UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-400/88-01

Licensee: Carolina Power and Light Company
P. O. Box 1551
Raleigh, NC 27602

Docket No.: 50-400 License No.: NPF-63

Facility Name: Harris 1

Inspection Conducted: January 11-15, 1988

Inspectors: T E Conlon for 2/2/88
J. R. Harris Date Signed

Accompanying Personnel: D. C. Ward

Approved by: T E Conlon 2/2/88
T. Conlon, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, announced inspection was in the areas of fire protection/prevention and follow-up on previously identified inspection items.

Results: Two violations were identified - Inadequate Procedure FPP-013 for Implementing Mitigating Actions for Inoperable Fire Suppression Systems and Failure to Perform Quarterly Surveillance of the Multicycle and Preaction Sprinkler Systems on the 190, 268, and 305 Elevations of the Reactor Auxiliary Building.

## REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. Biggenstaff, Principal Engineer - ONS
*G. Forehand, Director - QA/QC
*A. Kemp, QA Surveillance
*D. Markle, Specialist - Fire Protection
*J. McKay, Principal Engineer - HESU
*C. McKenzie, Principal QA Engineer
*J. Smith, Ops, Support Supervisor
*G. Stokes, Senior Specialist - Fire Protection
*D. Tibbits, Director Regulatory Compliance
*M. Wallace, Specialist - Regulatory Compliance
*J. Willis, Plant General Manager

Other licensee employees contacted included construction craftsmen, engineers, technicians, operators, mechanics, security force members, and office personnel.

NRC Resident Inspector

*G. Maxwell

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 15, 1988, with those persons indicated in Paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The following new items were identified during this inspection:

a. Violation Item (400/88-01-01) - Inadequate Procedure FPP-013 for Implementing Mitigating Actions for Inoperable Fire Suppression Systems

b. Violation Item (400/88-01-02) - Failure to Perform Quarterly Surveillance of the Multicycle and Preaction Sprinkler Systems on the 190, 268, and 305 Elevations of the Reactor Auxiliary Building.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Fire Protection/Prevention Program (64704)

a. Fire Prevention/Administrative Control Procedures

The inspector reviewed the following Fire Prevention/Administrative Procedures:

| Procedure No. Revision | Procedure Title |
|---|---|
| FPP-001 / Rev. 4 | Fire Protection Conduct of Operations |
| FPP-002 / Rev. 4 | Fire Emergency |
| FPP-003 / Rev. 1 | Fire Investigation Report |
| FPP-004 / Rev. 1 | Control of Transient Combustibles |
| FPP-005 / Rev. 3 | Duties of a Fire Watch |
| FPP-013 / Rev. 2 | Fire Protection and Mitigating Actions |
| FPP-014 / Rev. 1 | Fire Protection Surveillance Requirements |
| OMM-003 / Rev. 1 | Equipment Inoperable Record |

Based on this review, it appears that all of the above procedures except procedure FPP-013 meet the NRC Guidelines of NUREG-0800, Section 9.5.1, "Standard Review Plan - Fire Protection Program.

The inspector became concerned about the implementation of Section 8.2 of FPP-013 during a review of a sample of Equipment Inoperable Records (EIRs). An EIR is required to be issued whenever a fire protection system/feature becomes inoperable per OMM-003. The EIR form documents what compensatory measures have been implemented for the period while the fire protection system/feature is inoperable. The inspector reviewed eight EIRs generated as a result of a fire suppression system becoming inoperable to ensure the appropriate fire watch was posted per Section 8.2 of FPP-013. Section 8.2 of FPP-013 requires a continuous fire watch to be posted in areas containing redundant systems or components and a hourly fire watch for all other areas when the suppression system protecting the area becomes inoperable. On two occassions an EIR was issued (EIR F-649 and F-694) which required a continuous fire watch; however, a review of the Fire Watch Logs for the affected dates found that only an hourly watch was posted. Discussions with the licensee fire protection staff revealed that the areas protected by the inoperable suppression systems in the two EIRs were areas which did not contain redundant systems or components. Therefore, the hourly fire watch posted was

