

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-352/87-02

Docket No. 50-352

License No. NPF-39

Category C

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Facility Name: Limerick 1

Inspection At: Limerick, Pennsylvania

Inspection Conducted: January 5-9, 1987

Inspectors:

A. Krasopoulos
A. Krasopoulos, Reactor Engineer

2/10/87
date

Approved by:

C. J. Anderson
C. J. Anderson, Chief, Plant System Section

2/10/87
date

Inspection Summary: Inspection on January 5-9, 1987 (Report No. 50-352/87-02)

Areas Inspected: Routine unannounced inspection of the fire protection/prevention program including a review of: the combustible material control/hazard reduction program; programmatic administrative controls; installation, operability and maintenance of fire protection systems; fire protection LERs; fire fighting capabilities; fire protection equipment maintenance, inspection and tests; periodic inspections and quality assurance (QA) audits of the fire protection program.

Results: Of the eight areas inspected one violation was identified and two items remain unresolved.

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DETAILS

1.0 Persons Contacted

1.1 Philadelphia Electric Company(PECO)

- *J. F. Franz, Plant Manager
- *C. R. Enoriss, Administrative Engineer
- *D. B. Neff, Compliance Engineer
- *T. Day, QA Engineer
- *J. Mathis, Project Safety Supervisor (Bechtel Corp.)
- *J. F. Rubert, QA Site Supervisor
- *J. Conway, Fire Protection Assistant
- *R. Scott, Superintendent
- *A. McLeon Construction Engineer
- *G. Lauderback, QA Engineer

1.2 U.S. Nuclear Regulatory Commission (NRC)

- *G. Kelly, Senior Resident Inspector
- S. Kucharski, Resident Inspector

*Denotes those present at exit interview.

2.0 Follow-up of Previous Inspection Findings

Closed (Unresolved Item) 85-39-01, Quarterly Meeting for Fire Brigade Members

A concern was raised that although the licensee regularly holds training meetings not all of the Fire Brigade members participate fully in this training. The explanation given was that because of scheduler conflicts or vacations some brigade member missed some of the required training. The licensee revised the training procedures to include a provision for training make up sessions for those who miss training.

The inspector reviewed the training records of able brigade members and verified that they had participated in the required training during calendar year 1986. This item is closed.

Closed (Unresolved Item) 50-352/85-39-02 Semi-Annual Drills For Fire Brigade Members

The inspector reviewed the fire brigade drill records to verify that the fire brigade members participate in drills that are scheduled regularly throughout the year. The inspector did not identify any unacceptable conditions. However, section 4.5 of this report contains additional observation by the inspector related to fire brigade training. This item is closed.

Closed (Unresolved Item) 86-22-01, Health Physicist Training To Include Fire Protection Lessons

The inspector observed that for a fire in a radiological area the Health Physics group responds to the fire along with the brigade. The concern is that since the health physicists (HP) enters the fire area along with the brigade to take samples, the HP's should receive some fire protection training. The licensee agreed and will include in the HP yearly qualification training a fire protection lesson plan that instructs the HP's in their role at the fire scene. The inspector reviewed the lesson plan and observed the action of a HP in a fire drill and did not identify any unacceptable conditions. This item is closed.

3.0 Inspection Purpose and Methodology

The purpose of this inspection was to evaluate the licensee's fire protection and prevention program (FPPP) and verify that the licensee has developed and implemented adequate procedures, consistent with the applicable Technical Specifications (TS), license conditions, regulatory requirements and commitments made in the Final Safety Analysis Report and the Fire Protection System Evaluation Report (FPSER). The evaluation of the program consisted of a documentation and procedure review, interviews with licensee personnel and field observations.

The documents reviewed, the scope of review and the inspection findings for each area reviewed are described in the following sections.

4.0 Fire Protection Program Review

4.1 Review of Combustible Material Control - Hazard Reduction

The inspector toured the plant to inspect housekeeping conditions, work in process and activities or conditions that may present a hazard to the facility.

