

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-373/86004(DRS); 50-374/86004(DRS)

Docket Nos. 50-373; 50-374

Licenses No. NPF-11; NPF-18

Licensee: Commonwealth Edison Company
P.O. Box 767
Chicago IL 60690

Facility Name: LaSalle

Inspection At: LaSalle Nuclear Power Station, Marseilles, Illinois

Inspection Conducted: January 13-27, 1986

Inspectors: *W. Guldemon*
W. Guldemon

2/27/86
Date

C. Ramsey
C. Ramsey

2/27/86
Date

D. Holmes
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2/27/86
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Z. Falevitz
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2/27/86
Date

Approved By: *W. Guldemon*
W. Guldemon, Chief
Operational Programs Section

2/27/86
Date

Inspection Summary

Inspection on January 13-27, 1986 (Report No. 50-373/86004(DRS);
50-374/86004(DRS))

Areas Inspected: Special announced safety inspection conducted to close out previous open items, to assess licensee conformance to routine fire protection program requirements and review allegations concerning fire brigade training. The inspection involved 156 inspector-hours by four NRC inspectors, including zero inspector-hours onsite during off-shifts.

Results: Of three areas inspected, no violations or deviations were identified in two areas. One violation was identified in the remaining area (Failure to install fire detection and alarm systems in accordance with governing code requirements - Paragraph 4.a.).

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DETAILS

1. Persons Contacted

- *G. Diederich, Station Manager
- *R. Bishop, Services Superintendent
 - C. Allen, Nuclear Licensing Administrator
 - R. Rybak, Station Nuclear Engineering Department
 - C. Barnes, Station Nuclear Engineering Department
- *D. Roberts, Fire Protection Engineer
- *T. Gray, Fire Protection Engineer
- *T. Novotney, Fire Brigade Instructor
- *D. Trager, Station Fire Marshal
- *J. Kodrick, Maintenance Staff Engineer
- *B. Collins, Assistant Fire Marshal
- *P. Manning, Technical Staff Supervisor
- *A. Settles, Assistant Technical Staff Supervisor
- *T. Hammerich, Assistant Technical Staff Supervisor
- *M. Jeisy, QA Supervisor
- *T. Gallagher, QA
- *J. Kocek, Technical Staff
 - W. Sheldon, Assistant Superintendent, Maintenance
 - D. Berkman, Assistant Superintendent, Technical Services
 - M. Shiabe, Training
 - G. Roberts, Technical Staff
- *G. Morey, Electrical Maintenance Foreman
- *T. Meyer, Braidwood Station Fire Marshal
- *P. Hart, QA
- *R. Crawford, Training Supervisor

U.S. NRC

- *S. Stasek, Resident Inspector
- *R. Koprivra, Resident Inspector

*Denotes those in attendance at the exit meeting of January 27, 1986.

2. Licensee Actions on Previous Inspection Findings

(Closed) Violations (373/82-54-03; 374/82-22-03): These violations documented inadequacies in the licensee's cable tray cleanliness program as evidenced by the discovery of miscellaneous debris in cable trays. The licensee has implemented the following procedures addressing plant cleanliness including cable trays: LES-GM-101, "Cleaning Cable Tray and Electrical Panels" and LAP-900-15, "Housekeeping Practices." These procedures provide explicit directions on how to clean cable trays and require periodic cable tray inspections.

(Closed) Violations (373/82-54-01; 374/82-22-01): These violations consisted of three parts. The first two parts dealing with a lack of acceptance criteria for fire seals and failure to prepare Nonconformance

Reports for deficient seals, were closed in IE Inspection Reports No. 50-373/83-44 and No. 50-374/83-48. The third part dealt with a failure on the part of the licensee to ensure procedures were in place to specify proper mix control of Fire Code CT Gypsum. The inspector reviewed Transco procedures entitled, "Special Process - Fire Code CT Gypsum," and "Fire Code CT Gypsum Cement Application and Installation Procedures." These procedures specify explicit mix proportions for various applications.

(Closed) Unresolved Items (373/84-33-05; 374/84-40-04): These items documented concerns over the adequacy of procedural controls placed on the use of ignition sources. The inspector reviewed Procedure LAP-900-10, "Fire Prevention Procedure for Welding and Cutting," and LAP-900-22, "Use of Heat Generating Equipment and Heat Sources." LAP-900-10 provides the controls necessary to ensure proper control is exercised during and after welding, grinding, cutting, and open flame operations. LAP-900-22 provides the controls necessary to ensure proper control is exercised during the use of heat generation or heat source equipment capable of generating a temperature high enough to cause ignition of combustible material in the vicinity of the equipment. It was noted that the procedures overlap in establishing controls over the use of propane torches. While LAP-900-22 speaks explicitly to use of propane torches, it does not require the use of the welding and cutting permit system. LAP-900-10 does not speak explicitly to propane torches but does cover open flame work. As propane torches do produce an open flame, they fall under LAP-900-10. The licensee is encouraged to clarify their procedures in this area.