appropriate. Since the fire watch established was an adequate compensatory measure for these systems being inoperable this is not considered a violation. However, in reviewing FPP-013 the inspector noted the procedure does not provide any guidance to the user about which suppression systems do or do not protect areas containing redundant systems or components. In addition, discussions with the licensees fire protection staff revealed this information was not readily available to them. Therefore, the procedure is considered to be inadequate. This is identified as Violation Item 88-01-01, Inadequate Procedure FPP-013 for Implementing Mitigating Actions for Inoperable Fire Suppression Systems. The licensee has initiated a procedure change to eliminate this problem.

The inspector also reviewed the periodic inspection reports required to be performed periodically by Procedure FPP-001. The inspector noted that approximately eight inspections were conducted in 1987 and the majority of the inspections were performed in non-safety related areas. Presently most areas of the plant are being patrolled by hourly fire watches who are also performing fire prevention inspections. The inspector expressed a concern that the inspection frequency may need to be increased as fire watch patrols are deleted. This will be reviewed in a future inspection.

b. Fire Protection Surveillance Procedures

The inspector reviewed the following Fire Protection System Surveillance Procedures:

| Procedure No. | Title |
|---|---|
| FTP-3001 | Motor Driven Main Fire Pump Operability Test, Weekly Interval |
| FPT-3002 | Fire Main Valve Position Verification, Monthly Interval |
| FPT-3003 | Fire Suppression Valve Cycle Test, Yearly Interval |
| FPT-3004 | Main Fire Pump Flow Test, Annual Interval |
| FPT-3005 | Fire Suppression Non Accessible Valve Cycle, Test 18 Month Interval |
| FPT-3006 | Fire Main Flow Test, Three Year Interval |
| FPT-3007 | Hydrant Hose House Visual Inspections, Monthly Interval |
| FPT-3008 | Fire Hydrant Inspection ,Annual Interval |

| | |
|---|---|
| FPT-3009 | Fire Hydrant Flow Test, Annual Interval |
| FPT-3110 | Hose Rack Inspection Containment Building |
| FPT-3302 | Main Drain Test Auxiliary Building, Quarterly Interval |
| FPT-3305 | Main Drain Test, Fuel Handling Building, Quarterly Interval |
| FPT-3307 | Main Drain Test, Diesel Generator Building Quarterly Interval |
| FPT-3425 | Fire Damper Inspection, 18 Month Reactor Auxliary Building 286 Elevation |
| FPT-3427 | Fire Damper Inspection, 18 Month Interval Diesel Generator Building |
| FPT-3500 | Fire Door Check, Daily |
| FPT-3502 | Fire Door Monitor Trip Actuating Devices Operations Test - Panel 2, Monthly Interval |
| FPT-3506 | Fire Door Inspection, Fuel Handling Building Semi-Annual Inspection |

The above surveillance procedures were reviewed to determine if the various test outlines and inspection instructions adequately implement the surveillance requirements of the plant's Fire Protection Technical Specifications. In addition, these procedures were reviewed to determine if the inspection and test instructions followed general industry fire protection practices, NRC fire protection program guidelines and the guidelines of the National Fire Protection Associated (NFPA) Fire Codes. Based on this review, it appears that the above procedures are satisfactory.