The scope of review was to verify that the licensee:

- a. Keeps safety related and adjacent plant areas free from transient combustibles;
- b. Keeps flammable and combustible liquids under administrative control and stores such liquids in accordance with the guidelines of the National Fire Protection Association (NFPA) Standards;
- c. Performs periodic inspections for accumulation of combustibles;
- d. Uses wood treated with flame retardant for work inside plant areas;

- e. Does not allow the accumulation of waste, debris, rags, oil spills, and other combustible materials resulting from a work activity to extend beyond the end of each work shift or the end of the activity, whichever is sooner;
- f. Properly maintains the housekeeping in all areas containing safety related equipment and components;
- g. Prohibits smoking in safety related areas except where "smoking permitted" areas have been specifically designed by plant management; and
- h. Requires special authorization (work permit) for activities involving welding, cutting, grinding, open flame or other ignition sources, and assures that these activities are properly safeguarded.

The inspector noted that the plant housekeeping conditions were good, compressed air bottles when not in use were properly secured and flammable liquids were in approved containers.

The inspector also noted that the licensee is utilizing fire watches in areas where cutting, welding and grinding is taking place.

The inspector interviewed some of the fire watches to evaluate their training and assess their knowledge of their function as fire watches. This interview was prompted by the fact that the inspector observed hot work taking place without an extinguisher in the immediate vicinity.

Interviews and subsequent inspections in this area identified the following concerns:

- Hot work fire watches from the Bechtel Construction Corp do not have hands on training on test fires.
- At Reactor Building EL.313, Area 11 the fire watch assigned for hot work left his post while the work was taking place. The inspector noted that Area 11 has combustibles in the form of electrical cables.
- In the corridor at the Turbine Building at elevation 269 Hot work on Unit 1 piping was being performed. The fire watch assigned to this work did not have training and had left his extinguisher on the other end of the corridor. The inspector noted that electric cables and other combustibles were in the area.

The licensee in procedure A-12, Ignition Source Control Procedure, requires that ignition source workers shall ensure that the required type and number of fire watches are in place and that fire watches have the appropriate fire extinguisher prior to starting work. The performance of hot work without a fire watch or fire watch equipment as described above is a violation of procedure A-12.

10 CFR 50 Appendix B Criterion V requires that activities affecting quality shall be prescribed by documented procedures and shall be accomplished in accordance with these procedures. The failure to follow Administrative Procedure A-12 is in violation of 10 CFR 50 Appendix B Criterion V (50-352/87-02-01).

With regard to fire watch training, the NRC guidelines regarding cutting and welding processes are based on the National Fire Protection Association (NFPA) standard 51B. This standard stipulates that "fire watches shall have fire extinguishing equipment available and be trained in its use including practice on test fires". The NRC guidance on this subject specifies that the fire watch be trained and equipped to prevent and combat fires. The guidance assumes the training discussed in NFPA 51B. Pending a review of the licensee's actions in this area this item is unresolved. (50-352/87-02-02)

Additional concerns were raised when the inspector toured Unit 2 to ascertain whether the construction activities present a fire hazard for Unit 1. The construction at Unit 2 involves more than 2500 workers performing a variety of construction activities. The inspector observed that many welding, cutting and grinding operations were taking place at Unit 2.

The licensee stated that in order to prevent fires and combat them in the early stages they have two types of fire watches.

- Dedicated roving watches that patrol the entire facility.
- A welding assistant acts as a fire watch.

The roving watches (eight during the day shift) have adequate fire prevention and firefighting training. However, given the size of the facility and the amount of on-going hot work the licensee also relies on the welding assistant to act as a fire watch. The inspector interviewed persons associated with Unit 2 hot work. In one instance the welder did not have an assistant and did not have an extinguisher. Another welder did not know who the fire watch was and an extinguisher for this activity could not be found.

The inspector also raised the concern that NFPA 51B specifies that when hot work takes place the fire watch should remain in the area at least thirty minutes after all hot work is completed.

The inspector reviewed the following procedures to verify that the licensee had taken adequate measures to prevent and suppress any fires from construction activities on Unit 2:

- Bechtel Procedure CP-S-3, Revision 1 Fire Protection and Emergencies for Limerick Unit 2

- PECO Procedure SE-20, Revision 1, Fire in Unit 2 or construction facilities
- Bechtel Field Safety Procedure FSP #2 Revision 0 Fire Brigade/Fire Watch training
- Bechtel Field Safety Procedure FSP #1 Revision 0 Reporting/Handling of Medical, Fire and Safety Emergencies
- Bechtel Field Safety Procedure FSP #3 Revision 0 Fire Equipment Maintenance and Inspection
- Bechtel Field Safety Procedures FSP #4 Revision 0 Fire Impairment Procedure

The inspector did not identify any unacceptable conditions. However, the concern of the role of the welder assistance as a fire watch is an unresolved item (50-352/87-02-03)

4.2 Review of Administrative Controls

The inspector reviewed the A-14 Procedure for Control of Plant Modifications Revision 4 Lesson Plan SE-8, and Fire Special Event Procedure SE-8, Fire, Revision 3.

