversight, 373/83-29-01 was not added to the list of items that were administratively closed. This item is also considered closed.

(Closed) Violation (373/92008-01): Several examples of non-licensed operators failing to follow procedure. Review of licensee corrective actions is described in paragraph 7.b.

(Closed) Open Item (373/92008-06): Review licensee actions in regard to encouraging worker initiated procedure changes. This item is discussed in paragraph 6.a of this report. Further actions in this regard will be tracked through violation 373/92027-03 (DRP). This item is considered closed.

No cited violations, two non-cited violations, and no deviations were identified in this area.

### 3. Licensee Event Reports Followup (92700)

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

(Closed) LER 373/92009 Spurious Auto Start of Control Room Ventilation Emergency Make-Up Train Due to High Radiation Spike

(Closed) LER 374/92010 RCIC Steam Line Outboard Isolation Valve Motor Damage Due To Torque Switch Failure To Trip

(Closed) LER 374/92013 Reactor Core Isolation Cooling System Spurious Initiation During LIS-LC-403 Due To A Pressure Spike

(Closed) LER 373/92011 Wrong High Radiation Door Downgraded Due to Personnel Error

(Closed) LER 374/92011 Spurious Auto Start of Control Room Ventilation Emergency Makeup Train Due to High Radiation Spike

(Closed) LER 373/92010 Unit 1 Automatic Reactor Scram Due to Low Charging Header Pressure

In addition, recent deviation reports (DVRs) were reviewed in order to monitor conditions related to plant or personnel performance and to detect potential development of trends. Appropriate generation and

disposition of DVRs, in accordance with the Quality Assurance Manual, were also reviewed.

No violations or deviations were identified in this area except as identified in this or other inspection reports.

4. Operational Safety Verification (60710 and 71707)

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

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

Significant observations were:

- (1) The inspectors observed several licensee shutdown risk review board meetings conducted during the refuel outage. This meeting, held on a weekly basis, verified implementation and emphasis of the licensee's shutdown risk guidelines. Licensee management's ability to instill a shutdown risk sensitivity among plant workers, was apparent. An example was a nuclear station operator (NSO) identifying a single closed valve preventing draining of the vessel, such that additional administrative controls were placed upon that valve. Shutdown risk level assessment sheets were being completed on a regular basis. The inspectors noted good dissemination of shutdown risk status (such as current risk level and available systems) among plant workers.
- (2) The inspectors noted two examples of failing to follow procedures caused by inattention to detail during operating organization activities described below. Two additional examples are discussed in paragraph 4.d(3) of this report. Although each incident had minimal safety significance, in aggregate they indicated inattention to detail during several different facets of operating activities and a need for greater management attention in this area.
  - (a) While unisolating RWCU filter demineralizer 2A per LaSalle Operating Procedure (LOP)-RT-06, "Reactor Water Cleanup System Filter/Demineralizer Precoat," Revision 21, RWCU automatically isolated on high differential flow. The safety significance of the event was minimal as the containment isolation system performed its design function. Steps F.15.a.2 and F.15.a.4 of the procedure required the upstream resin drain stop valves to be closed and step F.15.b required verification that these valves were closed. Operators



indicated these steps were performed. Partial flow through these valves caused the isolation, indicating inadequate conduct of these steps. (The licensee subsequently performed a leak check of these valves which indicated no leakage.) The failure to properly implement these steps was due to inattention to detail and is an example of a violation (50-374/92007-01a (DRP)) of technical specification 6.2.A.1 which required adherence to procedures.

- (b) While transferring water from the Unit 2 chemical waste collecting tank to the chemical waste process tank per LaSalle Operating Procedure (LOP)-WZ-03, "Chemical Waste Collector Tank Transfer To Chemical Waste Process Tank And Vice Versa", the Unit 2 waste sludge tank was overfilled and approximately 1200 gallons spilled onto the floor. The safety significance of this event was minimal as the water was returned to the radwaste system and did not significantly contribute to the radiation levels already existing in the waste sludge tank room. Step F.2 of the procedure required the operator to blowdown the chemical waste collector tank to the waste sludge tank per LOP-WZ-16, "Chemical Waste Collector Tank Sludge Transfer To Waste Sludge Tank". The operator performed that action, but subsequently returned the line-up back to the waste sludge tank instead of the chemical waste process tank. Step F.5 of LOP-WZ-03 stated, "VERIFY proper flow by observing: a. Decrease on Chemical Waste Collector Tank Level Recorder OLR-WZ051. b. Increase on Chemical Waste Process Tank Level Recorder OLR-WZ052." The operator failed to properly verify the increase in chemical waste process tank level due to inattention to detail. This is an example of a violation (50-374/92027-01b (DRP)) of technical specification 6.2.A.1 which required adherence to procedures.