(Open) Unresolved Item (373/82054; 374/82022-05): Floor penetration seals in the control room exceed the dimensions of the fire stop designs actually tested.

In response to this issue, there were meetings held at NRC headquarters with the Office of Nuclear Reactor Regulation (NRR), Region III (RIII), and licensee personnel in the fall of 1983. Subsequent to this, the licensee made several submittals to NRR of fire test data to support penetration fire seal designs. NRR evaluated the licensee's submittals and made determinations of acceptability that were not published.

It is not clear which tests were reviewed and accepted by NRR as being representative of particular penetration fire seal installations. The inspector was unable to determine if any of the tests submitted by the licensee were representative of the control room penetration fire seal configuration. Therefore this item is being referred to NRR for resolution.

(Open) Unresolved Item (373/83044-01): 10 CFR 50, Appendix R, Sections III.G.3 and III.L require that if the licensee elects to establish alternative safe shutdown capability, that provisions for direct readings of process variables necessary to perform and control the reactor shutdown function shall be provided. Current NRR supplied guidance requires the following instrumentation be available for safe shutdown of BWR plants:

- a. Reactor water level and pressure
- b. Suppression pool level and temperature, and
- c. Diagnostic instrumentation for shutdown systems.

The licensee has supplied instrumentation to monitor reactor water level and pressure, suppression pool level and temperature, RHR service water flow, RHR flow, and RCIC flow in both the control room and at the remote shutdown panel. The licensee previously stated that the only instrumentation not reviewed for fire damage were suppression pool level and temperature.

The licensee is providing instrumentation for Unit 1 suppression pool level and temperature during the current outage which will prevent a single fire from damaging cable for Remote Shutdown Panel indications and the Control Room indications which is identical to that installed in Unit 2. This item will remain open pending completion and inspection of the modifications to this instrumentation for both units.

(Open) Open Items (373/83-44-03h; 374/83-48-24): The licensee failed to establish adequate quality assurance acceptance/rejection criteria as required by NFPA codes and standards for several surveillance tests.

The inspector reviewed the following surveillance procedures for quality assurance acceptance/rejection criteria as required by NFPA codes and standards:

- a. LES FP03, "Hydrogen Seal Oil Unit Deluge Initiation Circuit Functional Test."
- b. LOS FPA1, "Fire Protection Flow Path Valve Cycling Test."
- c. LOS FPA2, "Fire Protection System Function Test."
- d. LOS FPA3, "Fire Protection Sprinkler and Deluge System Drain Flow and Cycling Test."
- e. LMS FP06, "Fire Protection hose Station Valve Operability and Flow Verification."

No deviations were identified except those noted below:

Procedure LOS FPA2 entitled "Fire Protection Functional Test" does not incorporate NFPA requirements. The procedure should outline the necessary steps to assure that the fire pumps are tested in accordance with applicable NFPA Code requirements and design documents as well as satisfy Technical Specification Surveillances.

Procedure LOS FPA3 "Fire Protection Sprinkler and Deluge System Drain Flow and Cycling Test" outlines the steps necessary to:

- a. Cycle the Sprinkler Alarm Check Valves
- b. Cycle the Sprinkler and Deluge Inlet Stop Valves and verify that the associated Tamper alarms are Operational
- c. Conduct Drain Flow Test on Sprinkler Systems
- d. Conduct Full Flow test on Deluge System.

For sprinkler systems, the licensee conducts two-inch drain tests but does not include an inspector's test, which is required by NFPA-13A to be conducted quarterly.

In this procedure, the deluge system is tested by conducting a drain test. This is one of several tests that may be conducted on a deluge system. The licensee is requested to contact the manufacturer and develop a procedure that will be adequately address testing of the deluge systems.

3. Followup on Allegations

The inspectors performed followup activities relative to an allegation received by the NRC from an individual outside of the licensee's organization pertaining to the adequacy of training provided to fire brigade members and qualifications of certain staff members responsible for the fire protection program at LaSalle County Station. Results are as shown for each subject of the allegation.

Allegation RIII-85-A-0205

- a. (Open) Training provided to members of the LaSalle fire brigade was not adequate to permit the brigade members to perform their duties as firefighters. The allegor identified a fire drill in one of the ECCS rooms which apparently was not handled well by the station fire brigade.

