U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-272/91-12
50-311/91-12
50-354/91-09

Docket Nos. 50-272
50-311
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License Nos. DPR-70
DPR-75
NPF-50

Licensee: Public Service Electric & Gas Company
P.O. Box 236
Hancocks Bridge, New Jersey 08038

Facility Name: Salem Generating Station - Units 1&2
Hope Creek Generating Station

Inspection At: Lower Alloways Township, New Jersey

Inspection Conducted: April 15-19, 1991

Other contributors to the inspection report include:

David Notley, NRR - Fire Protection
Malcolm Widman, NRR - Fire Protection

Inspector: R. J. Paolino 6-5-91
R. J. Paolino, Senior Reactor Engineer, Electrical Section, EB, DRS — date

Approved by: Jacque D. Durr for 6/18/91
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Inspection Summary: Inspection on April 15-19, 1991 (Combined Inspection Report Nos. 50-272/91-12; 50-311/91-12 and 50-354/91-09).

Areas Inspected: 1) Routine, announced inspection of the Hope Creek Fire Prevention/Protection Program and its implementation in the areas of Administrative controls, surveillance, maintenance, modifications, training, and audits. 2) Routine, announced inspection of Salem Station program for completing installation of 1-hour fire barriers.

Results: (Hope Creek) No violations involving safety related areas or equipment were identified. Based on the results of this inspection, it was determined that the licensee fire protection/prevention program was satisfactorily implemented except for a deficiency noted in the implementation of Hope Creek's administrative procedures requiring biennial review of procedures.

(Salem) The installation work for fire barriers appears to be on schedule for completion by July 1992.

DETAILS

1.0 Persons Contacted

Public Service Electric & Gas Company

*J. Bailley, Nuclear Engineering Service Manager (Acting)
*R. Bashall, Systems Analysis Supervisor
*R. Braddick, Senior Staff Engineer
J. Clancy, Station Licensing Engineer - HC
*R. Donges, Licensing Engineer
P. Eldreth, Fire Protection Manager
S. Funsten, Maintenance Manager - HC
*R. Griffith, Sr., Manager Station QA - HC
*J. Hagan, General Manager - HC
*G. Kapp, Project Manager Special Projects
*J. Kerin, Senior Nuclear Fire Protection Supervisor
*C. Lambert, Manager, Nuclear Engineering & Project Services
W. McDevitt, Lead Engineer
*M. Metcalf, Manager Special Projects - E&PB
P. Moeller, Manager Site Protection
W. O'Malley, Operations Engineer - HC
*B. Preston, Manager Licensing & Regulation
*M. Prystupa, Radiation Protection Engineer - HC
I. Quather, Senior Staff Engineer
*J. Ronafalvy, Manager Nuclear Engineering Design
*G. Schroeder, Senior Staff Engineer
*W. Schultz, Manager, Station
D. Smith, Station Licensing Engineer - HC
*F. Thomson, Assistant to General Managers
*E. Villan, Station Licensing Engineer
*C. Vondra, General Manager - Salem Operations
*K. Wolf, Fire Protection Staff Engineer

(*) denotes personnel present at exit meeting of April 19, 1991

2.0 Fire Protection Program (64704)

2.1 Introduction

NRC requirements prescribe a fire protection program in 10 CFR 50.48 in order to limit fire damage in nuclear facilities. An inspection was performed to evaluate the adequacy of the Hope Creek fire protection program and associated implementing procedures. The inspection included the verification of procedure implementation, technical adequacy of procedures and programs, inspection of plant facilities, fire brigade training and qualification and review of previous licensee audit findings. Surveillance, routine tests, administrative and other procedures related to fire protection were reviewed with respect to administrative requirements for an effective fire protection program.

A sample of completed surveillance documentation was reviewed to verify that fire protection surveillance procedures are being properly implemented. Overall, the Hope Creek Fire Protection Program is being satisfactorily implemented with the exception noted in Section 2.3.