- (3) The inspectors identified a concern regarding required operator knowledge of OOS effects prior to implementation. This concern resulted from two events described below:

- (a) A Unit 2 scram occurred on November 16, 1992, during conduct of OOS 2-2202-92 on the Unit 2 station air compressors (SAC) to allow scheduled maintenance. The Unit 0 and 1 SACs were in an abnormal lineup, being supplied cooling water from the Unit 2 turbine building closed cooling water (TBCCW) system through crosstie valves rather than the normal Unit 1 TBCCW supply. The OOS isolated Unit 2 TBCCW from the Unit 2 SAC which also isolated flow to the crosstie valves. The Unit 0 and 1 SACs tripped on high lube oil temperature. The loss of air pressure caused control problems with the turbine driven reactor feed pumps such that the main turbine eventually tripped on high reactor water level. The automatic scram occurred due to the main turbine trip.



The shift supervisor (SS) who assigned the tagout was aware of the abnormal system configuration and that the OOS was for the Unit 2 SAC. However, he possessed insufficient knowledge of the affects of the OOS, as he failed to realize it involved TRCCW. The SS relied upon the facts that the OOS was a scheduled activity, the shift engineer was aware it was to be performed, and knowledge that the Unit 2 SAC was not operating. The operators assigned to hang the tagout were unaware of the abnormal lineup.

LaSalle Administrative Procedure (LAP)-900-4, "Equipment Out-Of-Service Procedure," Revision 48, did not require any review of an OOS against the existing plant configuration for possible adverse affects at the time of implementation. (A safety related or technical specification related OOS did require a review only to ensure technical specification requirements were still met.) As it was impossible when an OOS was written to always anticipate the exact plant configuration and an informed, conscientious operator was the last barrier to such an event, the inspectors regarded a procedural requirement for such a review to be imperative. This included the need for specific implementation guidance. This appeared to be a programmatic problem at LaSalle.

ANSI N18.7-1976, "Administrative Controls and Quality Assurance For the Operational Phase of Nuclear Power Plants," Section 5.2.6, required prior to granting permission for release of equipment, operating personnel shall verify that the equipment can be released, determine how long it may be out-of-service, and to document such granting of permission. As operating personnel did not properly verify that the equipment could be released and document granting of that permission, nor does the licensee's administrative program require such action, this is considered a violation (50-374/92021-02 (DRP)) of 10 CFR 50, Appendix B, Criterion XIV as implemented by Regulatory Guide 1.33, Revision 2, which endorses ANSI N18.7-1976.

- (b) On October 29, 1992, while implementing OOS 1-1065-92 on 1B reactor protection system electrical bus, the standby gas treatment (SBGT) dampers 1VG001 and 2VG001 (inlet isolation dampers) unexpectedly opened due to the loss of power. Although personnel who had prepared the OOS expected this to occur, this knowledge was not adequately communicated to the operating crew. Therefore, the operating crew had incomplete knowledge of the affects of the OOS. An Attachment F, "Safety or Technical Specification Related Equipment Outage Form," was completed, indicating it was reviewed for technical specification implications and authorized under that basis. Safety significance was minimal as SBGT fan operation was previously defeated and there was no adverse

consequences of the dampers repositioning other than initially confusing the operators.

- b. On a routine basis the inspectors toured accessible areas of the facility to assess worker adherence to radiation controls and the site security plan, housekeeping or cleanliness, and control of field activities in progress.

Significant observations were:

- (1) The inspectors noted a deterioration of radworker practices, similar to that noted during the last Unit 2 refuel outage. Examples (including a violation) are discussed in inspection report 50-373/92026; 50-374/92026. Housekeeping was also noted to be cyclical as it was during the previous refuel outage.
  - (2) The inspectors noted increased licensee dose reduction actions during the refuel outage. A standpipe was placed in the drain of the equipment drain sump underneath the vessel to maintain a constant shielding level as the sump was a significant source of dose. Also, a temporary filtering system for the water in the sump was installed. As the control rod drives (CRD) were removed, a certain amount of crud was flushed out the bottom and down into the sump. The filtration reduced dose due to crud build up in the sump. Finally, a modification was performed to lower the height of the CRD housing support structure under the vessel. It was estimated that the time to remove the steel for CRD replacement was reduced by approximately an hour and one-half. These actions appeared to be very effective, reducing the dose from CRD replacement by approximately 30 percent. In addition, the licensee substantially increased hydrolazing activities to reduce dose in different areas of the plant. Hydrolazing efforts were very minimal during the last Unit 2 refuel outage.
- c. Walkdowns of select engineered safety features (ESF) were performed. The ESFs were reviewed for proper valve and electrical alignments. Components were inspected for leakage, lubrication, abnormal corrosion, ventilation, and cooling water supply availability. Tagouts and jumper records were reviewed for accuracy where appropriate.
  - d. Refueling Activities
- The inspectors verified that refueling activities were being conducted and controlled as required by procedures except as noted below. This was done on a sampling basis through direct observations, discussions with licensee personnel, and review of work requests and procedures.

