U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-295/89023(DRS); 50-304/89021(DRS)

Docket Nos. 50-295; 50-304

Licenses No. DPR-39; DPR-48

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

Facility Name: Zion Nuclear Power Station, Units 1 and 2

Inspection At: Zion Site, Zion, Illinois

Inspection Conducted: July 17-21 and August 11, 1989

Inspector: J. Holmes

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R.N. Jardne Approved By: R. N. Gardner, Chief Plant Systems Section

Sept 14, 1989 Date 9/14/89

Inspection Summary

Inspection on July 17-21, and August 11, 1989 (Reports No. 50-295/89023(DRS); No. 50-304/89021(DRS)

Areas Inspected: Routine, unannounced inspection to review the implementation of the licensee's fire protection program including a follow-up of licensee actions on previous inspection findings. The inspector utilized inspection modules 64704, 92701 and 92702.

Results: Of the areas inspected, one violation was identified (Paragraph 3.e failure to adequately implement administrative control procedure). One open item was also identified in this report. The open item concerned the need to review potential missile hazards to personnel and safety-related equipment as a result of an earthquake or other event (Paragraph 3.e).

Strengths observed in the licensee's program consisted of:

- Knowledge of fire protection systems by the technical staff engineer appeared to be good.
- Knowledge of the fire protection surveillance procedure exhibited by the fire marshal appeared to be good.

One weakness was observed in that the station housekeeping/fire protection procedure was not adhered to which resulted in an acetylene/oxygen welder's cart temporarily stored in a safety-related area.

DETAILS

1. Persons Contacted

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Commonwealth Edison Company (CECo)

+B. Kurth, Station Manager
*T. Rieck, Superintendent, Technical
*+T. Boyce, Fire Marshal
*B. Brandolino, Quality Assurance
+W. Cramer, Support Group Leader
*G. Demo, Operations
*C. Diaz, Nuclear Engineering Department
*+K. Knudtson, Technical Staff
*B. Reecher, Technical Staff
+W. Stone, Regulatory Assurance Manager
*J. Yost, Quality Control

U.S. Nuclear Regulatory Commission (NRC)

*+A Bongiovanni, Resident Inspector.

- * Denotes persons attending the July 21, 1989 exit meeting.
- + Denotes persons participating by telecon in the exit interview on August 11, 1989.
- 2. Action on Previous Inspection Findings
 - a. (Closed) Noncompliance (295/87034-02; 304/87035-02): The inspector identified that fire operating procedures were not adequately established to achieve hot shutdown for a fire in the inner cable spreading room or the outer cable spreading room.

The licensee stated in a May 16, 1989 letter from G. Trzyna, CECo, to A. B. Davis, NRC, that "The Fire Operating Procedures (FOP 1 through 5) were revised to provide additional guidance about safe shutdown procedures. These procedure revisions were completed by June 28, 1988. The requirement to provide additional training to licensed operators was completed by June 29, 1988."

During this inspection, the inspector verified that fire operating procedures for the inner and outer cable spreading rooms were reviewed by the licensee and finalized. The inspector also verified that the operators were trained on the procedures. This item is closed.

b. (Closed) Open Item (295/87034-03; 304/87035-03): The licensee agreed to enhance the fire operating procedures by developing a specific fire operating procedure for the auxiliary electric equipment room.

The licensee stated, in a May 16, 1989 letter from G. Trzyna, CECo, to A. B. Davis, NRC, that, "The Fire Operating Procedures (FOP 1 through 5) were revised to provide additional guidance about safe

shutdown procedures. These procedure revisions were completed by June 28, 1988. The requirement to provide additional training to licensed operators was completed by June 29, 1988."

During this inspection, the inspector verified that the fire operating procedures for the auxiliary equipment room were in place and that the operators were trained in the procedures. This item is closed.

