

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

Report No. 50-382/84-20

Docket: 50-382

Construction Permit: CPPR-103

Licensee: Louisiana Power and Light Company (LP&L)
142 Delaronde Street
New Orleans, LA 70174

Facility Name: Waterford 3 SES

Inspection At: Waterford 3 Site, Taft, LA

Inspection Conducted: April 9-13, 1984

Inspectors:

Raj C. Anand
R. Anand, NRR

6/26/84
Date

F. Maura
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6/26/84
Date

for W. Crossman

M. E. Murphy, Reactor Inspector
Special Projects and Engineering Section
Reactor Project Branch 1

6/27/84
Date

Other
Inspectors: E. MacDougall, Brookhaven National Laboratory (BNL)
H. Thomas, BNL

Approved By: *W. S. Little*

W. S. Little, Chief,
Engineering Branch 2
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7/6/84
Date

for W. Crossman

R. E. Ireland, Acting Chief
Special Projects and Engineering Section
Reactor Project Branch 1

6/27/84
Date

W. Crossman

W. A. Crossman, Task Force Section Chief
Region IV Waterford 3

6/27/84
Date

Inspection Summary

Inspection on April 9-13, 1984 (Report No. 50-382/84-20).

Areas Inspected: Special, announced inspection of the implementation of the fire protection program; and compliance with the requirements of 10 CFR 50, Appendix R (safe shutdown) per FSAR commitments and SER evaluation. The inspection involved 332 inspector-hours onsite by six NRC inspectors and two consultants including 93 inspector-hours during off-shifts.

Results: Of the two areas inspected, no violations were identified. Two deviations were identified (failure to incorporate the NFPA 10 maintenance requirements for portable fire extinguishers - paragraph 8.e.; and failure to incorporate NFPA 27 minimum inventory of personnel protective equipment into the surveillance procedures - paragraph 8.c).

DETAILS

1. Persons Contacted

Louisiana Power and Light Company

- *R. Barkhurst, Plant Manager
- *K. Cook, Nuclear Support and Licensing Manager
- R. Crawley, Training Instructor
- *M. Cumbest, Fire Protection Engineer
- *K. Curley, Licensing Safety Engineer
- *G. Davie, Shift Supervisor
- *A. Holder, Fire Protection Engineer
- *C. Kelly, Operations Quality Assurance
- *R. Leddick, Senior Vice President-Nuclear Operations
- *R. Nelson, Licensing Manager
- J. O'Hearn, General Training Superintendent

EBASCO

- *V. Boynowsky, I&C Engineer
- *R. Campanella, Licensing Engineer
- *J. Ciambriello, Assistant Project Engineer
- *J. Hart, Site Licensing Supervisor
- *G. Koehler, Quality Assurance
- *O. Semen, Fire Protection Engineer
- *M. Servanescu, Fire Protection Supervisor
- J. Szczotka, Electrical Design Engineer
- *R. Vidal, Electrical Design Engineer
- J. Van Name, I&C Engineer

The inspection team also contacted other plant personnel including consultants to the utility.

*Denotes persons attending the exit meeting on April 13, 1984.

The following NRC personnel also attended the exit meeting on April 13, 1984:

- J. T. Collins, Regional Administrator, Region IV
- G. L. Constable, Senior Resident Inspector, Waterford 3
- W. A. Crossman, Section Chief, Region IV
- L. Lazo, Project Manager, Division of Licensing, NRR

2. List of Documents Reviewed

a. Procedures

<u>Number</u>	<u>Title</u>
CE-2-100, Rev. 0	Chemistry Technical Specifications Surveillance Performance Coordination
OP-901-004, Rev. 0	Off Normal Procedure, Evacuation of Control Room and Subsequent Plant Shutdown
OP-901-013, Rev. 3	Off Normal Operating Procedure, Emergency Boration
HP-2-631, Rev. 1	Operation of the Breathing Air Fill Station
HP-2-635, Rev. 1	Compressed Breathing Air Quality Control
HP-2-602, Rev. 2	Respiratory Protection Equipment Quality Control
MM-7-010, Rev. 1	Fire Extinguisher Inspection and Extinguisher Placement
MM-3-025, Rev. 1	Building Fire Hose Station Inspection
MM-3-026, Rev. 2	Yard Fire Hydrant Hose House Inspection
MM-3-031, Rev. 1	Halon 1301 Fire Suppression System
MM-3-032, Rev. 0	Diesel Fire Pump Engine Inspection
MM-3-033, Rev. 0	Computer Room Halon 1301 Fire Suppression System Flow Test
MM-7-008, Rev. 0	Fire Hose Hydrostatic Test
MM-3-024	Building Fire Hose Station Hose Replacement-Safety Areas (2/18/84)
MM-3-022	Yard Fire Hydrant Hose House (Safety Area) (2/6/84)
PMD-PE-010, Rev. 0	Program Description for Fire Protection
FP-1-000, Rev. 1	Fire Protection Administrative Controls
FP-1-001, Rev. 2	Control of Combustibles and Ignition Sources
FP-1-002, Rev. 2	Fire Protection System Impairments
FP-1-003, Rev. 2	Fire Emergency/Reports
FP-1-004, Rev. 2	Fire Fighting Equipment, Inventory, Specification and Maintenance
UNT-7-006, Rev. 1	Housekeeping