Significant observations were:

- (1) CECO was informed on September 18, 1992, of a potential problem with the fuel received for the Unit 1 refuel outage. As a precaution, General Electric (GE) requested that the fuel be shipped back to GE for additional testing. As a result, replacement fuel arrived after the start of the refuel outage. The inspectors observed new fuel receipt and inspection on a sampling basis to ensure adequate coordination of activities on the refuel floor. At one point, fuel unload was temporarily suspended while decontamination activities progressed for the new fuel receipt inspection area. The inspectors regarded this as a conservative action to limit distractions to fuel handlers during fuel unload. As GE supplied personnel to handle new fuel receipt, the inspectors reviewed the training and qualifications of these GE personnel. No problems were identified during this review.
- (2) While observing fuel unload, the inspectors noted that the digital position indication for bridge movement was inoperable. The licensee indicated that this system was no longer utilized because inaccuracies could be introduced over a short period of use. Although not required, the inspectors regarded this indication, when functioning properly, as a barrier to a fuel bundle mispositioning event. This was in consideration of a previous Dresden fuel bundle mispositioning event in which the licensee indicated a similar condition was a contributing cause. This importance was expressed to licensee management.
- (3) Two adverse fuel handling incidents described below occurred during fuel receipt and fuel unload. A review of licensee's deviation and informal reports for the last two years indicated a fuel bundle misorientation during the last refuel outage and a fuel bundle misposition in the refuel outage prior to that. Most involved the fuel pool and all were due to inattention to detail. Although each incident had minimal safety significance, in aggregate they indicated a need for greater management attention in this area.
  - (a) On October 15, 1992, in the process of defueling Unit 1 a fuel bundle struck the cattleshoot approximately four inches down from the bale handle. The safety significance of the event was minimal as inspections indicated the fuel damage was very slight.

The cause of the event was inattention to detail on the part of the fuel handling crew. A phone talker shift turnover taking place on the refuel bridge distracted both the fuel handler and the senior reactor operator such that the fuel mast not being fully retracted was not noticed. The General Electric (GE) cylindrical mast stopped movement in the upward direction unless the fuel handler slowed the upward velocity

when the bottom telescoping section was about to be fully withdrawn into the next section. When the fuel handler heard the mast upward motion stop, he moved the refueling bridge toward the cattleshoot without checking the digital height indicator, "Normal Up Light," or looking at the fuel.

LaSalle Fuel Procedure (LFP)-400-1, "Fuel Movements Within The Reactor And Spent Fuel Storage Pools", step F.1.n, stated, "Raise grapple and fuel assembly by using the right hand controller grapple raise/lower lever until hoist readout indicates zero (grapple full up) or until the 'NORMAL UP LIMIT' light illuminates on the left hand controller.". The failure to perform this action is an example of a violation (50-373/92027-01c (DRP)) of technical specification 6.2.A.1 which required adherence to procedures.

- (b) On October 24, 1992, the licensee identified that two new unirradiated fuel bundles, YJ3709 and YJ3710, for the Unit 1 refuel outage, had been placed in the wrong storage locations in the Unit 2 fuel pool contrary to the nuclear component transfer checklist. The fuel handler (a GE contractor) improperly verified the serial numbers of the fuel bundles as they were being passed to him from the new fuel inspection stand. The fuel handler had been trained on how to properly verify information for quality assurance records and the fuel handlers were previously told what was expected of them when handling fuel. Periodic supervision was provided by GE supervisors as opposed to CECO personnel. Safety significance was minimal as the fuel bundles were virtually identical as far as internal construction and the reactivity of the Unit 2 fuel pool was unaffected.

LaSalle Fuel Procedure (LFP)-100-2, "Administrative Control Of Transfer Of Fuel Or Special Nuclear Material Between Or Within the Spent Fuel Pool(s) Or Vaults", step F.3., stated, "As the steps on the Nuclear Component Transfer List are completed, they will be VERIFIED, initialed and dated by the Fuel Handling Supervisor." Failure to follow the procedure is considered an example of a violation (50-373/92027-01d (DRP)) of technical specification 6.2.A.1. In the process of implementing one of the corrective actions for this event, consisting of a more thorough audit of the new fuel bundles in the fuel pool, the licensee also identified one misoriented fuel bundle.

