



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30303

Report No.: 50-261/84-51

Licensee: Carolina Power and Light Company
 411 Fayetteville Street
 Raleigh, NC 27602

Docket No.: 50-261

License No.: DPR-23

Facility Name: H. B. Robinson

Inspection Conducted: December 10-13, 1984

Inspector:

P. M. Madden
 P. M. Madden

1-7-85

Date Signed

Approved by:

T. E. Conlon
 T. E. Conlon, Section Chief
 Engineering Branch
 Division of Reactor Safety

1-8-85

Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 28 inspector-hours onsite in the area of fire protection/prevention.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Licensee Employees Contacted

- *R. E. Morgan, Plant General Manager
- *T. Benjamin, Principal Engineer, Operations
- *D. Baur, Principal Specialist, QA
- *A. McCaully, Principal Engineer, Onsite Nuclear Safety
- *W. Brown, Senior Engineer, Fire Protection
- *E. Roper, Senior Specialist, Fire Protection
- *D. Stadler, Director, Regulatory Compliance
- *D. Bates, Senior Specialist, Regulatory Compliance
- *C. Wright, Senior Specialist, Regulatory Compliance
- R. Hightower, Fire Protection Technical Aide
- C. Potts, Security

Other licensee employees contacted included technicians, operators, security force members, and office personnel.

NRC Resident Inspector

*H. E. P. Krug

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on December 13, 1984, with those persons indicated in paragraph 1 above. The licensee acknowledged the following inspection findings:

- a. Inspector Followup Item (261/84-51-01), Inadequate Fire Extinguishing Equipment Selection Guidance Provided for Personnel Handling Flammable Liquids and Gases - paragraph 5.a.
- b. Inspector Followup Item (261/84-51-02), Additional Fire Brigade Training Required in Salvage and Water Runoff Control Operations - paragraph 5.b.2.
- c. Inspector Followup Item (261/84-51-03), Inadequate Upper Plant Management Review and Approval of Initial Fire Brigade Training Program Lesson Plans - paragraph 5.b.2.
- d. Inspector Followup Item (261/84-51-04), Fire Brigade/Offsite Fire Department Drill Not Conducted Within the Past 12 Months - paragraph 5.b.3.
- e. Inspector Followup Item (261/84-51-05), Insufficient Number of Fire Brigade Drills Conducted in Safety-Related Areas - paragraph 5.b.3.

- f. Inspector Followup Item (261/84-51-06), Inadequate Radiation Control Training Provided to Offsite Fire Department Personnel - paragraph 5.b.4.
- g. Inspector Followup Item (261/84-51-07), Inadequate Fire Door Assembly in M.G. Set Room Fire Barrier Wall - paragraph 5.d.
- h. Unresolved Item (261/84-51-08), Inadequate Fire Damper Assemblies Installed on 3-Hour Fire Barriers - paragraph 5.d.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 5.d.

5. Fire Protection/Prevention Program

a. Administrative Procedures

The inspector reviewed the following licensee's fire protection administrative procedures:

<u>Procedure No.</u>	<u>Fire Protection Procedure</u>
OMM-002 (Rev. 4)	Fire Protection Manual
FP-003 (Rev. 1)	Control of Transient Combustibles
FP-005 (Rev. 4)	Hot Work Permit
FP-006 (Rev. 0)	Handling of Flammable Liquids and Gases
FP-0010 (Rev. 3)	Housekeeping Controls

On the basis of this review, it appears that these procedures are adequate with regard to ensuring that the following fire prevention administrative controls are properly instituted:

- (1) Removal of all waste, debris, scrap oil spills, flammable liquids, or other combustibles upon completion of a work activity in a safety-related area.
- (2) Only flame-retardant treated wood may be used in safety-related plant areas. Where scaffolding and platforms are needed, noncombustible materials are required to be utilized, where possible.
- (3) Weekly housekeeping fire protection inspections are conducted and accumulation of combustibles is controlled.