The scope of review was to verify that the licensee had developed administrative controls which require that:

- a. Work authorization, construction permit or similar arrangement is provided for review and approval of modification, construction and maintenance activities which could adversely affect the safety of the facility;
- b. Fire brigade organization and qualifications of brigade members are delineated;
- c. Fire reporting instructions for general plant personnel are developed;
- d. Periodic audits are to be conducted of the entire fire protection program; and
- e. The Fire protection/prevention program is included in the licensee's QA Program.

No unacceptable conditions were identified.

4.3 Review of Installation, Operability and Maintenance of Fire Protection Systems

The inspector reviewed the installation of randomly selected fire protection systems, fire protection system flow diagrams, the condition and operability of the fire protection equipment and the Fire Protection Equipment Maintenance Request List to determine whether:

- a. Fire protection equipment such as stand pipes and hose stations are operable and accessible in all areas important to safety;
- b. Adequate portable extinguishers are provided at designated places in each fire area;
- c. The condition of all fire suppression devices inspected is satisfactory;
- d. The system's valves are lined up in the proper position and are protected from tampering; and
- e. The fire protection equipment is well maintained.
- f. The fire barriers and related components such as fire doors, fire dampers, and penetration seals have been installed and maintained properly to insure against fire propagation.

The inspector "walked down" the fire pump system as shown on Process and Instrumentation Diagram (P&ID) M-22 Revision 29, titled Fire Protection to verify that the as found valve and system line up agree with the P&ID.

No unacceptable conditions were identified. However, the inspector observed that the isolation valves installed on the diesel fire pump engine cooling line could be tampered with. The licensee agreed with the inspector and issued a work request to lock the valves open.

4.4 Review of Licensee Event Reports (LER's)

The inspector reviewed Fire Protection related LER's to evaluate the licensees corrective and preventive actions. The LER's reviewed are:

<u>LER No.</u>	<u>Subject</u>
86-06	Failure to meet Surveillance Requirements on Fire Hose stations
86-09	Failure to meet Calibration Requirements on the Remote Shutdown Panel
86-17	Missing fire seals in electrical gutters without fire watch

86-18	Missing penetration plugs from spare conduit without fire watch
86-19	Failure to perform hourly fire watch patrol due to error
86-27	Fire door propped open without fire watch
86-34	Fire door propped open without fire watch
86-36	Failure to perform fire watch duty within the time required
86-51	Missing penetration plugs from spare conduit without fire watch

The inspector observed that the majority of the LER's were issued because of degraded barriers and some of the LER's were preventable. For instance propping open fire doors or removing spare electrical plugs are events that are preventable with general personnel training regarding the importance of establishing fire barrier integrity.

The licensee's immediate corrective actions were to remind the individuals involved in each incident of their responsibilities.

4.5 Review of Fire Fighting Capabilities

The inspector reviewed licensee documents conducted interviews with personnel, inspected fire fighting gear and witnessed a fire drill to evaluate the on-site capability of the licensee to fight fires.

The documents reviewed were:

- Fire training certificates for Unit 2 Fire watches and Fire Brigade members
- Fire watch Unit 2 training rosters
- Local Fire Department training, Procedure ST-7-EPP-480-0 Revision 1
- PECO Fire School Curriculum Course No. 3001
- PECO Refresher Fire School Curriculum Course No. 3021
- Miscellaneous Fire Protection Lesson Plans for Licensed Operators (Training and Requalification)
- Fire drill Procedure ST-7-EPP-550-0 Revision 3

- Fire Brigade Drill Review RT-7-022-983-0 Revision 0
- Fire Brigade Training Review RT-7-022-980-0 Revision 0

The scope of the review was to:

- a. verify that all personnel designated to take part in fire emergencies are trained in these actions and in the overall emergency plan;
- b. verify that the licensee has established a training program that ensures the capability to fight potential fires;
- c. verify that the licensee's training program consists of initial classroom instruction followed by periodic classroom instruction, firefighting practice and fire drills.
- d. verify that the licensee had developed fire fighting strategies for fires in all safety related areas and in areas in which a fire could present a hazard to safety related equipment and
- e. verify that the fire fighters can fight plant fires with the equipment available.