- (4) On October 22, 1992, while moving new fuel from the new fuel inspection stand to the fuel prep machine, the jib crane stopped working. The fuel bundle was hanging from the jib crane over the edge of the spent fuel pool. After ensuring the bundle was in no danger of falling, the jib crane boom was hand cranked back over the floor. The bundle was left suspended about two feet over the new fuel vault cover while electrical maintenance repaired the



jib crane. A jib crane power cable had caught on the edge of the crane pedestal structure, causing a short and subsequent tripping of the lifting motor breaker. The jib crane was repaired and the fuel bundle placed back in the new fuel inspection stand.

- (5) The inspectors reviewed fuel pool cooling/cleaning operations and noted several fuel pool cooling pump trips in June, October, and November 1992. The onsite nuclear safety group and plant management reviewed these trips and proposed several corrective actions. The inspectors will evaluate the effectiveness of these corrective actions as they are incorporated. The licensee appeared to be addressing this problem in a reasonable manner.

Two violations, including one with four examples, and no deviations were identified in this area.

5. Monthly Maintenance Observation (62703)

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

The following maintenance activities were observed and reviewed:

WR L83942	Steam Condensing Pressure Switch Modification No. M-1-1-88-026
WR L59953	High Pressure Core Spray (HPCS) Underground Piping Modification M-1-1-86-072 Electrical Construction Test Procedure #19 Control Circuits
WR L02281	Unit 1 Division III Battery Upgrade
WR L18135	Reactor Recirculation Pump 1B Breaker 3B Did Not Trip During Testing
WR L12225	Perform LaSalle Electrical Procedure (LEP)-EQ-146 Motor Operated Valve (MOV) Inspection, Refurbishment, and Votes Test of 1E12-F0643
WR L13409	Disassemble, Inspect, and Reassemble 1E51-F011
WR L14091	0 Diesel Generator Small Bore Tubing Replacement
WR L15561	Replace the Degraded Voltage Relays With 1TE27N Undervoltage Relays for Division I Switchgear 141Y
WR L02279	Replace the Division III Battery Charger

- WR L02281    Replace the Division III Batteries
- WR L12210    Perform Inspection Per LEP-AP-101 for Non-Segmented Bus Duct From Unit Auxiliary Transformer 141 to Bus 151
- WR L13359    Disconnect, Dress, and Reconnect Bolted Connections to Bus 143
- WR L05924    Apply Tape to Insulate All Exposed Bus Cable and Duct Connections in the Rear of Switchgear 143
- WR L59953    Electrically Modify High Pressure Core Spray So It Takes Suction From the Suppression Pool
- WR L97339    1B Diesel Generator Small Bore Tubing Replacement

Significant observations included:

- a. On October 19, 1992, a maintenance mechanic driving a mobile crane, struck a 480 volt power line. The power line crossed an access road on wooden utility poles and supplied a nearby storage building. The crane boom was down as it was being moved and a spotter was not being utilized. The licensee's policy guide on operation of vehicles within the protected area required the boom to be down unless transporting a load. A spotter was required only when the boom was not down or if the vehicle was being driven within certain boundaries around high voltage equipment. The licensee had previously thought sufficient clearance existed with the boom in the down position and cranes had used that path before. The crane may have hit a pothole with the resulting bounce negating the minimal clearance for that electrical line. No personnel were injured and the vehicle was not damaged as a result of this event. Other than a loss of power to the storage building, the plant was not affected by this event.

The licensee identified other lines within the protected area with the potential to cause overhead clearance problems. These were marked with warning signs giving the clearance height. In addition, the license permanently restricted further vehicle access to the location of the event. The licensee also planned to implement a periodic surveillance of line heights to ensure that over time they do not sag below the height depicted on the warning signs.

A mechanical maintenance foreman stated that prior to the event, he had casually mentioned in passing to a general foreman, that when using this road, care should be taken under this electrical line. The general foreman could not remember this conversation. The method of conveying this information did not reflect an aggressive and proactive attitude toward problem identification and resolution.

- b. The inspectors performed an historical review of licensee actions in response to two recurring equipment problems noted below. Both were prevalent in 1992 as well as previous years. The inspectors concluded that the licensee was addressing these concerns in a much more aggressive and proactive manner in 1992 than previously.