- (4) Storage of combustible material is restricted to designated storage areas. Storage of combustibles in zones outside these designated areas is prohibited. In addition, the quantities of combustibles which are stored in the designated areas are limited to the amount required for normal plant operation.
- (5) Smoking by plant personnel is prohibited in areas containing flammable liquids or potentially flammable vapor atmospheres that present a hazard to safety-related equipment.

The inspector, in reviewing procedure FP-006, paragraphs 5.17 and 5.2.3 on pages 7 and 8, respectively, noted that procedure FP-006 refers to FP-003 for guidance with regard to the selection of fire extinguishing equipment by personnel handling flammable liquids and gases. However, procedure FP-003 does not provide the necessary fire extinguishing equipment selection guidance as stated by procedure FP-006. Procedure FP-003 should be revised accordingly, to provide the necessary fire extinguishing equipment selection guidance as required by procedure FP-006. This item is currently being evaluated by the licensee to determine the appropriate corrective actions and is identified as Inspector Followup Item (261/84-51-01), Inadequate Fire Extinguishing Equipment Selection Guidance Provided for Personnel Handling Flammable Liquids and Gases, and will be reviewed during a subsequent NRC inspection.

b. Fire Brigade

(1) Organization

The plant fire brigade for each shift is comprised of five personnel: a team leader which is a senior reactor operator; two Unit 2 auxiliary operators; the fire protection technical aide; and a Unit 1 operator. The inspector reviewed the "On Shift Fire Brigade Duty Roster" for the following dates and verified that sufficient qualified personnel were on duty to meet the provisions of Technical Specification Section 6.2.2:

December 10, 1984
December 11, 1984
December 12, 1984

(2) Fire Brigade Training Program

Procedure OMM-002, Rev. 4, Attachment 6.4 outlines the fire brigade initial training program. The inspector reviewed the fire brigade training to determine its compliance with NFPA-27 recommendations for organization and training. The initial training program is designed to provide basic knowledge and manual fire suppression skills to the Robinson Fire Brigade personnel and to maintain that acquired knowledge and skills through continued training. The initial fire brigade training program is 36 hours

and includes practical hands-on firefighting applications. The following topics are covered by the program.

- Fire brigade duties and responsibilities
- Chemistry and extinguishment of fire
- Classification and uses of portable fire extinguishers
- Uses of water and foam in fire extinguishment
- Fire hydrants, fire hoses, and cabinets and houses
- Fire protection systems and building layout
- Flammable liquids and gases
- Smoke and toxic gas hazards
- Communications
- Lighting
- Use of fire preplans for fire hazards and ventilation controls
- Practical utilization of self-contained breathing apparatus, fire-water system fire hydrants, fire hose, hose cabinets, hose houses and ladders

This program appears to be an effective one and exhibits great effort by the licensee's fire protection staff with regard to its development and implementation. However, the review of the program and the evaluation of past fire brigade drills disclosed that more emphasis needs to be placed on salvage and water runoff control operations. The inclusion of these topics into the training program would assist the licensee with regard to increasing the fire brigade's overall effectiveness and the recommended training topics outlined by NFPA-27 would then be completely covered by this training program. This has been identified as Inspector Followup Item (261/84-51-02), Additional Fire Brigade Training Required in Salvage and Water Runoff Control Operations, and will be reviewed during a subsequent NRC inspection.

The Fire Brigade Training Program is maintained under the direction of the Manager of Operations and Maintenance. The Senior Fire Protection Specialist is responsible for ensuring the development and the technical adequacy of the training materials and sources to be used for the Fire Protection Training Program.

However, as a result of the inspector's review of the initial Fire Brigade Training Program Course lesson plans, the following concerns were expressed to the licensee's Fire Protection Staff:

- (a) The initial fire brigade training course lesson plans have not been properly documented and formulated into structured lesson plans similar to those utilized by the Training Department in the operator training program.
- (b) The instructional content of the existing fire brigade lesson plans is not properly referenced to the resource materials which were utilized in establishing the program. Proper references are required in order to establish program credibility.
- (c) The initial fire brigade training program has not been reviewed and approved by plant management as a site training program.