The inspectors examined fire brigade drill critique records and records of training sessions held during the years 1984 and 1985 to determine the quality of these activities. Thorough interviews were held with selected fire brigade members, the licensee's training staff, the station fire marshal and cognizant licensee personnel. The following are the results of these activities:

(1) Fire Brigade Drill Critiques

Fire brigade drill critiques were incomplete in some instances because they did not contain adequate assessment of the drills. For example, in an August 10, 1984 drill that simulated a 4160V switchgear fire, the drill critique did not assess the fire brigade leader's ability to determine the need for offsite fire department assistance. The critique did not mention whether any decision was made in this regard.

None of the drill critiques examined made any assessment of individual fire brigade member performances during drills (i.e., physical, mental and emotional fitness to perform the required duties).

(2) Fire Brigade Drills

It appears that the drills were conducted at regular intervals and each brigade member received a minimum of two drills per year, including one drill per year that consisted of the use of a self-contained breathing apparatus in a artificially smoke filled environment within the smoke house. The nature of the drills conducted was diversified and contained a variety of simulated fire conditions such as internal structural fires involving electrical equipment, internal structural fires involving oil storage tanks, external fires involving flammable liquid spills, and fires involving motor vehicles.

All of the drills conducted appeared to rely on the use of portable fire extinguishers as the primary method of fire extinguishment. Fire hose stations appear to have been used in the drill simulations, but, according to the licensee's staff, fire brigade training has been largely focused on the use of portable fire extinguishers.

(3) Hands on Practice - Use of Fire Hose Stations

The use of fire hose stations on practice grounds or on practice fires under actual fire conditions is not required of individual participants to become a member of the fire brigade. The licensee's staff indicated that sometimes line fire hose practice was conducted in the summer months on practice grounds, but this activity was difficult to continue due to objections raised by station operations because of recurring problems with the station fire pumps. All fire brigade members have not been trained in the use of the high pressure hose streams used at LaSalle while fighting internal structure fires.

(4) Hands on Practice - Use of Portable Fire Extinguishers

According to the licensee, live fire extinguishment of actual fires with portable fire extinguishers is provided to all station employees, but no documentation was provided to verify that all fire brigade members received this training prior to becoming a fire brigade member.

(5) Smoke House Training Facility

According to the licensee, one drill per year includes a challenge to fire brigade members within the licensee's smoke house training facility. Artificial smoke is introduced into the smoke house and fire brigade members dressed in complete turn-out gear and self-contained breathing apparatus have to find their way through the smoke-filled area.

The smoke house is a concrete and steel structure approximately 15 feet by 50 feet with a 20 foot ceiling. Wooden props are erected in part of the building area that simulate obstacles in the form of walls, three steps, and crawl-through spaces.

While the licensee's smoke house facility provides some challenge to fire brigade members, this challenge is not equivalent to the challenges or the quality of training that is provided by State Certified Firemanship Training Facilities such as those required by NFPA Standard No. 27 and Chapter XVII, of Federal OSHA Standard No. 1910.156 (Subpart L).

(6) Fire Brigade Classroom Instruction Training

The inspector's review of the licensee's fire brigade classroom training lesson plans and interviews with selected fire brigade members indicate a broad range of firefighting subjects are covered in classroom lectures; however, no objective measurement is made of individual brigade member's comprehension of this training because written or oral qualifying examinations are not administered on any of the subject matter at any time. Furthermore, an initial 20 hour classroom training session is all that is required for individuals to qualify as a fire brigade member. Based on the inspector's review and interviews with fire brigade members, this training does not contain the quality and depth of training that is intended by the requirements of Chapter 4 of NFPA 27, NRC guidelines or Federal OSHA requirements.

(7) Selection of Fire Brigade Members

The licensee's employment policy is that a particular class of employee (Operators classed as "B" men) must be members of the fire brigade. Though not stated in a job description (according to the licensee), this is a condition of employment. During the inspector's interview with fire brigade members, some brigade members expressed discontent with this policy because of a fear of firefighting; personnel impositions placed on them and/or improper training and experience in the hazards involved in firefighting at the facility.

While other fire brigade members interviewed expressed enthusiasm and genuine interest in the fire brigade, the licensee's employment policy is not consistent with the requirements of Section 3-2.3.3 of NFPA Standard No. 27, which states in part, "only persons meeting physical, mental and emotional requirements should be considered eligible to serve on the fire brigade." The licensee has not established mental and emotional requirements for fire brigade members.