- (1) The inspectors reviewed licensee actions as to the long history of spurious control room ventilation radiation monitor spikes causing control room emergency ventilation automatic actuations. Prior to 1992, this problem was not addressed in a proactive manner. As a result of a July 17, 1988, and previous actuations, a modification to change the actuation logic was planned as indicated in LER 373/88016. Although this would not address radiation monitor spiking for unknown reasons, it would prevent resulting system actuations. This planned modification did not receive adequate priority to be pursued aggressively. LERs 373/91008 and 91010, depicting three additional actuations in 1991, again referred to the modification and estimated a late 1992 completion date. Other than verifying correct operation with surveillance procedures and replacing a power supply board, no other corrective actions were mentioned in these LERs.

The licensee was much more aggressive in addressing this recurring equipment problem in 1992 showing a marked improvement in sensitivity. Four additional actuations occurred between May and September 1992 due to spurious radiation monitor spikes (LERs 373/92007, 373/92009, 374/92007, and 374/92011). Various actions were taken during this time to address the problem including troubleshooting with a vendor technician and later a vendor senior design engineer, taking apart, cleaning, and inspecting the detectors, additional sealing of the units, replacing the GM tubes and amphenol connectors, and modification of the calibration procedure to change the way the background was set. However, these actions still were not effective. The licensee planned an additional modification of the detector electronics to filter out fluctuations in the signals. The licensee also started pursuing the languishing 1988 planned modification to the actuation logic and estimated an early 1993 completion date.

- (2) The inspectors noted several reactor core isolation cooling (RCIC) system failures in 1992, resulting in increased unavailability of RCIC. Certain aspects of those failures were discussed in inspection reports 50-373/92010; 50-374/92010; 50-373/92013; 50-374/92013; 50-373/92016; and 50-374/92016. As a result, the inspectors reviewed LERs from 1990 through 1992 to ascertain any common causes for these failures. A total of 11 safety system failures were reported for RCIC which could be grouped into the following categories:

- (a) Unit 1 RCIC overspeed trips due to the governor valve sticking open. Four occurrences were noted in June 18, 1990, July 20 1991, October 23, 1991, and April 6, 1992. Following

the last failure, the licensee verified binding between the valve stem and carbon ring. This was believed due to steam leakage through the steam admission valve causing an unfavorable environment within the governor valve.

- (b) Unit 2 RCIC exhaust vacuum breaker upstream containment isolation valve tripped on thermal overloads necessitating closure of isolation valve per technical specifications. Following an initial trip on June 15, 1992, current trace data, motor meggering data, motor winding resistance, motor current data, and bus voltage data did not indicate any problems. Plans were instituted to provide more frequent lubrication of the valve stem. Following lubrication on July 14, 1992, a similar failure occurred during valve stroking. The licensee performed a VOTES test and current traces with no problems noted. Current traces taken on an increased frequency indicated degradation in relation to the time period between valve cycling. As a result, the valve was repacked, upon which a junk ring at the bottom of the stuffing box was found cocked and the valve stem slightly worn in this area.
- (c) Unit 2 steamline outboard isolation valve failure. This occurred on August 10, 1992, due to a torque switch failure as it was set above the limit torque recommended value for the operator due to Generic Letter 89-10, Supplement 3 concerns. This event is being evaluated in more detail in conjunction with the currently ongoing NRC motor operated valve inspection at LaSalle.
- (d) Unit 1 RCIC inoperable due to 250 volt battery low electrolyte temperature. This occurred only once on December 25, 1990, due to ventilation system design problems.
- (e) RCIC steamline high flow switch failure necessitating closure of isolation valve per technical specifications. This occurred on May 11, 1990, August 1, 1990, and June 21, 1991, and is discussed in paragraph 2 of this report.

Due to the excessive number of failures of RCIC, the licensee formed a task group to concentrate on RCIC turbine problems. Three major review initiatives resulted including a maintenance history performance review by General Electric, a system vulnerability assessment by Bechtel, and evaluation of maintenance work practices by Technicon. Beside repair of the steam admission valve and RCIC turbine overhaul, numerous extensive recommendations were developed including component replacements, modifications, and changes in procedures and operational practices. The licensee was either implementing or still evaluating these recommendations.



The causes of failures were very diversified between the five categories and did not signify any obvious maintenance program deficiencies. While the licensee's approach to the first two governor valve events was reasonable, it could not be described as aggressive toward problem resolution. The licensee's response to the third governor valve failure was more aggressive but stopped short of addressing all potential root causes. The response to the latest governor valve failure was very aggressive, reflected a more detailed and defined approach to failure investigation, and was more encompassing as to potential root causes. The licensee's response to the vacuum breaker isolation valve was reasonable although not particularly aggressive as repacking was not done until after the second failure and degradation was shown to exist.