- c. (Open) Noncompliance (295/87034-05; 304/87035-05): The NRC inspectors identified that inadequate or no emergency lighting existed in the following areas:
 - 617' auxiliary building, general area (front of elevator)
 - MCC 2391 switchgear room
 - MCC 2381B switchgear room
 - o main steam valve house

o upper valve house

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During this inspection, the licensee informed the inspector that the installation and relocation of emergency lights had been completed. However, the testing of the emergency lights has not been completed. In a letter dated August 4, 1989, from G. Trzyna, CECo, to A. B. Davis, NRC, the licensee provided an updated schedule for installation of emergency lighting as indicated below:

- Installation of all emergency lights was completed on June 10, 1989.
- A walkdown of the installation was completed on June 22, 1989.
- Problems that were identified during the walkdown will be corrected by August 7, 1989.
- The paperwork review that is required before the modification test can be conducted will be completed by August 25, 1989.
- ^o The modification test will be completed by September 18, 1989.
- Problems that are identified during the performance of the modification test will be corrected by November 7, 1989.
- The FOP walkdown verification is the final phase of the mcdification process, and is scheduled to be completed by November 30, 1989.

This item will remain open pending review of licensee's FOP walkdown verification.

d. (Closed) Unresolved Item (295/87034-06; 304/87035-06): During the Appendix R inspection, the inspectors discovered that an HVAC duct penetration was not provided with a fire damper in the wall which separates the control complex from the turbine building.

During this inspection, the licensee indicated that the damper has been installed. The licensee also indicated that this damper will be incorporated into the damper surveillance procedure. This item is considered closed.

e. (Closed) Unresolved Item (295/87034-07; 304/87035-07): The inspectors identified that the licensee did not conduct fire barrier surveillance for Fire Zones 11.2-0 and 11.3-0.

During this inspection, the inspector reviewed updated surveillance procedure PT-207D, "Surveillance of Penetration Fire Barrier," which included fire barrier surveillance for Fire Zones 11.2-0 and 11.3-0. Based on the licensee's actions of incorporating these two fire zones into the surveillance procedure, this item is considered closed.

f. <u>(Closed) Noncompliance (295/87034-08; 304/87035-08)</u>: During the Appendix R inspection, the inspectors identified that no fire barrier surveillance had been conducted along the fire wall at the G column line which separates the auxiliary building from the turbine building.

The inspector reviewed the applicable sections of the "Surveillance of Penetration Fire Barriers," PT 207 (A-R). The inspector also verified that the barrier at the G column line which separates the auxiliary building from the turbine building was part of the surveillance procedure. Based on the inspector's review, this item is considered closed.

g. (Closed) Open Item (295/87034-09; 304/87035-09): The licensee was requested to address all fire dampers (other than Ruskin fire dampers which were previously reviewed) to ensure that the dampers would function as designed under airflow conditions.

During this inspection, the inspector verified how the licensee addressed this concern. Section C.2(4) of the Zion Station Administrative Procedure ZAP-02 states, "In case of a major fire in a safety-related area, secure (or notify local operator to secure) ventilation in the affected area at least momentarily to ensure the associated fire dampers will be capable of closing. Re-start initiation at direction of Licensed Shift Supervisor."

The inspector indicated to the licensee that instructing the Licensed Shift Supervisor to "momentarily" secure the ventilation system did not appear adequate, since the supervisor would not know when the dampers closed (at which time the ventilation system could be re-started). The licensee acknowledged the inspector's concern and committed to revise the procedure to indicate that the decision to restore ventilation will be coordinated with the fire brigade leader. In addition, provisions will be available to provide local ventilation to cool equipment in areas required for safe plant operation, if it is necessary to secure the ventilation system for a long period of time.

Based on the licensee's commitment to incorporate these concerns into the procedure, this item is considered closed.

h. (Open) Open Item (295/87034-10; 304/87035-10): Technical Specification 4.21 requires that each of the safety-related penetration fire barriers be verified as being functional by a visual inspection once every 18 months. The licensee's inspection procedure, PT-230, "Visual Inspection of Fire Dampers," indicates that a visual inspection should be performed every 18 months to verify the integrity of the fire dampers. The inspector informed the licensee that a sample number of fire dampers should be drop tested to ensure the dampers will function as designed. The licensee indicated that drop testing of fire dampers would be reviewed.

During this inspection, the licensee indicated that this issue is currently being reviewed and the plant's position on this issue will be developed by October, 1989. Pending the documenting of the position and subsequent review by the NRC, this item will remain open.

1. (Closed) Open Item (295/87034-11; 304/87035-11): During the Appendix R inspection, the licensee informed the inspectors that the methodology for assuring post-fire safe shutdown is based on a conclusion that heating, ventilation, and air-conditioning (HVAC) systems are not necessary to support safe shutdown systems. The licensee had justified this conclusion for the charging pumps on the basis of an analysis which was reviewed and approved by NRR. During the inspection, the audit team requested similar supporting analyses for the remaining shutdown systems in the auxiliary building. The licensee responded that the charging pump room analysis was considered a worst-case condition. However, the licensee could not support that conclusion with data or engineering analyses.