This has been identified as Inspector Followup Item (261/84-51-03), Inadequate Upper Plant Management Review and Approval of Initial Fire Brigade Training Program Lesson Plans, and this will be reviewed during a subsequent NRC inspection.

(3) Fire Drills

The inspector reviewed the 1983 and 1984 through September 17, 1984, fire brigade drill records to verify that fire drills are being conducted in accordance with Technical Specification requirements and the requirements of the licensee's procedure OMM-002, Rev. 4. The following is a summary of the fire brigade activities:

<u>Date(s) Conducted</u>	<u>Drill Exercise</u>	<u>Drill Type</u>
02/22/83, 03/01/83 03/14/83, 03/15/83 03/22/83 and 04/05/83	Structural Firefighting, South Carolina Fire Academy	Announced
03/28/83	Postulated Fire Condition in A&B Auxiliary Boiler Area	Unannounced
06/02/83, 06/10/83 and 06/17/83	Postulated Fire Condition in No. 2 Startup Trans- former	Announced
06/23/83	Postulated Fire Condition in Unit 2 Battery Room	Unannounced

08/16/83	Postulated Fire Condition in No. 2 Transformer Yard	Announced (Local Off- site Fire Dept/Plant Fire Brigade Exercise)
08/26/83, 09/02/83 09/07/83, 09/16/83 09/23/83 and 09/30/83	Postulated Fire Condition in Unit 2 4160 V Room	Announced
09/21/83	Postulated Fire Condition in Unit 2 "A" Train Battery Room	Unannounced (Local Off- site Fire Dept/Plant Fire Brigade Exercise)
10/21/83, 10/28/83 10/31/83 and 11/11/83	Postulated Fire Condition in Unit 2 Metric Construction Break Trailer	Announced
12/09/83	Hose Handling and Deployment	Announced
12/21/83	Postulated Fire Condition in Unit 2 Construction Tool Room Complex	Unannounced
01/24/84, 01/31/84 02/07/84, 02/14/84 02/21/84 and 02/28/84	Structural Firefighting South Carolina Fire Academy	Announced
02/22/84	Postulated Fire Condition in Unit 2 Turbine Lube Oil Tank Area	Unannounced
04/19/84, 04/26/84 05/03/84, 05/10/84 05/17/84, 05/24/84 05/31/84	Postulated Fire Condition in Unit 2 Diesel Generator Fuel Oil Storage Tank Area	Announced
06/27/84	Postulated Fire Condition in Unit 2 "B" Main Transformer	Unannounced

08/08/84, 08/15/84 08/29/84, 09/05/84 09/12/84 and 09/21/84	Postulated Fire Condition in Construction Fuel Storage Area, Unit 2	Announced
09/17/84	Postulated Fire Condition in Southeast Corner Unit 2 Turbine Deck	Unannounced
12/6/84	Postulated Fire Condition "A" Auxiliary Boiler, Unit 2	Unannounced

In reviewing the fire brigade drill records, the inspector confirmed that an adequate number of announced and unannounced fire brigade drills was being conducted for each fire brigade shift per calendar quarter as required by plant Technical Specifications and procedure OMM-002. However, the inspector noted that the offsite fire department had not been on site within the last 12 months for a combined plant fire brigade/fire department drill. The licensee indicated that a drill has been scheduled with the Hartsville Fire Department and will be conducted on December 18, 1984. This has been identified as Inspector Followup Item (261/84-51-04), Fire Brigade/Offsite Fire Department Drill not Conducted Within the Past 12 Months, and will be reviewed during a subsequent NRC inspection.