- c. The licensee continued to successfully reduce the backlog of corrective maintenance. The NRC operational safety team inspection (OSTI) conducted in November 1991, described the number of outstanding nonoutage corrective work requests (690 at that time) as six weeks of backlog and moderately low. Since the Spring 1992 refuel outage, this number averaged between 550 and 600 and was reduced to less than 500 just prior to the start of the current refueling outage. However, the OSTI also noted about 50 percent of the corrective work requests were older than three months and recommended evaluation of support to craft activities to help reduce this time.

The licensee addressed this concern by periodically requesting status of older work requests from the various departments and more recently adding more emphasis by producing a ten oldest work request list for departments. Although these efforts appear to have been partly effective, further improvement was still warranted. While the percentage of nonoutage corrective work requests greater than three months old assigned to electrical, mechanical, and instrument maintenance appeared to be reasonable, those assigned to other work groups was still high. These groups included engineering and construction, operational analysis division, operations, substation construction, and technical staff (TS).

The inspectors performed a more detailed review of the backlog concentrating on the TS for further insight. Of the 142 nonoutage, corrective work requests greater than six months old, 42 were assigned to the TS. The inspectors noted that total open TS corrective nonoutage work requests had declined significantly over the past year indicating good progress. However, 68 per cent of the TS backlog was greater than six months old, showing continued efforts needed on older items. The inspectors selected a sample of four of these work requests for specific review and concluded insufficient justification existed for the long delay in two of these items. Although they were of generally low safety significance, justifying a lower priority, it was apparent that some items were still not being addressed in a timely manner.

The number of pending control room corrective work requests remained low, showing a strong commitment to keeping control room equipment in good working condition.

The inspector noted that plant management was developing and evaluating enhancement to maintenance performance indicators to assist in management evaluation and control of work request backlog.

No violations or deviations were identified in this area.

6. Monthly Surveillance Observation (61726)

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

LaSalle Mechanical Surveillance (LMS)-DG-01 Main Emergency Diesel Unit Surveillances

LaSalle Electrical Surveillance (LES)-GM-308 Unit 1 Southern Division Operational Analysis Division Inspections and Calibrations for the Diesel Generator 0 System

LES-GM-301 Calibration and Functional Testing of Unit 1 4kV Emergency Bus Loss of Voltage Relays by Operational Analysis Division

LES-GM-130 Inspection of Westinghouse Motor Control Center Equipment

LES-GM-109 Inspection of 480 Volt Klockner-Moeller Motor Control Centers

Significant observations included:

- a. The inspectors noted the following three procedural inadequacies, two resulting in unnecessary challenges to safety-related equipment, and the other involving inadequate testing. Numerous examples of procedural weaknesses were noted in inspection report 50-373/92008; 50-374/92008. The licensee had previously implemented a weekly joint procedure review meeting to provide better quality and more timely procedure reviews. This was especially designed to show quick turnaround of worker initiated procedure changes to encourage more worker identification and ultimate correction of existing procedure deficiencies. These additional examples indicated continued problems with new and existing procedures. However, due to the nature of the licensee corrective actions one would expect, not an immediate, but a more long term resolution of existing procedural deficiencies.

- (1) On October 9, 1992, while performing LES-RD-102, "Unit 1 Alternate Rod Insertion Division 1 Logic Functional Test," Revision 1, a Unit 1 scram occurred. The unit was in a refueling outage at the time with the reactor vessel head removed. As a prerequisite, the procedure referred to Attachment B with information on the test and its effects upon plant operation. The attachment listed conditions the plant must be in prior to performing specific steps in the procedure. Among these were the mode switch being in the shutdown position and the control rod drive (CRD) charging water header supply stop valve being closed. The attachment did not delineate any specific order for these conditions. The stop valve closure was accomplished first, resulting in low CRD charging water header pressure and a reactor scram.

If the mode switch had been taken to shutdown prior to closing the valve, the scram would not have occurred since it was active only in operational conditions 2 and 5. The operators' attention to detail was lacking as they had been trained on this particular scram signal and should have recognized the consequences of their actions. Safety significance of the event was minimal since the reactor was already shut down, limiting affects upon the plant to primarily unneeded wear on the control rod drives. This procedure was inappropriate to the circumstances in that it did not delineate a specific applicable step sequence that would have prevented the scram. Therefore, this is considered an example of a violation (373/92027-03a (DRP)) of 10 CFR 50, Appendix B, Criterion V.

- (2) Technical specification 3.6.1.2 required the RWCU discharge valves 1G33-F040 and 2G33-F040 to be type C leak rate tested. This was accomplished in accordance with LaSalle Technical Surveillance (LTS)-100-11, "Feedwater Outboard Stop and RWCU Return Valves Local Leak Rate Test," Revision 8. The inspector noted a check valve between the RWCU discharge valve and its required vent path for the local leak rate test. This procedure was inappropriate to the circumstances as the location of this check valve invalidated the test results as performed by LTS-100-11. This is considered an example of a violation (50-373/92027-03b (DRP)) of 10 CFR 50, Appendix B, Criterion V.