During this inspection, the licensee informed the inspector that in 1988, due to the expense and difficulty of modeling the auxiliary building to justify their conclusion, CECo decided to upgrade the HVAC system to ensure that one system will be available in the event of a fire.

The licensee indicated to the inspector that the modification of the OA and OB exhaust fans was completed on May 17, 1989. Testing, however, is not complete. The licensee informed the inspector that testing of the equipment has not been conducted since a replacement part for OB has not been received. On August 4, 1989, the licensee informed the inspector that new test procedures will be written to test OA under a separate package. The licensee informed the inspector that testing on the OA system will be tentatively completed by September 1, 1989, and testing on the OB system will be completed after the modification is completed. Based on the licensee's decision to upgrade the HVAC system, this item is closed.

j. (Open) Open Item (295/87034-12; 304/87035-12): During the Anpendix R inspection, the audit team discovered that not all fire alarm circuits were electrically supervised. This means that a single break or ground fault condition could render a portion of the fire alarm system inoperable without warning. In addition, the fire alarm system lacks a "reflash" capability. This means that if the fire or trouble condition annunciator panel light in the control room was lit for any reason, a subsequent fire or trouble alarm could not be received.

During this inspection, the licensee indicated to the inspector that their NFPA Code deviation will be provided to NRR by the end of July. This item will remain open pending NRR review and acceptance of the licensee's response regarding NFPA Code deviations.

k. (Closed) Open Item (295/87034-13; 304/87035-13): In conjunction with a request for exemption from the requirements of Appendix R to 10 CFR Part 50, the licensee committed to install fire detectors along the run of power feed cables to component cooling water pumps on elevation 560 of the auxiliary building. The audit team observed that detectors had not been completely installed in accordance with this commitment.

During this inspection, the licensee indicated to the inspector that the additional detectors have been installed and will be incorporated into the detector surveillance. Based on the licensee's response, this item is considered closed.

 (Open) Open Item (295/87034-14; 304/87035-14): During the inspection, the audit team observed that the licensee's fire hazards analysis (FHA) was not consistent with conditions as they exist in the plant.

During this inspection, the licensee indicated that the revised FHA would be provided to NRR by the end of July 1989. This item will remain open pending NRR review and acceptance of the licensee's revised FHA.

m. (Open) Open Item (295/87034-15; 304/87035-15): In Generic Letter 86-10, the staff indicated that licensees should identify and justify all National Fire Protection Association (NFPA) Code deviations in the FSAR or Fire Hazards Analysis. The licensee had not completed this effort at the time of the inspection.

During this inspection, the licensee indicated that the NFPA Code deviations would be provided to NRR by the end of July 1989. This

item will remain open pending review and acceptance of the NFPA Code deviations by NRR.

n. (Closed) Open Item (295/87034-16; 304/87035-16): During the Appendix R inspection, it was determined that a single short circuit between terminals HP and IVHPB on Pyralarm terminal board TBA in the auxiliary electric equipment room may cause a spurious signal. This spurious signal could result in an inadvertent release of halon in the outer cable spreading room where manual operator action is required.

During this inspection, the inspector reviewed the revised Fire Operating Procedure, FOP-4, dated June 29, 1988, which stated "Inadvertent actuation of the halon system to the CSRs could happen due to the fire. Entry into these rooms to perform switching is still required. Health and safety of the operator is <u>NOT</u> affected by the presence of the halon."

The licensee also indicated that a new detection system or modifications to the present detection system is currently being considered. After a decision is made to install a new detection system or modify the current system, consideration of relocating the pyralarm terminal board from the auxiliary electric equipment room will be addressed.

Based on the licensee's actions and statements previously discussed, this item is considered closed.

o. (Closed) Noncompliance (295/87034-17; 304/87035-17): The inspectors observed that the fire pump controller was not installed as required by a license condition.