Based on the NRC's direct investigation, review of pertinent fire brigade records, and brigade training programs, and interviews with cognizant licensee personnel, this allegation was substantiated and the following specific conclusions were reached:

- (1) Fire brigade drill critiques did not contain adequate assessments of individual fire brigade member performances during drills.
- (2) Fire brigade drills did not include practice sessions using hose lines in actual fire extinguishment during continuing practice sessions.
- (3) Hands on practice using fire hose stations was inadequate because individual brigade members are not required to be trained in the use of hose lines prior to becoming a brigade member.
- (4) Fire brigade members are not required to use hose lines to extinguish actual fires prior to becoming a fire brigade member and this is not a stated requirement of the licensee's fire brigade training program.
- (5) No documentation is available to verify that fire brigade members have been properly trained in the use of high pressure hose streams that exist in the plant for internal structural firefighting.
- (6) High pressure hose lines that exist in the plant deviate from the licensee's commitment to NFPA Standard No. 14.
- (7) Fire brigade yard hose line practice without fire extinguishment for the fire brigade was discontinued for the fire brigade because of operations problems with the station fire pumps.
- (8) The licensee could not verify that individual fire brigade members received hands on practice using portable fire extinguishers in actual fire extinguishment prior to their becoming a fire brigade member. This is not a stated requirement of the licensee's fire brigade training program.
- (9) The licensee's smoke house training facility does not provide equivalent training experience for internal structural firefighting to that which is provided by State Certified Firemanship Training Facilities that are referenced in NFPA Standard No. 27.
- (10) Fire brigade classroom instruction training was inadequate because it did not require qualifying examinations at any time for any subject matter.

(11) The licensee's employment policy dictates that certain employees must become members of the fire brigade. No criteria has been established to assure that these employees are suitable to perform firefighting duties as required by the licensee's commitment to NFPA Standard No. 27.

These specific conclusions indicate that the licensee has not adopted a performance-based training approach for the fire brigade. That approach would have identified these and other weaknesses which may exist in the fire brigade training program. Licensee management was encouraged to adopt a performance-based training program for the fire brigade.

- b. (Open) Training Department personnel were not qualified technically to give fire brigade training.

Direct investigation of the licensee's training staff and interviews with training instructors responsible for fire brigade training revealed that the fire brigade training instructor has had some fire protection related classes over a five year period. The assistant fire brigade training instructors have had a number of one to three day firefighting courses over a two year period and one seven day firefighting course at Great Lake Naval Training Center in 1973.

The fire brigade training instructor does not claim any firefighting or fire prevention and control experience other than his volunteer firefighting experience and certification as a Firefighter II Instructor through the University of Illinois Extension. The assistant fire brigade instructor claims firefighting experience as an officer in charge of a U.S. Naval Damage Control and Firefighting Team from 1977 to 1979; U.S. Naval Damage Control and Firefighting Team member from 1973 to 1979, and active member of the Mazon, Illinois volunteer fire department from 1982 to the present.

While NRC Fire Protection program guidance documents do not specify technical qualifications for fire brigade training instructors, the licensee's FSAR Commitment to NRC Branch Technical Position 9.5.1 commits the licensee to comply with the requirements of NFPA Standard No. 27 for fire brigade training. Sections 4-2.1 and 4-2.2 of NFPA Standard No. 27 require that fire brigade training be conducted and supervised by a state certified fire service instructor, public fire department, or qualified private consultant. Members of the fire brigade are required to be afforded opportunity to improve their knowledge of firefighting and fire prevention through attendance at outside meetings and special hazard training classes.

The fire brigade training instructor's training and experience in firefighting and fire prevention does not appear to meet the requirements of NFPA Standard No. 27, and according to interviews with cognizant individuals of the licensee's staff, all fire brigade members are not afforded the opportunity to attend outside training classes by qualified instructors on the special hazards of internal structural firefighting at nuclear power plants.

Based on the NRC's investigation and review of the fire brigade training instructors' qualifications and interviews with cognizant licensee personnel, this allegation was substantiated because of the fire brigade training instructors' minimum qualifications, and because the outside special hazards training that satisfies the requirements of NFPA Standard No. 27 is not being provided to fire brigade members. Again, it is felt that had the licensee applied the principles of performance-based training to this functional area, this problem would have been avoided.

- c. (Open) Training department and station management have not supported fire brigade training.

Interviews with cognizant licensee personnel revealed that the licensee's training department and station management have been reluctant to provide outside fire brigade training and have discontinued fire brigade live hose stream practice sessions because of operations problems concerning the station fire pumps. It appears that the licensee considered fire brigade classroom sessions with no examinations adequate for initial fire brigade training. At some point in an employee's tenure, portable fire extinguisher training is provided for all general employees. This is the extinguisher training that is relied upon for fire brigade members to receive initial hands-on practice with portable fire extinguishers. For continuing training, the licensee considered each brigade member's attendance at a minimum two fire drills per year, with one drill consisting of the smoke house challenge, to be adequate fire brigade training.