c. Fire Protection System Surveillance Inspections and Tests

The inspector reviewed the following surveillance inspection and test records for the dates indicated:

| Procedure No. | Results Reviewed |
|---|---|
| FPT-3001 | 9/3/87 to 12/31/87 |
| FPT-3002 | 7/8/87 to 12/18/87 |
| FPT-3003 | 10/31/86 and 11/4/87 |
| FPT-3004 | 7/30/86 and 8/18/87 |
| FPT-3005 | 11/13/86 and 9/19/87 |
| FPT-3006 | 8/1/86 and 12/3/86 |

| | |
|---|---|
| FPT-3007 | 7/21/87 to 1/4/88 |
| FPT-3008 | 10/31/85, 10/23/86 and 10/18/87 |
| FPT-3009 | 4/18/86 and 4/17/87 |
| FPT-3302 | 10/17/86 to 11/24/87 |
| FPT-3305 | 10/15/86 to 11/12/87 |
| FPT-3307 | 10/15/86 to 11/12/87 |
| FPT-3505 | 9/21/86, 1/22/87 and 8/10/87 |
| FPT-3425 | 10/19/86 |
| FPT-3427 | 10/19/86 |
| FPT-3502 | 7/28/87 to 1/11/88 |

The surveillance test record data and testing frequency associated with the above fire protection system surveillance test/inspections were found to be satisfactory with regard to meeting the requirements of the plant's Fire Protection Procedures, except for the results associated with procedure FPT-3302.

Procedure FPT-3302 is the main drain test for the automatic suppression systems in the Reactor Auxiliary Building (RAB) and is to be conducted quarterly. The review of surveillance records revealed that six systems on the 190, 268, and 305 elevations of the RAB were not tested between 2/4/87 and 8/28/87. This exceeded the quarterly interval. This is identified as Violation Item 88-01-02, Failure to Perform Quarterly Surveillance of the Multicycle and Preaction Sprinkler Systems on the 190, 268, and 305 Elevations of the Reactor Auxiliary Building.

Failure to complete the required quarterly surveillance would result in the suppression systems being declared inoperable. Declaring the systems inoperable would have required a continuous fire watch to be posted in the area protected by the inoperable systems per procedure FPP-013 since redundant systems or components are located within these areas. However, since the licensee was unaware of the missed surveillance a continuous fire watch was not posted. The inspector reviewed the fire watch records for the dates the systems were inoperable and found that the licensee had maintained an hourly fire watch in the affected areas.

The purpose of the main drain test is to verify the system operability per the requirements of procedure FPP-014 by flowing water through the system piping to ensure there is no blockage. Since the main drain test was conducted successfully on 2/4/87 prior to the missed surveillance and on 8/28/87, the quarter following the missed surveillance, the inspector felt that although the systems were "technically inoperable" they would have performed their intended function. Therefore the licensees failure to maintain a continuous fire watch in the area is not considered a violation.

d. Fire Protection Audit

The most recent audit and surveillance reports of the Harris Fire Protection Program were reviewed. These audits were:

QAA 10022, 86-04, 8/25-29/86
QAA 10022, 87-04, 6/8-12/87
QA Surveillance, 87-093, 5/12-18/87
QA Surveillance, 87-103, 6/1-5/87
QA Surveillance, 87-109, 6/10-17/87
QA Surveillance, 87-119, 6/18-26/87
QA Surveillance, 87-128, 7/6-10/87
QA Surveillance, 87-133, 7/11-12/87
QA Surveillance, 87-139, 7/20/87
QA Surveillance, 87-152, 7/3/87 - 8/7/87
QA Surveillance, 87-176, 8/8-17/87
QA Surveillance, 87-185, 9/18/87 - 10/9/87

These audits identified several fire protection program discrepancies and unresolved items, and recommended several program improvements. The licensee has either implemented the corrective actions associated with these audit findings or a scheduled date for completion of the corrective actions has been established. The licensee appears to be taking the appropriate corrective actions on these audit findings.

e. Fire Brigade

(1) Organization

The total station fire brigade is composed of approximately 87 personnel from the operations and radwaste staff. The on duty shift fire brigade leader is normally one of the licensed operators and the remaining four fire brigade members are composed of operators and radwaste personnel. The inspector reviewed the on duty shifts for the following dates and verified that sufficient qualified fire brigade personnel were on duty to meet the provisions of the plant's Final Safety Analysis Report:

1/12/88
1/14/88

(2) Training

The inspector reviewed the training and drill records for four brigade leaders and twelve brigade members for 1987. The records reviewed indicated that each of these leaders and members had received and attended the required training and participated into the required number of drills. The inspector also verified that a fire brigade drill had been conducted every 92 days for each shift for 1987. The fire brigade training records that were reviewed were found satisfactory.