2.2 Plant Tour

During the inspection period, the inspector walked down accessible vital and non-vital areas in the Hope Creek Generating Station. The inspector visually inspected the fire protection water systems, fire pumps, fire water piping and distribution systems, post indicator valves, hydrants and contents of fire houses. The examination included area fire detection and alarm systems, automatic and manual fixed suppression systems, interior hose stations, fire barriers, penetration seals and fire doors. The inspector observed general housekeeping conditions and randomly checked inspection tags on portable fire extinguishers to verify that the required monthly surveillance inspections were performed. No deterioration of equipment was noted. Tank gauges registered full. All extinguishers noted appeared to be of the correct type, capacity, carried current inspection tags and were provided in the correct location.

2.3 Procedural Review

The inspector reviewed applicable fire protection program procedures consisting of Corporate Policy, Site Administrative and Departmental Procedures. The Departmental Procedures include site protection, fire department pre-fire plans, surveillance testing, training and alarm responses. The Nuclear Safety Manual and the Programmatic Standard currently in use at the Hope Creek Generating Station were reviewed.

The policy and procedure documents reviewed appear to be well thought out, technically sound and properly implemented.

During this review, the inspector noted that nine surveillance procedures had not received the required two year review. Three of the procedures, M10-SHT-029, M10-SHT-030 and M10-SHT-69, had not been reviewed since 1986.

Following discussions with licensee personnel, the licensee was able to provide documentation, dated April 19, 1991, to indicate that they had also identified similar discrepancies in the review cycle. Licensee documentation indicates there are twenty surveillance procedures (including the nine identified by the NRC) which did not have the two year review cycle. To prevent usage of these procedures, which are used on equipment requiring a five year surveillance cycle, the licensee is tracking the items which have not been reviewed. As part of this effort, the licensee is planning to update all of the procedures through the use of contract personnel. This work is scheduled for completion by September 1, 1991. Upon completion, the licensee will notify the NRC Resident Inspector to close out this item. This item will be tracked as an NRC unresolved item pending completion of the update and the required review (50-354/91-09-01).

2.4 Fire Brigade Training

Fire Department Training Procedures and attendance records for brigade members were reviewed. General observations indicate the records are complete and accurate. Training records are maintained for each brigade member. The records provide a complete history of training, medical fitness, participation in fire drills and shift assignments. Certificates for specific courses in specialized subjects are kept in each fire brigade members file.

Discussions with fire brigade members during the facility inspection indicates the fire brigade members are cognizant of their responsibilities and that the training provided is beneficial in maintaining an awareness of current developments in fire protection and improving fire fighting techniques. The site protection department responsibilities includes not only fire fighting, response to hazardous material incidents and emergency medical situations, but also plant inspections, maintenance of fire protective measures, surveillance/testing, impairment tracking, ignition and combustible material control and the fire watch program. Operating personnel are assigned to each crew as needed to provide technical support and knowledge of plant systems.

No deficiencies were identified.

2.5 Control of Combustibles

Control of combustible materials throughout the facilities inspected was considered to be good. Ignition source control within the plant appears to be handled properly. There was no observed hotwork in progress in either facility. Adequate fire watchers, including one change of personnel, was observed and no deficient barriers were noted. Good housekeeping was noted. No accumulation of trash was noted and cleanliness appeared to be stressed in all areas. Weekly management walks through the facility are performed with positive affects on housekeeping management.

2.6 Announced Drill

During this inspection, there was a joint drill conducted with the local offsite fire department. The objective of the drill was to determine the adequacy of:

- procedures for recalling off-duty fire fighting personnel.
- procedure and method for calling the local offsite fire department for assistance.
- communication process between onsite/offsite fire departments.
- procedure for getting offsite fire department personnel and equipment into protected areas.
- compatibility of offsite fire department equipment for tieing into site hydrant system.
- staging and incident command system.
- hose handling, search and rescue techniques using self-contained breathing apparatus.
- fire fighting strategies and tactics in the fire attack.
- use of medical services techniques for victims found during search and rescue.

The drill was performed on the backshift, starting at 18:18. The drill, terminated at 19:12, demonstrated that the command and control of site protection was adequate; actions taken were timely and decisive.