The licensee indicated in a letter dated May 16, 1989, from G. Trzyna, CECo, to A. B. Davis, that to install the fire pump controller, bus 137 would need to be taken out of service. The licensee indicated that this modification is currently scheduled for the Unit 1 1989 fall refueling outage. Based on the licensee's commitment to complete work during the next refueling outage, this item is considered closed.

p. (Open) Unresolved Item (295/87034-18; 304/87035-18): The licensee was requested to provide the inspector with the field acceptance test (performed by the manufacturer) for the OB diesel fire pump and provide technical justification that the field acceptance test equals the performance as indicated on the manufacturer's certified shop test.

During this inspection, the licensee provided the inspector with the OA electric and OB diesel shop test and field acceptance test. The field tests provided do not appear to equal the performance of the shop tests as required by NFPA. For electric fire pump OA, the field acceptance test far exceeds the shop test.

For diesel fire pump OB, the field acceptance test curve is below the shop test curve between shutoff and approximately 325 feet (total head) and the field acceptance test curve is above the shop test curve between 325 feet (total head) and 250 feet (total head). This appears contrary to NFPA which requires that the fire pump as installed equal the performance as indicated on the manufacturer's certified shop test characteristic curve within the accuracy limits of the test equipment.

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The licensee also provided the inspector with an internal letter dated January 15, 1973, to J. Bitel from J. Leider, G. Pliml and W. Kiedeisen. This letter indicated that the test review committee met for the second time regarding the fire protection system Pre-Operational test results. The letter states, "In our previous discussion we asked that the summary section of the report be improved, and that an explanation be given as to why the diesel driven pump characteristic curve was lower than the test characteristic curve even though the pump speed was indicated to be higher 2100 RPM than the test speed 1770. The revised summary covers the results of the test very well. There is a speed reducer 5/6 on the pump coupling which means that the pump speed was 1750 RPM when the diesel is at 2100 RPM. This satisfactorily explains the test results."

This letter does not provide sufficient technical justification of the deviation between the shop test curve and the field acceptance test for the OB diesel driven fire pump. The licensee agreed to perform a detailed engineering study and provide the rationale for the differences between the shop test and field acceptance test for the OB diesel and OA electric fire pumps. This review should be documented and the licensee should provide a baseline pump curve indicative of the installed pump. This curve should be incorporated into appropriate surveillance procedures. This item will remain open pending review of license's detailed engineering study and upgraded surveillance procedures.

q. (Closed) Unresolved Item (295/87034-19; 304/87035-19): The licensee was requested to review Test Procedure PT 202 to ensure that the fire pumps are tested in accordance with manufacturer's instructions and NFPA-20.

During this inspection, the licensee provided the inspector with an updated test procedure. Based on the licensee's revision of this surveillance test procedure, this item is considered closed.

r. (Open) Unresolved Item (295/87034-20; 304/87035-20): During the Appendix R inspection, it was identified by the inspector that the fire protection coordinator position as described in the licensee's response to Appendix A of BTP APCSP 9.5-1 (Section 3.1.A.1.b) was not filled. The licensee contended that the functions of the fire protection coordinator had been assumed by the station fire marshal and the corporate fire protection engineers. During the inspection, the licensee agreed to review and update the fire protection staffing organization structure and to clarify the position and duties of the personnel responsible for implementing the fire protection program.

During this inspection, the licensee indicated that a revised Fire Hazard Analysis would be provided to NRR by the end of July 1989. This item will remain open pending NRR review and acceptance of the licensee's fire hazards analysis.

s. (Open) Open Item (295/87034-21; 304/87035-21): During the Appendix R inspection, the inspectors requested and were provided with the carbon dioxide surveillance procedure for the inner and outer cable spreading room and diesel generator rooms. Based on review of these surveillance procedures, the inspector determined that the procedure required removing electro-thermo links (ETL) during the surveillance tests.

The removal of the ETLs during carbon dioxide surveillance testing does not allow testing of its associated damper. The licensee was requested to review the carbon dioxide surveillance procedures with NFPA 12 (1980) entitled "Standard on Carbon Dioxide Extinguishing Systems" and the manufacturer's instructions to ensure that the carbon dioxide systems are thoroughly inspected and tested for proper operation. The licensee indicated to the inspector that the present surveillance procedures would be reviewed. The licensee also indicated that the carbon dioxide system testing conducted at other CECo sites would be reviewed.