Based on the NRC's investigation and review of fire brigade training records and interviews with cognizant licensee personnel this allegation was substantiated. The review of selected fire brigade member training records revealed that fire brigade members were not receiving outside special hazards training in internal structural firefighting. The licensee's fire brigade training staff and station management personnel stated it had been their position that the onsite fire brigade training program was adequate; therefore it was not necessary to provide outside fire brigade special hazards training. Furthermore, the licensee's training and management staff acknowledged the discontinuation of fire brigade training in the use of line hose streams due to operations problems with the station fire pumps.

- d. (Open) The station fire marshal was not qualified technically.

Currently, the NRC has not specified any formal qualification requirements for the position of fire marshal; however, based on the NRC's investigation, review of the station fire marshal's qualifications, and interviews with cognizant licensee personnel, the inspectors concluded that the station fire marshal has only a minimum of training in firefighting. He has no fire prevention, fire technology or fire protection engineering formal training or experience, and he has been the station fire marshal for four months.

This is viewed as a serious disadvantage to the individual filling this position and to fire protection program implementation because the responsibilities of the station fire marshal entail duties that require a broad range of fundamental and in-depth technical knowledge and expertise in fire science, fire engineering, firefighting, fire prevention, and regulatory and code interpretation.

Within the licensee's organizational structure, the station fire marshal is assigned responsibilities that include establishing authority and assigning responsibilities for fire protection program implementation, recommending program improvements to management, establishing firefighting strategy and its impact on plant operations, inspecting the plant for control of fire hazards, developing procedures and reviewing surveillance test results to determine operability of equipment, reviewing all fire prevention inspections, preplanning fire hazards and targeting problem areas, recommending to management the purchase of needed equipment, keeping management informed as to the condition of equipment and the status of the fire brigade, monitoring welding and cutting activities, performing fire investigations, and making fire reports.

Although NRC guidelines do not specify technical qualifications for individuals filling the position of station fire marshal, it is Region III's position that this individual should have a thorough knowledge of fire prevention and control methods that is supported by formal training and actual experience in fire protection, as well as a thorough knowledge of the plant, procedures, and regulatory and code requirements, or have such knowledge and experience immediately available in the form of an assigned staff while the necessary knowledge and experience are gained.

Based on the NRC's investigation and review of the station fire marshal's qualifications, this allegation was substantiated. The station fire marshal's limited training and experience in fire protection serves as a potentially serious disadvantage to his position as well as the licensee's overall fire protection program implementation.

- e. (Open) Tests were not administered after fire brigade training.

The NRC's investigation of this allegation is discussed in Paragraph 3.a of the report. Examinations are not administered on any subject at any time during the licensee's fire brigade training program.

Based on the NRC's investigation discussed in Paragraph 3.a of the report, this allegation was substantiated.

In summary, the NRC conducted a review of an allegation received relative to inadequacies in fire brigade training and deficiencies in the qualifications of certain personnel responsible for implementation of the licensee's fire protection program. As a result of the review, it was

determined that, while no explicit regulatory requirements were violated, the concerns expressed by the allegor possessed merit. Taken in aggregate, the deficiencies identified during the review create the potential that fire brigade effectiveness and fire protection program implementation may be compromised. Further, it was the conclusion of the inspectors that the deficiencies identified resulted from a failure on the part of the licensee to clearly establish their expectations of and priorities for these aspects of the fire protection program and build training and qualification requirements around those expectations and priorities. Rather, it appeared to the inspectors that the licensee had based training and qualification requirements on minimum regulatory requirements and guidance.

The findings and conclusions resulting from the inspectors' review of the allegation, including the conclusions relative to the methodology and basis for establishing training and qualification requirements for fire protection personnel, were discussed with the licensee during the exit interview on January 27, 1986. The licensee did not take exception to any of the specific findings and proposed corrective actions responsive to those findings. With respect to the more general conclusions relative to expectations for fire protection personnel, their training, and their qualifications, the licensee stated that Commonwealth Edison had recently undertaken a reevaluation of these and other issues on a corporate-wide basis. This reevaluation, initiated as a result of internally and NRC-identified issues at other Commonwealth Edison nuclear stations, is scheduled for completion late in the second quarter of 1986, at which time actions will be initiated to resolve the findings of the reevaluation. This comprehensive approach to resolution of the identified deficiencies is acceptable to Region III. The allegation which prompted the review documented above will remain open pending review of the results of the licensee's reevaluation and inspection of implementation of the resulting corrective actions. This is currently expected to occur in September 1986.