2.7 Audits

The inspector reviewed the annual and triennial audits of the station fire protection program. Triennial Audit No. 89-032, dated December 12, 1989, covers the audit period November 7 through November 17, 1989. Annual Audit No. 90-032, dated October 26, 1990, covers the audit period September 17 through September 28, 1990. The audits cover fire protection programs at the Salem Generating Station, Units 1&2 and the Hope Creek Generating Station. The Hope Creek Generating Station audits included

walkdowns of outbuildings (hose houses), work in-process, organizational controls for training, document control, procurement, material control, operating status, and control of measuring and test equipment. Observations were summarized and recommendations were made where applicable. The site protection department has issued work requests to repair/correct discrepancies noted. The Audit Assessment SQA-91-003 of January 3, 1991, by Fire Protection Consultants and Technical Specialists have been that overall the Fire Protection Program is satisfactory. The report also recognizes the effectiveness of the NFPD organization and the staff performance.

2.8 Surveillance Test (ST) Review

The inspector reviewed the following surveillance tests to determine if associated technical specification requirements were being properly implemented:

· MIO-SHT-003	Fire Water Valve Lineup
· MIO-SST-009-1	Bi-Weekly Operability Test of No. 1 Fire Pump
· MIO-SHT-019	Monthly Verification of CO2 Flow Path
· MIO-SST-027-1	18 Month Inspection of Technical Specification Fire Doors
· SP-(O)4.3.3.6.1	Bi-Annual Functional Test of Smoke and Thermal Detector
· MIO-SHT-029/CS-#1	Bi-Annual Functional Test of Class 1 Fire Detection System
· MIO-SST-022-2	Monthly Inspection of Technical Specification Fire Hose Station

All of the STs reviewed were performed within the required frequency and were satisfactorily and properly dispositioned. The surveillance test information has been incorporated into a computer program. The information is readily available on demand. The program provides a description of the test, the test procedure, the test frequency, due date, date completed and the previous completion date for each component tested.

3.0 Status of Appendix R Modifications (Salem Units 1&2)

3.1 1-Hour Fire Barrier

Public Service Electric & Gas Company (PSE&G) received approval from the NRC to implement modifications to the Salem Generating Station for the alternative compliance to Section III.G.2 of 10CFR 50, Appendix R. The related exemptions were approved by the NRC via Safety Evaluation Report (SER), dated July 20, 1989. The approval included a requirement to install 1 hour fire barriers between redundant safe shutdown circuits in specific areas.

The Appendix R modification program reviewed by the NRC during this inspection included:

- Installation of an automatic CO2 suppression system in the electrical penetration areas per Design Change Request (DCP) 1SC-2160-1/2 for Unit 1 and DCP-2SC-2160-1/2 for Unit 2. Engineering design started August 10, 1989. Installation was completed on January 25, 1991.

- Installation of an automatic CO2 suppression system in the 480V switchgear room of both Salem Units 1&2 per Design Change Requests (DCP) 1SC-2161-1/2 and 2SC-2161-1/2 (for non-outage work). Engineering design was started on August 10, 1989. Installation was completed on January 25, 1991 for Unit 1 and March 5, 1991 for Unit 2. For work requiring an outage (DCP-1SC-2161-4), installation was completed on March 27, 1991.

- Suppression systems for containment panel 335 per DCP-1SC-2271 and 2SC-2271. Engineering design for both units was started on May 4, 1990. Installation was completed on April 2, 1991 for Unit 1. Unit 2 completion date is scheduled for the 1992 refueling outage but no later than July 23, 1992 (as specified in the PSE&G Fire Protection Improvement Modification Schedule provided to Region I on October 5, 1989, Attachment 1).

- One hour fire barriers for redundant cables in specific fire areas. Forty-five fire areas have been identified. Twenty-one fire areas were determined as not requiring additional 1-hour fire barriers. Of the remaining 24 fire areas, six of 10 fire areas analyzed required the 1 hour fire wrap as follows:

  a) 1&2FA-AB-45A per DCP-1SC-2159 completed December 21, 1989

b) 1&2FA-AB-45B per DCP-1SC-2159 completed December 21, 1989
c) 1&2FA-DG-84F per DCP-1EC-2248 completed October 27, 1988
d) 1&2FA-EP-100G no wrap required
e) 1&2FA-PP-100H no wrap required