During this inspection, the licensee indicated that the surveillance procedure will be updated to ensure that the carbon dioxide system's associated dampers and auxiliary circuits will be tested. The surveillance procedures are currently in draft form. This item will remain open pending review of the revised procedures.

t. (Open) Open Item (295/87034-22; 304/87035-22): During the Appendix R inspection, the inspectors requested and were provided with the halon surveillance procedure for the inner and outer cable spreading room. In review of procedure PT 227, "Halon Fire Protection Functional Test," it was observed that the fuses for damper electro-thermo link (ETL) circuit OL P89 were required to be removed. The removal of the ETL fuses during halon surveillance testing does not allow testing of its associated damper. The licensee was requested to review the halon surveillance procedures with NFPA 12A (1980) entitled "Standard on Halon 1301 Fire Extinguishing Systems" and the manufacturer's instructions to ensure that the carbon dioxide systems are thoroughly inspected and tested for proper operation. The licensee indicated that the present procedures would be reviewed. The licensee also indicated that the halon system testing conducted at other CECo sites would be reviewed.

During this inspection, the licensee indicated that the surveillance procedure will be updated to ensure that the halon system's associated dampers and auxiliary circuits will be tested. The surveillance procedures are currently in draft form. This item will remain open pending review of the revised procedures.

3. Routine Fire Protection Program

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The inspector reviewed a sample of the licensee's administrative procedures. The inspector also reviewed records and toured the plant and outside grounds. During this review, the inspector determined the following:

a. Fire Marshal and Assistant Fire Marshal

Administrative Procedure ZAP-02, "Station Fire Fighting Forces," establishes the Zion Station fire prevention and fire fighting organization and responsibilities. Sections B.1 and B.2 of ZAP-02 define the responsibilities of the fire marshal and the assistant fire marshal. Discussed below are the results of the inspector's review of the fire marshal and assistant fire marshal positions.

(1) Fire Marshal

The station fire marshal's qualifications include eight years experience as a firefighter, several seminars in fire protection and 13 years as a senior reactor operator. The fire marshal has held the position as fire marshal at Zion for six years. At the present time the fire marshal is responsible for the day-to-day availability of the various components that make up the fire protection program at the station and is assigned the following responsibilities:

- (a) Implement the fire protection program.
- (b) Conduct and document periodic inspections and tests of the passive and active fire protection features at the station in accordance with administrative controls and technical specification criteria.
- (c) Review and establish appropriate control of planned plant operations or outages that will render installed fire protection systems incapable of performing their intended function.
- (d) Inform the appropriate Zion Station and/or PWR engineering personnel of potential deficiencies in the fire protection program.
- (e) Maintain a current listing of qualified fire brigade members.
- (f) Direct and coordinate the overall firefighting activities, and designate alternate personnel to perform this function when not on site.

- (g) Provide technical assistance to the Training Supervisor for the development, update, and administration of the site fire protection training program.
- (h) Evaluate the performance of Fire Brigade.
- (i) Develop and analyze fire drill problems.
- (j) Investigate and report each fire.
- (k) Review the fire reports.
- Inspection, testing, and purchasing of inventory, and maintenance of all fire fighting equipment as approved by the station manager.
- (m) Perform fire hazard reviews for nuclear work requests.

(2) Assistant Fire Marshal

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ZAP-02 indicates that the assistant fire marshal reports to the fire marshal and is assigned duties by the fire marshal. ZAP-02 does not explicitly indicate the assistant fire marshal duties. However, the assistant fire marshal's duties, as indicated by the licensee, may include:

- (a) Assure that fire watches and operator rounds properly cover potential fire hazards.
- (b) Implement fire drills and evaluate results.
- (c) Maintain fire brigade records.
- (d) Participate in all fire inspections.
- (e) Provide continuing followup on items identified by fire inspections.
- (f) Assist in fire brigade training.
- (g) Perform duties as specified by the fire marshal.
- (h) Perform duties of the fire marshal in his absence.

In discussions with the licensee's staff, the inspector determined that although there is a fire brigade instructor with a title of assistant fire marshal, this individual does not report to the fire marshal and is not assigned duties by the fire marshal.

(3) Conclusion

The inspector was concerned that the fire marshal's lengthy

list of responsibilities constituted a significant workload and it appeared that an assistant fire marshal was warranted.