The licensee was unable to positively show that the 0.6 La for combined type B and C leakage required by technical specifications was met. The licensee subsequently tested 1G33-F040 in the reverse direction with satisfactory results. The test on 2G33-F040 required partial draining of the Unit 2 feedwater system and Unit 2 was operating. Therefore, the licensee requested and was granted a waiver of compliance from the Office of Nuclear Reactor Regulation (NRR) until an emergency technical specification change could be processed to delay the testing of 2G33-F040 in the reverse direction until an outage of sufficient duration. The configuration of feedwater and RWCU, in

addition to previous testing results, provided sufficient confidence of containment operability in the interim.

- (3) An unplanned emergency control room ventilation actuation occurred on October 16, 1992, due to causes other than radiation monitor spiking. Because of a change in how the detectors were calibrated, background radiation was not always sufficient to perform the technical specification required channel check surveillance with a unit shut down. LaSalle Limited Procedure (LLP)-92-159, "Alternate Method For Performing Channel Check of VC Intake Radiation Monitors," Revision 0, was written to perform the surveillance in those cases. The procedure was deficient as it failed to recognize that a greater than two second delay between returning the monitor switch to the "OPERATE" position and depressing the red trip light during the surveillance would cause the actuation logic to seal in. The technical staff group leader who authorized the procedure and the onsite reviewers had insufficient knowledge of detector operation to identify this potential. As the procedure was inappropriate to the circumstances, it is considered an example of a violation (50-373/92027-03c (DRP)) of 10 CFR 50, Appendix B, Criterion V. This represented an unnecessary challenge to safety-related equipment.

Another unplanned emergency control room ventilation actuation occurred the following day, October 17, 1992, while performing the same evolution. The operators were aware of the previous event through the turnover process. To prevent a spurious initiation while performing the surveillance, the operator placed the train into pull-to-lock. Upon completing the surveillance but prior to taking the train out of pull-to-lock, the operator depressed the reset push button. By design, this should have prevented an actuation. The button was either not depressed sufficiently hard or long enough to reset the signal. As a result, another initiation occurred when the train was taken out of pull-to-lock. The inspectors regarded the second incident as isolated and having a different root cause than the first incident.

- (b) The inspectors performed an historical review of licensee actions in response to recurring RCIC system spurious initiations. LERs from 1990 through 1992 showed three RCIC initiations due to pressure transients during surveillances and four RCIC initiations from pressure transients during reactor scrams caused by a turbine trip.

Following a Unit 2 turbine trip on September 12, 1990, the licensee initiated a study to determine if a modification was feasible to filter or delay short duration pressure spikes. The corrective actions following a March 1, 1992, Unit 1 turbine trip referred to the study being done for the previous September 1990, event. The corrective actions following an August 27, 1992, Unit 2 turbine trip discussed a modification, to be reviewed, to insert a time delay to prevent a spurious pressure signal from being transmitted.



Corrective actions to address spurious RCIC initiation during the latest November 16, 1992, turbine trip were not yet formalized.

The spurious RCIC initiations during surveillances all occurred while conducting LaSalle Instrument Surveillance (LIS)-LC-303, "Unit 1 Main Steam Isolation Valve Leakage Control Inboard Reactor Vessel Pressure Functional Test," or corresponding procedure for Unit 2, LIS-LC-403. The licensee determined the cause of the first initiation on July 24, 1991, to be a stuck isolation valve on a pressure transmitter. The corrective actions were geared toward replacement of the isolation valve and identification of other such valves. The cause of a second event on June 22, 1992, was thought to be a packing leak on an instrument stop valve. Corrective actions included training of instrument maintenance (IM) personnel, restricting performance of this surveillance to more experienced personnel, revision of the procedure to include cautions as to this problem, and to evaluate replacement of the stop valve with an anti-surge valve. Corrective actions for a September 17, 1992, event were to replace the instrument stop valves with anti-surge valves, bypass the RCIC initiation logic during the performance of this surveillance, and reference was made to the time delay modification.

The inspectors discussed the history and progress of the review of the level sensor time delay modification with the cognizant technical staff engineer. Initially, no hardware solution to the problem appeared to be available. When a hardware solution was found, the initial scope of the modification was to install a time delay relay in all reactor level signal circuitry. This option was dropped because it was considered too expensive and the problem did not appear to be urgent. Due to the marked increase in the rate of actuations in 1992, the licensee approved a modification to install time delay relays in the RCIC and high pressure core spray (HPCS) logic circuitry. The RCIC modification for Unit 1 was scheduled for the current refuel outage.