4. Implementation of Routine Fire Protection Program Requirements

Facility operating License Nos. NPF-11 and NPF-18 require that the license maintain in effect all provisions of the approved fire protection program for LaSalle Station, Units 1 and 2. The inspectors assessed selected areas of the licensee's fire protection program for compliance with stated regulatory requirements. The results of these assessments are as follows:

a. Building Design-Fire Detection System Installation

Appendix A to NRC Branch Technical Position (BTP) 9.5-1, its supplemental guidance, and Appendix R to 10 CFR 50 make up the requirements for an approved fire protection plan that satisfies Criterion 3 of Appendix A to 10 CFR 50. The licensee's FSAR response to NRC Question No. 010.45 committed to installation of fire detection systems installed in accordance with National Fire Protection Association Standard No. 72D. Based on this commitment,

the NRC staff concluded in Section 9.5.1.4 of the original Safety Evaluation Report (SER) that fire detection systems for both LaSalle units were installed or would be installed in accordance with NFPA Standard No. 72D. No deviations from NFPA 72D requirements were granted to the licensee in subsequent SER supplements one through six by the NRC and none were identified to the NRC by the licensee prior to this inspection.

Appendix A to BTP 9.5-1 requires that fire detection systems give audible and visual alarms in the control room and a local audible alarm that sounds at the location of the fire. A local alarm is defined by NFPA 72D as an intermediate fire alarm or fire supervisory control unit used to provide area fire alarm or area fire supervisory service. Sections 4-1 and 4-2.3 of NFPA 72D specify that signal notification requirements in a central supervisory station and, if provided, signal notification for evacuation of occupants, or signals directing aid to the location of an emergency, comply with the provisions of NFPA Standard No. 72A in addition to the provision of NFPA 72D.

Section 3-9.1 of NFPA 72D references Table 3-9.1 of NFPA 72D to explain the performance of alarm initiating device circuits. Table 3-9.1 allows users to identify minimum performance of present and future fire alarm systems by determining the trouble and alarm signals received at a central supervising station (control room) for specified abnormal conditions. According to Table 3-9.1 of NFPA 72D, intermediate fire alarms (local alarms) or fire supervisory control units (control room fire detection system annunciator) are required to be supervised to give distinct trouble alarms in the control room under specified abnormal conditions.

Section 2-4.1 of NFPA 72A requires that all fire alarms and process monitoring alarm systems be electrically supervised so that the occurrences of a single open or a single ground fault condition of installation wiring which prevents the required normal operation of the system, or failure of its primary power supply source will be indicated by a distinct trouble signal. This is graphically displayed in Table 3-9.1 of NFPA 72D. Furthermore, Section 2-7.1 of NFPA 72D requires that all interconnecting equipment, devices and appliances to proprietary signaling systems be monitored for integrity so that the occurrence of a single open or a single ground trouble condition will be automatically signaled to and recorded in the central supervising station within 200 seconds.

During the inspection on January 14, 1986, local alarms in the Unit 1 reactor building were giving audible fire alarms simultaneously as a result of a wire to wire short. No trouble alarm indication was received in the control room because the local alarm circuits, which are manually initiated only from the control room, are not electrically supervised in accordance with NFPA 72D and 72A requirements. According to interviews with cognizant licensee personnel, this was a recurring event that confused employees and

diminished employee and fire brigade member confidence in the fire alarm system to the extent that it is difficult for employees to distinguish an actual fire alarm from a false alarm.

The inspector's investigation of the actuated alarms resulted in the determination that the local alarms were not electrically supervised in the control room. Because of this lack of electrical supervision, control room operators were unable to pinpoint the location of the actuated alarms and the manual reset button for the local alarm circuits was inoperative; therefore, the alarms rang in the Unit 1 reactor building for approximately six hours while the inspectors were onsite until the licensee's staff de-energized the fault that was causing the problem.

In addition, the licensee identified to the inspector, and the inspector verified, that the control room visual alarm annunciator circuit for the fire detection system was not electrically supervised. A single open or a single ground fault condition in this circuit could cause the loss of all control room visual alarm annunciation for the fire detection system without any notification to control room operators of abnormal conditions in the circuit.

For the local fire alarm condition, the licensee took exception to NFPA 72D and 72A and indicated their position was that the local fire alarms were supplementary alarms and therefore not required to be electrically supervised. This position is a misinterpretation of NFPA 72D and 72A.

For the control room visual alarm fire detection system annunciation circuit, the licensee stated that the compensatory measures already being taken were to have an operator verify the status of this circuit once per eight hour shift. This is not equivalent to the continuous electrical supervision that is required for this circuit by NFPA 72D and 72A and is therefore unacceptable to Region III.

These deviations from the requirements of NFPA 72D and 72A constitute a failure to comply with the approved fire protection program and are a violation of Condition No. 24 of Amendment No. 1 to Facility Operating License No. NFP-11 (Unit 1) and Condition No. 15 to Facility Operating License No. NPF-18 (Unit 2) (373/86-004-01(DRS); 374/86-004-01(DRS)).

b. Fire Detection and Local Alarm System Drawing Discrepancies

The inspector reviewed the fire detection and alarm systems as delineated on the applicable electrical drawings and schematics for technical adequacy, circuit presentation, standardization, and conformance to regulatory requirements and industry standards.