Installation of the 1 hour fire barrier for the remaining 14 fire areas is scheduled for completion by July 23, 1992. Engineering evaluation prior to installation will include seismic loading of cable trays and cable ampacity. Engineering is scheduled for completion by October 1991. The remaining fire areas include:

a) 1&2FA-AB64A, 4160V Switchgear Room - elevation 64'-0
b) 1&2FA-AB64B, Reactor Plant Auxiliary Bldg. - elevation 64'-0
c) 1&2FA-AB84A, 460V Switchgear Room - elevation 84'-0
d) 1&2FA-AB84B, Reactor Plant Auxiliary Bldg. - elevation 84'-0
e) 1&2FA-AB84C, Reactor Plant Auxiliary Equipment Area No. 11
f) 1&2FA-AB100C, Reactor Plant Auxiliary Equipment Area - elevation 100'-0
g) 1&2FA-EP78C, Lower Electrical Penetration Area - elevation 78'-0
h) 1&2FA-MP78I, Mechanical/Penetration Area - elevation 78'-0 and 100'-0

Within the scope of this inspection no deficiencies were identified.

3.2 Compensatory Measures

In an April 4, 1991 letter to the NRC, PSE&G has proposed the use of hourly fire watches as compensatory measures pending completion of the 1 hour fire barrier. However, it was noted that several fire areas do not have area wide detection systems. Some of these areas have only manual fire suppression with some limited automatic fire suppression. During this inspection, these areas (identified in PSE&G letter of April 4, 1991) were examined during a facility walkdown verification of installed 1 hour fire barriers to determine the adequacy of hourly fire watches as opposed to continuous fire watches.

Fire areas visited include:

- Fire Areas 1&2FA-AB-64A, 4160V Switchgear Room - elevation 64'-0
- Fire Areas 1&2FA-AB-64B, Reactor Plant Auxiliary Building - elevation 64'-0
- Fire Areas 1&2FA-AB-84A, 460V Switchgear Room - elevation 84'-0
- Fire Areas 1&2FA-AB-84B, Reactor Plant Auxiliary Equipment Area - elevation 100'-0
- Fire Area 1&2FA-AB-100C, Reactor Plant Auxiliary Equipment Area - elevation 100'-0
- Fire Areas 1&2FA-EP-100C, Lower Electrical Penetration Area
- Fire Areas 1&2FA-MP-78I, Mechanical Penetration Areas - elevation 78'-0 and 100'-0

Conditions noted during this facility walkdown include:

- An excellent level of housekeeping throughout both Salem Units with the resultant absence of transient combustibles.
- General spatial separation of redundant safe shutdown cables and/or equipment
- Automatic fire detection capability installed in the vicinity of required safe shutdown cables or components
- Automatic fire suppression installed where the fire hazards clearly indicated need for automatic suppression
- Good access for manual fire fighting

Based on these observed conditions, the NRC concluded that there is no technical reason to increase the fire watch surveillances in the areas from an hourly roving watch to a continuous watch.

4.0 Previously Identified Open Items

During the February 27 - March 3, 1989 NRC inspection (Report No. 89-06), an unacceptable condition was identified involving the Halon Cart and the fact that it took approximately 25 minutes to make the connection into the supply line. The licensee committed to performing an engineering evaluation to resolve the problem by June 30, 1989.

The engineering evaluation was completed on June 6, 1989, concluding that a fixed halon system should be installed in the control room. The system has been installed, using quick disconnect hose connection. The system was declared operational on April 12, 1991.

For tracking purposes, the licensee assigned the number 89-06-FA. The NRC identified this as an open item, however, a tracking number was not assigned. This item is closed.

5.0 Unresolved Item(s)

Unresolved items are matter about which more information is required in order to ascertain whether they are acceptable items or violations. Unresolved item(s) are discussed in Details, Paragraph 2.3.

6.0 Exit Meeting

The inspector met with licensee personnel (denoted in Details, Paragraph 1.0) at the conclusion of the inspection, on April 19, 1991, at the Salem Generating Station site. The inspector summarized the scope of the inspection and the inspection findings at that time.

ATTACHM[redacted]