In addition, the inspector reviewed the licensee's initial fire brigade training program to verify that the following training topics are being covered:

- Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.
- Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.
- The toxic and corrosive characteristics of expected products of combustion.
- Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.
- The proper use of available fire fighting equipment and the correct method of fighting each type of fire. The types of fires should include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fire resulting from construction of modifications (welding), and record file fires.
- The proper use of communication, lighting, ventilation and emergency breathing equipment.
- The proper method for fighting fires inside buildings and confined spaces.
- The direction and coordination of the fire fighting activities (fire brigade leaders only).
- Detailed review of fire fighting strategies and procedures.
- Review of the latest plant modifications and corresponding changes in fire fighting plans.

Based on this review, it appears that the licensee's initial fire brigade training program covers the above required training topics. In addition, it appears that the licensee's fire brigade training program repeats the basic fire fighting skills of the initial program to qualified fire brigade members every two years.

(3) Fire Brigade Fire Fighting Strategies

The inspector reviewed the following plant fire fighting strategies:

Fire Zone 1-A-4-CHFA/RAB 261
Fire Zone 1-A-4 COME/RAB 261
Fire Zone 1-A-EPA/RAB 261

Based on this review, the inspector determined that the above fire fighting strategies adequately addressed the fire hazards in the area, the type of fire extinguishants to be utilized, the direction of attack, systems in the room/area to be managed in order to reduce fire damage, heat sensitive equipment in the room/area, and specific fire brigade duties with regard to smoke control and salvage.

(4) Fire Brigade Drill

During this inspection, the inspector witnessed an unannounced fire brigade drill. The drill fire scenario was a fire in the area of the motor driven auxiliary feedwater pumps (Reactor Auxiliary Building E236), which was apparently caused by the ignition of transient combustibles by welding activities in the area.

Five fire brigade members responded to the pending fire emergency. The brigade assembled outside fire zone 1-A-3-PBA in full protective firefighting turnout clothing and self contained breathing apparatus. An initial size-up of the fire condition was made by the fire brigade leader and three 1½ inch fire attack hose lines were advanced into the area. The fire attack hose lines were placed in service on the fire and the fire was placed under control in 19 minutes. In addition, the fire brigade initiated fire victim search and rescue, smoke control, and water control operation.

The fire brigade utilized proper manual firefighting methods and reacted to the fire drill scenario in an effective and efficient manner.

f. Plant Tour and Inspection of Fire Protection Equipment

(1) Outside Fire Protection Walkdown

The inspector verified that the two fire pump suction intake structures from the Harris lake were in service.

The two fire pumps were inspected and found to be in service. The diesel fuel tanks for the diesel driven fire pump contained approximately 329 gallons of fuel which met the requirements of procedure FPP-014.

The following sectional control valves in the outside fire protection water supply system were inspected and verified to be properly aligned, locked, and electrically supervised in position:

| | |
|---|---|
| 3FP-6 | 3FP-89 |
| 3FP-14 | 3FP-91 |
| 3FP-24 | 3FP-125 |
| 3FP-56 | 3FP-126 |
| 3FP-61 | 3FP-1035 |
| 3FP-80 | 3FP-1036 |
| 3FP-82 | 3FP-1037 |
| 3FP-88 | 3FP-1044 |

The following fire hydrants and fire hydrant equipment houses were inspected:

| | |
|---|---|
| 3FP-38 | 3FP-79 |
| 3FP-49 | 3FP-86 |
| 3FP-54 | 3FP-87 |
| 3FP-60 | 3FP-90 |
| 3FP-62 | 3FP-124 |
| 3FP-65 | 3FP-128 |
| 3FP-69 | 3FP-433 |

The equipment houses contained the minimum equipment requirements of that specified by NFPA-24, Private Fire Service Mains and Their Appurtenances, and/or the FSAR commitments. The equipment appeared to be adequately maintained.