The following observations were made:

- (1) Schematic Diagram 1E-1-4033AJ, Revision E, titled "Fire Protection Central Relay Panel 1FP08J":
 - (a) Sub-titles under the functional portion of the circuitry do not exist.
 - (b) Time delay relay 1TDR does not contain time delay description.
 - (c) Contact designation for push button 1PB4 are missing.
 - (d) Contact 2-4 of Relay 1ELX1 does not indicate a reference drawing.
- (2) Schematic Diagram 1E-1-4033AK, Revision C, titled "7.5KVA, 120VAC DC to AC Inverter (Panel 1FP01E)":
 - (a) Breaker rating not indicated on breakers 1 through 8.
 - (b) 250A and 130A fuses internal to the inverter are in series with 100A breaker upstream at the 125V DC emergency feed to the inverter. This is of concern because normally the sequence would be that higher rated breakers for fuses are placed upstream of the circuit.
- (3) Schematic Diagram 1E-0-4421AH, Revision F, titled "RX Building Local Control Box No. 2 (Panel 0FP02J)":
 - (a) Fire and evacuation sirens and local indicating lights relating to the fire detection zones' circuitry are not continuously monitored as required by NFPA 72D-1975.
 - (b) Siren and light circuitry do not contain a protective fuse. A 15A breaker located at the 1FP01E inverter is used for circuit protection. Contact 2-4 of Relay 1FR02 to this circuit failed open just prior to this inspection, preventing reset of local fire alarms. In addition, relay contacts in this circuit are rated at 2A resistive at 120VAC 60HZ per vendor drawing No. 005346, Revision 0. Therefore, it is possible that a current in the circuits of more than 2A could cause the contact to fail. This is possible because the only circuit protection is a 15A breaker.
 - (c) 120VAC feed to Relays 1ER02 and 1FR02 is noted on the drawing as coming from inverter 1FP03E. Review of design drawings indicated that it is presently fed from Inverter 1FP02E (which was verified to be a drafting error).
 - (d) Sub-titles under the functional portion of the circuitry do not exist.

- (4) Connection Diagrams 1E-0-4604AF, Revision G, and 1E-1-4594AQ, Revision J:

No observations made.

- (5) No functional schematic diagram existed delineating the continuously monitored fire detection circuits for the detectors, end of line resistors, and alarm to the main fire annunciator panel (1FP04JB) in the main control room. This (items 4.b(1), (2), (3), and 4.b(5)) is considered an Open Item (373/86-004-02(DRS); 374/86-004-02(DRS)) pending further review by Region III.

c. Field Inspection of Inverters and Panels

The inspector conducted a field visual inspection of inverters 1FP02E and 1FP03E, Fire Protection Panels 1FP08J and OF, and the control room alarm panel. Except for missing designations on several relay contacts, no violations or deviations were identified.

d. Administrative Controls

In the LaSalle County Facility Operating License for Units 1 and 2, it indicates that the licensee shall maintain in effect all provisions of the approved fire protection program.

Supplement 2 of the Safety Evaluation Report dated February 1982, Section 9.5.8 entitled "Appendix R Statement", states in part, "The applicant's fire protection program will meet the technical requirements of Appendix R to 10 CFR Part 50, and the applicant is committed to meet guidelines for the administrative controls for fire protection."

The Commonwealth Edison LaSalle County Station (LSCS) Units 1 and 2 response to the NRC's Request for Conformance to Branch Technical Position (BTP) APCS 9.5-1 (letter dated January 24, 1978 from M. S. Turbok to A. Bournia), indicated that LSCS is in compliance with the NRC position on Administrative Procedures and Controls.

Section B.1 of the BTP requires that administrative procedures consistent with the need for maintaining the performance of the fire protection system and personnel be provided. The inspectors reviewed the licensee's procedure entitled "Fire Protection Program", numbered LAP-900-14, Revision 9 dated September 4, 1985. The procedure states "The purpose of this procedure is to define the Fire Protection Program at LaSalle County Station by assigning responsibilities, defining the organization, and providing information and procedures pertinent to fire protection.

The procedure outlines that the offsite members of the CECO staff for fire protection are:

- (1) Division Vice President and General Manager - Nuclear Station and Division
- (2) LSCS Quality Assurance Supervisor
- (3) CEC Co Fire Protection Coordinator (Fire Protection Engineer)
- (4) CEC Co Fire Protection Engineer

The onsite responsibilities are assigned to:

- (1) Fire Commissioner - Station Manager
- (2) Fire Marshall
- (3) Shift Engineer
- (4) Fire Chief

No deviations were identified in this area except as noted in Paragraph 2 of this report.