In addition, this review indicated that an insufficient number of fire brigade drills, which simulated various fire conditions in a variety of safety-related plant areas, was conducted during the two-year period. Therefore, on the basis that fire brigade drill scenarios have not frequently involved safety-related plant areas, the utilization of the fire preplans by the fire brigade team leader during drill exercises has not been required. This has been identified as Inspector Followup Item (261/84-51-05), Insufficient Number of Fire Brigade Drills Conducted in Safety-Related Areas, and will be reviewed during a subsequent NRC inspection.

(4) Offsite Fire Department Training Program

The licensee's fire protection staff provides an indoctrination training course for the offsite fire department. This training course is held annually onsite. The course is two hours and covers the following topics and objectives:

<u>TOPIC</u>	<u>OBJECTIVE</u>
Station access and evacuation routes	Recognize access and egress routes of the station.

Plant Layout	Recognize major building names, location of fire hydrants and outside hose houses, and types of fire hazards.
Plant entry and exit procedure	Recognize how offsite fire department will be granted access to the protected area and what is required prior to their departure.
Fire emergency procedure	Recognize provisions of fire emergency procedure pertaining to notification of offsite fire department, on-scene coordination with Fire Brigade Team Leader, and radiological controls.

However, during the review of this program, the inspector noted that Health Physics did not review and approve the radiological protection course content for adequacy and accuracy. In addition, they do not provide any instructional assistance during the teaching of this course. This has been identified as Inspector Followup Item (261/84-51-06), Inadequate Radiation Control Training Provided to Offsite Fire Department Personnel, and will be reviewed during a subsequent NRC inspection.

(5) Fire Brigade Equipment

The inspector made an inspection of the fire brigade equipment house located adjacent to the Unit 2 Turbine Building to verify if the fire brigade is adequately equipped. The following fire brigade equipment and special extinguishing agents are maintained on site at the fire brigade equipment house:

- 150 lb Halon 1211 Wheeled Fire Extinguisher
- Two Smoke Ejectors
- One Portable Generator
- Four Sections of Flexible Smoke Ejectors Ducting
- Two Smoke Ejector Door Brackets
- Five Portable Hand Lanterns
- One 25-gallon AFFF Foam Cart with 75 Feet 1½ Inch Hose and 95 gpm Foam Eductor and Nozzle
- One Foam Cart with 3.5 Gallon AFFF Foam Cans and 125 gpm Foam Eductor and Nozzle

- Ten Sets of Self-Contained Breathing Apparatus
- Twenty Spare Air Cylinders
- Four Portable Radios
- Thirteen Sets of Firefighter's Turnout Gear
- Two Proximity Suits
- Two Entry Suits
- One Hallgen Forcible Entry Tool
- One Pry-Axe
- One (1) Pick-head Axe
- Three Flat-head Axes

In addition to the above firefighting equipment, the plant fire protection staff has developed for fire brigade use a fast response fire attack/support equipment cart. The following is a partial list of the equipment carried on this cart:

- Two 100 ft. 1½ Inch Fire Attack Hose Lines Equipped with Automatic Nozzles With a Flow Range of 60-400 gpm
- One 2½ Inch Stack Tip Solid Stream Nozzle
- 30 ft. of Life Line
- One Pry-axe
- Bolt Cutter
- Two Portable Hand Lanterns
- Halogen Bar
- Hydrant Wrench
- 2½" to 1½" Hose Reducer
- Fire Brigade Preplan Book

The designated fire brigade firefighting equipment is modern, properly maintained, and stored in a ready condition for rapid deployment.

c. Inspection and Tests of Fire Protection System

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

- (1) OST-602, Rev. 5, 11-06-84 - Unit No. 2 Fire Water System Valves (Monthly)

December 14, 1983 through October 14, 1984

- (2) OST-603, Rev. 1, 8-14-84 - Motor-Driven Fire Water Pump and Engine Driven Fire Water Pump Test (Weekly)

September 19, 1984 through October 28, 1984

- (3) OST-610, Rev. 5, 11-02-84 - Unit 2 Portable Fire Extinguishers, Fire Hose Stations and Hose Houses (Monthly)