A tour of the exterior of the plant indicated that sufficient clearance was provided between permanent safety-realted buildings and structures and temporary buildings, trailers, and other transient combustible materials. The general housekeeping of the areas adjacent to the permanent plant structures was satisfactory.

(2) Permanent Plant Fire Protection Features

A plant tour was made by the inspector. During the plant tour, the safe shutdown related plant areas within the Reactor Auxiliary Building (RAB) and their related fire protection features were inspected.

The fire/smoke detection systems, manual fire fighting equipment (i.e., portable extinguishers, hose stations, etc.) and the fire area boundary walls, floors and ceiling associated for the above plant areas were inspected and verified to be in service or functional.

The automatic sprinkler systems installed in the 190' elevation of the RAB were inspected and found to be in service.

Based on this inspection, it appears that the fire protection features associated with the above plant areas are satisfactorily maintained.

The plant tour also verified the licensee's implementation of the fire prevention administrative procedures. The control of combustibles and flammable materials, liquids and gases, and the general housekeeping were found to be satisfactory in the areas inspected.

(3) NUREG 0800 Fire Protection Features

The inspector visually inspected the fire rated raceway fire barriers required for compliance with NUREG 0800, Section C.5.b in the following plant areas:

Reactor Auxiliary Building Elevation 286
Reactor Auxiliary Building Elevation 236

Based on the inspector's observations of the raceway fire barrier enclosures in the areas above, it appears that the one hour fire barrier integrity associated with the above fire barrier assemblies are being properly maintained in a satisfactory condition.

The inspector also visually inspected the one hour fire rated barriers separating MCCs 1A35-SA and 1A35-SB. Based on this inspection, the inspector determined that the one hour fire resistive integrity associated with this equipment fire barrier was being properly maintained in a satisfactory condition.

The inspector made a walkdown of the NUREG 0800 related sprinkler protection in the following plant areas:

| Fire Zone | RAB Elevation |
|---|---|
| 1-A-1-PA | 190 |
| 1-A-1-PB | 190 |
| 1-A-3-PB | 236 |
| 1-A-EPA | 261 |
| 1-A-EPB | 261 |

| | |
|---|---|
| 1-A-CSR-A | 286 |
| 1-A-CSR-B | 286 |

Based on this walkdown, the inspector determined that the sprinkler protection provided for the areas identified above provided sufficient protection with respect to controlling an exposure fire.

The following eight-hour emergency lighting units were inspected:

| Unit No. | |
|---|---|
| RAB 10 | RAB 91 |
| RAB 24 | RAB 100 |
| RAB 50 | RAB 104 |
| RAB 78 | |

These units were in service; however RAB 50 had one burnt out lamp and RAB 24, 50, 87 and 104 appeared to be improperly aligned. The inspector reviewed the licensees procedure for periodic maintenance of the emergency light units and found that it did not address ensuring the lights remained properly aligned to illuminate safe shutdown access paths and safe shutdown equipment. The inspector informed licensee personnel responsible for this procedure that he was concerned that over a period of time the lights would become misaligned if the proper light alignment was not periodically verified. The licensee personnel stated the procedure would be revised to include verifying proper lighting alignment.

Except as noted above, within the areas inspected, no additional violations or deviations were identified.

6. Inspector Followup Items

The licensee's actions associated with the following IFI were reviewed:

(Closed) IFI (400/85-40-01) Construction activities involving fire barrier wraps, fire doors, penetration seals and fire detection systems. During this inspection, the inspectors reviewed records addressing these items and verified during a walkdown of the plant that work on these items has been completed. This item is closed.