The inspectors also reviewed a selected sample of the licensee's administrative controls established to minimize fire hazards such as fire prevention procedure for welding and cutting, use of lumber and other combustibles in the plant, and control of flammable liquids. No deviations were identified in this area.

e. Operating Technical Specification Surveillances

Section 9.5.1.4 of the LSCS UFSAR states "Periodic inspections and operational checks to demonstrate integrity are routinely performed on all fire protection systems. These tests and inspections are identified in the Technical Specifications."

The inspectors reviewed the following technical specification surveillances:

<u>Technical Specification</u>	<u>Description of Surveillance</u>	<u>Procedure Number</u>
4.7.5.1.1.a	Valve lineup	LOS-FP-M3, Rev. 7
	Combined outside fire protection flow path valve position	LOS-FP-M3
4.7.5.1.1.b	Valve Cycling	LOS-FP-A1, Rev. 3
4.7.5.1.3.a.1	Electrolyte level above plates.	LOS-DC-W1, Rev. 9

4.7.5.1.3.a.2	Pilot Cell specific gravity	LOS-DC-W1, Rev. 9
4.7.6.2.e	Inspect auto hold- open, release and closing mechanism, and latches at least once per 6 months	LTS-1000-14

Areas reviewed that were found unacceptable are discussed below:

Fire Protection Valve Surveillances

The inspectors reviewed "Fire Protection Flow Path Valve Cycling Test (FPFPVCT)," Procedure No. LOS-FP-A1, which requires the valves in the open position in the fire protection system to be lubricated and cycled once every six months. This procedure requires three attachments of Procedure LOS-FP-M3, entitled "Valve Lineup (VL)", which identify the valves to be lubricated and cycled to be utilized and attached to the FPFPVCT surveillance.

The inspector could not verify that all the valves required to be lubricated and cycled per FPFPVCT procedure were completed because the three VL surveillances were not attached as required. Instead, several of the individuals performing the surveillance signed the FPFPVCT surveillance and included a note to see the VL surveillance. The inspector reviewed the VL surveillance and noted that one individual that had not signed FPFPVCT surveillance was on the VL surveillance and it was not known if the valves this individual had signed off on in the VL surveillance were cycled as per FPFPVCT procedure. The individual was questioned by the NRC inspectors and it was concluded that the individual conducted the FPFPVCT procedure. The procedure will be revised to insure that adequate documentation will be available to insure that valves in the fire protection system have been properly lubricated, cycled, and locked in the proper position. This is considered an Open Item (373/86004-03(DRS); 374/86004-03(DRS)).

Procedures for Firefighting Foam

The inspectors observed two types of 31% firefighting foam concentrate (produced by two different manufacturers) in the fire protection equipment area in the Unit 2 turbine trackway located at R-27 Elevation 710. At the request of the inspector the licensee contacted the manufacturers to verify if the foams could be used together. The manufacturers indicated that the foams are incompatible. The licensee took corrective action and separated the two types of foam. As discussed with the licensee, there is 50 gallons of one type of foam which will be stored in the warehouse and used only for fire brigade training purposes. In addition, the licensee indicated that only one type of foam will be utilized at this facility. The licensee

indicated that procedures were being developed for the foam concentrate to insure that it is tested according to NFPA and manufacturers' instructions. This is considered an Open Item (374/86004-04(ORS)).

Quality Assurance Program

The Safety Evaluation Report dated April 3, 1981, Section 9.5.7, stated that the applicant has agreed to implement the fire protection program contained in NRC supplemental guidance document "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance," dated August 29, 1977.

The inspector's review of the licensee's Quality Assurance Program included review of the following:

- (1) Quality Assurance Audit Report dated August 2, 1984 and July 31, 1985.
- (2) Audit Checklist and Record Sheet 01-BS-I, March 19-22, 1985, and 01-BS-II, September 10-13, 1985.
- (3) Triannual Audit by M and M Protection Consultants dated December 4, 1984.

No violations or deviations were identified.

8. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 3, 4.b, and 4.e.

9. Exit Interview

The inspectors met with the licensee representatives at the conclusion of the inspection on January 27, 1986, and summarized the scope and findings of the inspection. The licensee acknowledged the statements made by the inspectors. The inspectors also discussed the likely informational content of the inspection report with regard to documents reviewed by the inspector during the inspection. The licensee did not identify any such documents as proprietary. Subsequently, in a telephone conversation with the licensee, additional concerns regarding failure to install fire detection and alarm systems in accordance with governing code requirements were discussed with the licensee.