December 15, 1983 through September 15, 1984

- (4) OSi-622, Rev. 0 - Unit 2 Fire Suppression Water System (18 Months)

June 10, 1982, August 19, 1983, and July 24, 1984

- (5) OST-629, Rev. 3, 11-21-84 - Pre-Action Sprinkler and Dry Standpipe System Functional Test (18 Months)

May 19, 1982, November 22, 1982, and February 3, 1984

The record data were satisfactory.

d. Plant Tour

A plant tour was made by the inspector. The following fire suppression systems and components were inspected and found to be in service:

- Electrical Motor Driven Fire Pump
- Diesel Engine Driven Fire Pump
- Valve FP-2 (Locked Open) Motor Driven Fire Pump Discharge Valve
- Valve FP-3 (Locked Open) Engine Driven Fire Pump Discharge Valve
- Valve FP-4 (Locked Open) Unit 2 Fire Main Isolation From Intake
- Valve FP-86 (Locked Open) Outside Isolation Valve for Containment Fire Water Supply
- Valve FP-93 (Locked Open) Main Auxiliary Building Supply from East Loop
- Valve FP-89 (Locked Open) Auxiliary Building Hallway Pre-Action Sprinkler System Isolation
- Valve FP-87 (Locked Open) Hagan Room Dry Standpipe System Isolation
- Valve FP-247 (Locked Open) Electrical Penetration Room Pre-Action Sprinkler System Isolation

- Cable Spreading Room Halon 1301 Fixed Suppression System
- Hose Stations 108, 107, 82, and 35

During the plant tour, an inspection of hydrants HY-6, HY-5, HY-2, and HY-1 and their associated hose houses was made. Procedure OST-610 requires that the following minimum firefighting equipment be provided in each hydrant house:

- 200 Feet of 2½-Inch Fire Hose
- One 2½-Inch Adjustable Stream Nozzle
- One 2½-Inch N.S.T. Female X 1½-Inch N.S.T. Male Reducer
- One Pick-head Axe
- 200 Feet of 1½-Inch Fire Hose
- Two 1½-Inch Adjustable Stream Nozzle with Nozzle Turned Off
- Two Universal Spanner Wrenches
- One Hydrant Wrench
- One Gate Wye, 2½-Inch Female to two 1½-Inch Male
- One Valve Wrench

In addition, during the plant tour, the inspector visually inspected the fire barrier walls of the cable spreading, component cooling water pump room, auxiliary feedwater pump room and M.G. set room to verify that the barrier integrity is being maintained. This inspection identified that the fire door No. 6 at the entrance to the M.G. set room had been modified. The hinge screws on the upper door hinge were replaced with an unknown screw material, which may be of a different type than what was originally fire tested. The door closer for the door was attached by through bolts. The licensee indicated that this door/frame assembly is going to be replaced as a part of TAR Program R81-056. This item has been identified as Inspector Followup Item (261/84-51-07), Inadequate Fire Door Assembly in M.G. Set Room Fire Barrier Wall, and will be reviewed during a subsequent NRC inspection.

In addition, component cooling water pump room fire damper No. 19 and auxiliary feedwater pump room fire damper No. 79 are not installed with sill retaining angles at the wall/damper sleeve interface on both sides of the fire barrier wall. The sill angle design function is to retain the damper/sleeve assembly as an integral part of fire barrier wall assembly under actual fire conditions. The licensee indicated that the existing fire barrier installations are being reevaluated for adequacy and electrical and piping fire barrier penetrations are being upgraded as part of ongoing Appendix R evaluations. Therefore, this item has been identified as Unresolved Item (261/84-51-08), Inadequate Fire Damper Assemblies Installed on 3-Hour Fire Barriers. The resolution of this item will be based on the adequacy of the licensee's Appendix R fire barrier re-evaluation/analysis with regard to the justification of existing fire barrier designs.