With regard to the above the inspector interviewed the fire fighters assigned to brigade duty to ascertain their level of experience to fight fires. In reviewing the fire school curriculum it was noted that the entire class receives a total of 5 to 8 hours of hands on practice that includes use of:

- Fire Extinguishers (1¼ hours)
- Dry chemical and fog nozzle (approximately 2 hours)
- Rescue technique demonstration (½ hours)
- Hose cart use (½ hours)
- Dry chemical and foam (2 hours)

The inspector noted that the entire class receives 6 to 8 hours of hands on practice. Thus individual experience is estimated to be an hour or two of actual firefighting.

The brigade members that were interviewed all stated that the training received is adequate. They felt confident that the brigade could handle any postulated fires on site.

The inspector requested to review a drill. With regard to the drill the inspector made the following observations:

- The drill instructor, prior to the drill being announced instructed the brigade members in what they should do. This type of instruction is usually reserved for the drill critique.
- The critique that followed failed to mention the fact that the lead hose man did not wear protective gloves.
- The drill instructor although knowledgeable does not have state certification.

Concerning the above the licensee made the following commitments:

- Drills henceforth will be performed without advanced instructions. Instructions will be a part of the critique.
- Drill will be performed with the brigade members in full protective clothing and self contained breathing apparatus (SCBA)
- Breathing with the SCBA will be at the option of the drill instructor
- The drill instructor will receive state certification within a year.

The inspector had no further concerns in this area.

4.6 Review of Equipment Maintenance, Inspection and Tests

The inspector reviewed the following documents to determine whether the licensee had developed adequate procedures which establish maintenance, inspection, and testing requirements for the plant fire protection equipment:

- *-- Procedure ST-6-022-910-0 FSWS diesel driven pump weekly battery inspection
- *-- Procedure ST-6-022-251-0 Fire suppressions water system motor driven pump flow test
- *-- Procedure ST-6-022-911-0 FSWS diesel driven pump quarterly battery inspection
- *-- Procedure ST-6-022-252-0 FSWS FSWS diesel driven pump flow test
- *-- Bechtel procedure -- redundant water supply confirmation and fire system integrity verification

In addition to reviewing the above documents, the inspector reviewed the maintenance, inspection and test records of the items marked with an asterisk to verify compliance with Technical Specifications and established procedures.

The inspector also reviewed the procedure implementation tracking mechanism established by the licensee to assure that surveillances are performed in a timely manner. The inspector did not identify any unacceptable conditions.

4.7 Periodic Inspections and Quality Assurance Audits

The inspector reviewed Audit Report AL-86-94 PL. This audit was performed to satisfy Technical Specification (T.S.) audit requirements T.S. 6.5.2.8.h and 6.5.2.8.i which require twelve (12) and twenty four (24) month audits of the fire protection plan. Because the audit was in a draft form a thorough review to ascertain that the audit was conducted in accordance with the guidelines contained in Generic Letter 82-21 could not be performed.

The inspector however determined that the auditors reviewed all major areas of the fire protection program. The inspector did not identify any unacceptable conditions.

4.8 Facility Tour

The inspector examined the fire protection water systems. This included fire pumps, fire water piping and distribution systems, post indicator valves, hydrants and the contents of hose houses. The inspector toured accessible vital and non-vital plant areas and examined fire detection and alarm systems, automatic and manual fixed suppression systems, interior hose stations, fire barrier penetration seals, and fire doors. The inspector observed general plant housekeeping condition and randomly checked tags of portable extinguishers for evidence of periodic inspections. No deterioration of equipment was noted. The inspection tags attached to extinguishers indicated that monthly inspections were performed. The inspector did not identify any unacceptable conditions other than those identified in other sections of this report.

5.0 Unresolved Items

Unresolved items are matters about which more information is required to ascertain whether they are acceptable items, violations or deviations. Unresolved items disclosed during the inspection are discussed in Section 4.1.

6.0 Exit Interview

The inspector met with the licensee representatives (see Section 1.0 for attendees) at the conclusion of the inspection on January 9, 1987. The inspector summarized the scope and findings of the inspection. The inspector also confirmed with the licensee that the report will not contain any proprietary information. The licensee agreed that the inspection report may be placed in the Public Document Room without prior licensee review for proprietary information (10 CFR 2.790).

At no time during this inspection was written material provided to the licensee by the inspector.