The corrective actions taken by the licensee in regard to the time delay modification were reasonable but not particularly aggressive until this year. The corrective actions taken by the licensee in regard to preventing spurious RCIC initiations during surveillances prior to the September 1992 event were ineffective and not aggressive. The inspectors will evaluate the current set of corrective actions as they are implemented for long term effectiveness.

One violation with three examples, and no deviations were identified in this area.

7. Safety Assessment and Quality Verification (40500)

- a. The inspectors reviewed the open quality verification (QV) corrective action records to verify actions were being taken in a reasonable manner. Except for one described below, no problems were noted for

items belonging to the previous Nuclear Quality Programs (NQP). However, there were many items past their original due date on the onsite nuclear safety (ONS) list. From review of the items and from discussions with ONS personnel, the inspector ascertained many of the items were procedure revisions. The excessive time required to complete procedure revisions at LaSalle was previously identified in inspection report 50-373/92010; 50-374/92010. Review of procedure revision turnaround statistics indicated some progress was being made in this area but further progress was necessary. The following two examples were indicative of the problem:

- (1) On February 26, 1992, a licensee quality verification (QV) inspector identified loose material on the catwalk of the reactor building overhead crane which passed over the reactor cavity and the spent fuel pools. The items discovered were not accounted for as loose items in the area of the reactor cavity and spent fuel pools. Licensee management agreed to monthly housekeeping inspections of the crane as part of LaSalle Mechanical Surveillance (LMS)-HC-01, "Station Cranes and Hoist Preventative Maintenance and Examinations." This change did not occur until seven months later on September 29, 1992.
- (2) The inspectors noted that the licensee still had not developed policies or procedures to govern the tie down of large loads when moving them within site boundaries. As indicated in inspection report 50-373/92008; 50-374/92008, this concern originated from a previous Dresden event in which a large radwaste shipping cask fell off a truck whose path was near incoming power lines. As a result of the inspectors' inquiries, plant management requested ONS to review this area. This review, documented in the January 1992 ONS monthly report, resulted in action item record 373-352-92-00404 to develop appropriate guidance with an original due date of August 1, 1992. This would have been prior to the next scheduled refueling outage in consideration of protection of power sources and shutdown risk.

The licensee was developing changes to the procedure review process and accountability to shorten the turnaround time. Effectiveness of those actions will be evaluated in future inspection reports.

- b. The inspectors reviewed licensee actions to address previous operator procedural adherence concerns. These concerns were discussed in inspection report 50-373/92008; 50-374/92008. The inspectors verified completion of licensee actions in response to violation 50-373/92008-01. In addition, the licensee formed a task group which consolidated procedural adherence expectations from various procedures into a single page, understandable document and disseminated it to plant personnel. The root cause of the procedural adherence violation examples described in paragraphs 4.a and 4.d of this report differ from those of the previous concerns. Previously, they resulted from a combination of not understanding licensee management procedural adherence expectations and a lack of respect or

attitude toward procedural adherence. Recent examples involve inattention to detail errors. The licensee's previous corrective actions appear to have been effective as no similar problems to the previous concerns have been recently noted (except for radworker practices described in inspection report 50-373/92026; 50-374/92025.)

- c. To ascertain event screening capability, the inspectors attended several licensee daily events meetings. The licensee had recently instituted utilization of this process to ensure the correct tracking mechanisms in accordance with the event significance and appropriate level of needed followup. Attendees were from several pertinent work groups, ensuring a multidisciplined approach. Review of inputs (such as logs) since the last meeting were detailed, tending to provide a lower threshold of event identification. A review of deviation and informal report generation numbers since instituting the daily event meeting supports this conclusion. Although the rate of deviation report generation remained roughly steady, the rate for informal reports increased substantially. The inspectors regarded this process as a positive step toward problem identification and resolution.
- d. Through interviews with plant and quality verification (QV) personnel and review of various reports, the inspectors ascertained the effect of recent staffing reductions involving QV. ONS and NQP groups were combined into a QV group and total staffing cut in half. Despite an expected reduction in the number of audited activities, this group maintained positive attributes previously identified with ONS. This included maintaining a big picture overview, trend identification, and detailed evaluations with recommendations beyond those of plant personnel. The inspectors will continue to evaluate this area for more long term effects.

No violations or deviations were identified in this area.

#### 8. Report Review (90713)

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

No violations or deviations were identified in this area.

#### 9. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) during the inspection period and at the conclusion of the inspection period on November 25, 1992. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.