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The inspector requested the licensee's position regarding this concern. The licensee indicated their position in a letter dated August 4, 1989, from G. Trzyna, CECo, to A. B. Davis. This letter indicated that:

"During the 1970's, Zion's original Technical Specifications did not identify a specific individual who had the responsibility for fire protection activities. In 1979, Technical Specifications were changed to reflect the fire protection responsibility as a collateral duty of an operating engineer. To accomplish the activities associated with this new responsibility, the station appointed an assistant fire marshal. In addition, appropriate Administrative Procedures were developed to assure the completion of fire protection activities.

In 1983, the Station appointed a full-time fire marshal. The assistant fire marshal position was retained on an as-needed basis to perform the duties of the fire marshal whenever he was not available (vacations, training, etc.). At the present time, the duties and responsibilities are accomplished primarily with one full-time person. The requirements of ZAP-02 with regard to the responsibilities of the assistant fire marshal are being performed by the fire marshal.

The Company's Introspect reorganization plan, which is currently being implemented, includes a full-time assistant fire marshal position. It is the station's intent to appoint that individual by September 1, 1989. This is consistent with the organization of all CECo facilities." The licensee's response appears to adequately address the inspector's concerns.

b. Fire Operating Procedures and Fire Brigade Training

Good management oversight and attention is required to provide basic training concepts which encompass knowledge, skill and performance. The implementation of the fire operating procedure and fire fighting in enclosed areas with potentially energized equipment is complex. This involves infrequently performed duties that are highly critical, and personnel should be trained to effectively carry out these duties.

(1) Fire Operating Procedure Training

The inspector reviewed the 1989 training records for the nuclear station operators required to implement the fire operating procedures. No discrepancies were observed.

During discussions with the licensee, the licensee indicated that walkdown of the fire operating procedure during initial or requalification training is currently not performed. The licensee did indicate that tentatively, by the end of 1990, the job performance measure (JPM) will include an operator walkdown of portions of the fire operating procedures to ensure that operators can successfully implement the procedures. The licensee's proposed actions to include operator walkdown of i ons of the fire operating procedures in the JPM appear to biocceptable.

(2) Fire Brigade Training

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The inspector reviewed the 1989 training record summary for the fire brigade members with acceptable results. The inspector also reviewed the 1989 fire brigade chief training record summary. This fire brigade training summary indicated that all licensed foremen met the requirements to be fire brigade leaders. Accordingly, in cases where an individual was not available for training, a program which was equivalent to the required training was given. In one case where a waiver was given to an individual not attending one of the training sessions, the licensee indicated that this individual's prior experience was sufficient for the individual to perform as fire brigade leader.

The review of the Station Control Room Engineer (SCRE) fire brigade leaders indicated that one SCRE had not yet received fire brigade leader training and four others had not yet completed fire brigade leader training.

On August 10, 1989, in a telephone conversation, the licensee informed the inspector that approximately two years ago the SCREs were added to the list of individuals to be fire brigade leaders. The licensee indicated that this was done in order that SCREs could fill in for foremen as fire brigade leader. At this time, the SCREs were considered back-ups to the trained foremen.

As previously indicated, there was one SCRE who had not received fire brigade leader training. The licensee indicated that this individual no longer functions as a SCRE and works in another department. The licensee agreed to institute controls to ensure that until the four SCRE's are trained, there will be at least one licensed foreman (or acting foreman) who will have received fire brigade leader training.

At the present time, the licensee does not conduct fire brigade leader retraining for the fire brigade leader. The licensee indicated to the inspector that a retraining program is currently being planned for the brigade leader. The licensee's proposed actions to conduct retraining for the fire brigade leader appeared to be acceptable.

c. Fire Brigade Training on Live Electrical Fires

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During discussions with the licensee, the inspector was informed that the fire brigade does not train on live electrical fires. The inspector was concerned that the fire brigade should train on the type of fire they are expected to control and extinguish. For example, if the fire brigade is expected to handle flammable liquid fires and flammable gas type fires, then the fire brigade should train on flammable liquid and gas type fires in order to develop the knowledge and skill to perform effectively during these types of fires. The licensee acknowledged the inspector's concern.

d. Personnel Required for Safe Shutdown and Fire Fighting Activities

In the event of a disabling fire which requires evacuation of the Zion 1 and 2 Control Rooms when both units are operating, it would be necessary to provide sufficient personnel to shutdown both operating reactors and provide manual fire fighting capabilities. The inspector reviewed this issue as follows:

(1) Safe Shutdown Personnel

The licensee has developed four separate fire operating procedures (FOP 1, 2, 3, 4,) which require evacuation from the main control room should a disabling fire occur in any of the following areas:

- main control room (FOP-1)
- inner cable spreading room (FOP-2)
- outer cable spreading room (FOP-3)
- auxiliary electric equipment room (FOP-4)

An evacuation of the control room due to a fire would require at a minimum the following plant personnel:

Operator	Title	Responsibilities
(a)	Unit 1 Nuclear Station Operator	Direct operators and operations of Unit 1.
(b)	Unit 2 Nuclear Station Operator	Direct operators and operations of Unit 2.
(c)	Electric "A" Qualified Personne?	Aligns diesel generators and switchgear (Unit 1).
(d)	Center Desk Nuclear Station Operator	Manual control of Unit 1 steam generator (1A) atmospheric relief valve and Unit 1 valve house lineups.

(e)	Equipment Attendant "B"	Performs auxiliary building Unit 1 valve lineups.
(f)	Rad Waste Foreman (non-licensed)	Performs auxiliary building valve lineups and manual control of Unit 1 and Unit 2 turbine driven auxiliary feedwater pumps.
(g)	Electric "A" Qualified Personnel	Aligns Unit 2 diesel generators and switchgear.
(h)	Fourth Nuclear Station Operator	Manual control of Unit 2 steam generators (2A) atmospheric relief valve and Unit 2 valve house lineups.
(i)	Equipment Attendant "B"	Performs auxiliary building

(2) Fire Brigade

Section 6.1.3 of the licensee's Technical Specifications specifies at least a five member fire brigade in addition to the personnel required for essential functions during a fire emergency.

Unit 2 valve lineups.

In the event of a disabling fire requiring the evacuation of the control room, the licensee indicated the minimum composition of the fire brigade for all shifts is as follows:

Licensed Shift Foreman Licensed Shift Foreman Equipment Attendant "B" Equipment Attendant "B" Equipment Attendant "B"

(3) Conclusion

The inspector requested records to demonstrate that the nine personnel required to implement the safe shutdown procedure and the five personnel required for the fire fighting activities were available for three shifts on July 4 and 5, 1989.

Based on the licensee's documentation, the inspector verified that the appropriate composition of personnel for implementation of the fire operating procedures and fire brigade was available. The inspector was concerned that prior to "coming on shift," individuals should be informed as to their position as either a FOP person or as a member of the fire brigade. The licensee indicated that this concern will be reviewed.

e. Plant Tour

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The inspector toured several areas of the Unit 1 and Unit 2 reactor buildings and the turbine building. During this tour, the inspector visually observed several hose stations, extinguishers, sprinkler valves, emergency lights and housekeeping. The inspector observed that, in general, housekeeping was good. The inspector did, however, observe the following:

(1) Acetylene/Oxygen Welder's Cart

On July 17, 1989, the inspector observed an acetylene/oxygen welder's cart on elevation 579 near the 2C Auxiliary Feedwater Pump in a safety-related area (Fire Area/Fire Zone 11.3) for which the licensee had requested exemption regarding full automatic suppression, detection and 20 feet separation between redundant components and cabling for safe shutdown equipment.

Contrary to the licensee's housekeeping/fire protection procedure, the fire marshal was not consulted if additional fire equipment and increased surveillance was required. This condition existed from July 17 through July 19, 1989.

10 CFR 50.48(a) requires that each operating nuclear power plant have a fire protection plan that satisfies Criterion 3 of Appendix A to 10 CFR Part 50. It further requires that the plan describe specific features necessary to implement the program such as administrative controls and personnel requirements to limit fire damage to structures, systems, or components important to safety so that the capability to safely shut down the plant is ensured.

Section 3.1.B.3 of the licensee's 1977 Fire Protection Report indicates that normal and abnormal conditions or other anticipated operations such as modifications and refueling activities are reviewed by appropriate levels of management and special action and procedures are implemented to assure adequate fire protection and reactor safety.

Technical Specification 6.2. requires that detailed written procedure be prepared, approved, and adhered to for the Fire Protection Program.

Sections G.8 and G.9 of the licensee's station housekeeping/fire protection procedure indicate that in areas where transient fireload is excessive and presents a possible hazard to the plant equipment, an increased surveillance of the area may be required. The station fire marshal shall be consulted regarding areas of concern. When consulted, he/she will determine if additional fire equipment and increased surveillance are required.

Failure to adhere to the fire protection procedure is considered a violation (295/89023-01(DRS); 304/89021-01(DRS)) as identified in the Notice of Violation.

(2) <u>Stationary High Pressure Cylinder Storage In and Adjacent to</u> Safety-Related Areas

During the inspector's tour, the inspector observed stationary high pressure cylinders stored in and adjacent to safety related areas. The licensee was requested to review potential missile hazards resulting from earthquakes or other events which may dislodge the high oressure cylinders. The dislodged high pressure cylinders may result in a broken discharge valve assembly which may become a missile hazard to personnel and safety-related equipment. The licensee acknowledged the inspector's concern. This is considered an Open Item (295/89023-02(DRS); 304/89021-02(DRS)) pending review of the licensee's actions.

(3) Radwaste Sorting Room Sprinkler System

The inspector observed a wet pipe sprinkler system in the radwaste sorting room on elevation 592 of the radwaste building. In discussions with the licensee, the inspector was informed that the sprinkler system, at one time, was to be removed to limit the amount of water that may be introduced into the radwaste building. At the request of the insurance company, the licensee agreed not to remove the sprinkler system, however the licensee removed the test valve and disconnected the water flow alarm. The inspector agrees with the licensee that the sprinkler system is a good method to provide protection of the radwaste sorting room and would provide a fast and reliable method of controlling and/or extinguishing a fire. However, at present, the test valve has been removed and the water flow alarm removed. The inspector informed the licensee that the test connection and water flow alarm should be returned to service and maintained. In the event of fire or inadvertent operation/rupture of the sprinkler system, the water flow alarm will inform key personnel of the event. The licensee acknowledged the inspector's concern.

The inspector also toured the plant's outside grounds. In general, the housekeeping in this area was good. However, the inspector observed unnecessary debris at the new service building which was under construction. In addition, east of the new service building, wooden crates and garbage were also observed. The licensee was informed of the need to improve housekeeping in this area.

f. Offsite Fire Department Response

The licensee's procedure ZAP-02 indicates that the Zion Fire Department directs the fire fighting activities, and the Zion Station fire chief and fire brigade will act as an assist team near the scene of the fire. Also, the station procedure indicates that the Zion Fire Department will set up a command post with the assistance of security personnel. The Zion Fire Department fire chief will consult with the shift engineer for plant nuclear and steam safety considerations. The inspector suggested to the licensee that the plant fire brigade leader who is a shift foreman and is also trained as a fire fighter should make the decision ; o whether the Zion station fire fighters should be replaced by the a Fire Department fire fighters.

The licensee agreed to meet with the appropriate Zion Fire Department personn. 1 to discuss this matter.

g. Fire Fighters Breathing Apparatus

The self-contained breathing apparatus of the Mine Safe Appliances (MSA) air packs is an essential piece of protective equipment for the fire fighter. The MSA equipment provides a source of air to allow the fire fighter to enter a fire area which may be oxygen deficient and laden with toxic fumes and smoke.

As part of this inspection, the inspector reviewed the licensee's surveillance procedure titled "Maintenance and Care of Respiratory Protective Equipment," ZRP 1220-3, dated April 30, 1989. No deficiencies were identified. However, the inspector recommended that the licensee consider preprinting all permanent locations of MSA equipment as part of the surveillance procedure to ensure that all locations containing MSA air packs are checked. In addition, the inspector also recommended that the licensee consider developing an additional column in the surveillance procedure so that after the technician checks for air leaks and operation of the main-line valve and bypass valve, it may be documented in the surveillance. Further, the inspector observed that the licensee did not utilize a lear plastic seal to provide assurance that the MSA equipment was not tampered with after its last surveillance. The licensee concurred with the inspector's comments and indicated that they will preprint all permanent locations on the surveillance, include an additional column to include air leaks, etc., and utilize a seal on the MSA breathing equipment after the surveillance has been completed.

4. 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. An open item disclosed during the inspection is discussed in Paragraph 3.e.

5. Exit Interview

The inspector met with the licensee representative at the conclusion of the inspection on July 21, 1989, and summarized the scope and findings of the inspection. Also on August 11, 1989, a conference call was held between the licensee's representatives and the inspector. The inspector discussed the likely content of this report and the licensee did not indicate that any information discussed during the inspection could be considered proprietary in nature.