b. Pre-Fire Strategy

<u>Number</u>	<u>Title</u>
RAB 9-001, Rev. 0	Remote Shutdown Panel Room-Room 217
RAB 11-001, Rev. 0	Control Room Proper-Room 304
RAB 11-002, Rev. 0	Control Room Envelope-Room 304
RAB 3-001, Rev. 0	HVAC-Switchgear Room-Room 323
RAB 3A-001, Rev. 0	Battery Exhaust Room-Poom 406
RAB 4-001, Rev. 0	Cable Spreading Room-Room 260
RAB 5-002, Rev. 0	Electrical Penetration Area A Zone 2- Room 263
RAB 6-001, Rev. 0	Electrical Penetration Area A Zone 1- Room 263A
RAB 7-002, Rev. 0	Relay Room-Room 262
RAB 8-001, Rev. 0	High Voltage Switchgear Room A-Room 212A
RAB 8-003,	High Voltage Switchgear Room A/B- Room 212B (2/14/84)
RAB 11-001, Rev. 0	Battery Room B-Room 213
RAB 15-001, Rev. 0	Emergency Diesel Generator Room B- Room 222

c. Pre-Operational Test Results

<u>Number</u>	<u>Title</u>
SPO-11-001, Rev. 0	Plant Emergency Lighting
SPO-10-001, Rev. 1	Communications System
SPO-46K-001, Rev. 0	Fire Dampers (Safety and Nonsafety)
SPO-22-005, Rev. 1	Fire Protection Test Procedure
22-7 Fire Protection	SPO-22-005 R1 Pump Flow Test Def. 13 Retest

d. Fire Training Lesson Plans

<u>Number</u>	<u>Title</u>
None	Fire Hydrants, Fire Hoses, and Hose Cabinets and Houses (3/11/82)
W3N005-001-01	Duties of a Fire Watch (1/30/84)
FP-1-001	Handout-Fire Protection Permits, Transient Combustibles (1/30/84)
FP-1-002	Handout-Fire Protection Permits, Ignition Sources (1/30/84)

e. Drawings

<u>Drawing No.</u>	<u>Title</u>
G-151, Rev. 19	Flow Diagram Main and Extraction Steam System
G-160, Sheet 1, Rev. 017	Flow Diagram Component Closed Cooling Water System

<u>Drawing No.</u>	<u>Title</u>
G-160, Sheet 2, Rev. 15	Flow Diagram Component Closed Cooling Water Systems
G-164, Sheet 3, Rev. 10	Flow Diagram Miscellaneous Reactor Auxiliary Systems
G-167, Sheet 1, Rev. 20	Flow Diagram Safety Injection System
G-167, Sheet 2, Rev. 19	Flow Diagram Safety Injection System
G-168, Sheet 1, Rev. 16	Flow Diagram Chemical and Volume Control System
G-168, Sheet 2, Rev. 17	Flow Diagram Chemical and Volume Control System
G-172, Rev. 15	Flow Diagram Reactor Coolant System
G-252-S01, Rev. 3	Safe Shutdown Analysis-Appendix R Electrical Modifications - RAB EL. -35'
G-252-S02, Rev. 3	Safe Shutdown Analysis-Appendix R Electrical Modification - RAB EL. -35'
G-252-S03, Rev. 3	Safe Shutdown Analysis-Appendix R Electrical Modifications - RAB EL. -35'
G-252-S07, Rev. 2	Safe Shutdown Analysis - Appendix R, Electrical Modifications - RAB EL. -4' Sheet 3
G-255-S10, Rev. 3	Safe Shutdown Analysis - Appendix R Electrical Modification - RAB EL. +21.00 Sheet 1
G-252-S14, Rev. 1	Safe Shutdown Analysis - Appendix R, Electrical Modifications - RAB EL. +35.00 Cable Vault and Relay Room
G-252-S18, Rev. 1	Safe Shutdown Analysis - Appendix R, Electrical Modifications - RB and West Wing EL. -35.00 Sheet 1
G-252-S19, Rev. 2	Safe Shutdown Analysis - Appendix R, Electrical Modifications RB and East Wing EL -35.00 Sheet 2
G-252-S24, Rev. 3	Safe Shutdown Analysis - Appendix R, Electrical Modifications - RAB EL. +24'-0" Sheet 1 & 2

G-252-S28, Rev. 1	Safe Shutdown Analysis - Appendix R, Electrical Modifications - RB and West Wing EL. +46.00 Sheet 1 & 2
G-252-S31, Rev. 1	Safe Shutdown Analysis - Appendix R, Electrical Modifications - Cooling Towers
G-424, Sheet 7155 B-424, Rev. 8	CCW System Instrumentation Control Wiring Diagram-SG1 Main Steam Atmospheric Dump Valves

<u>Drawing No.</u>	<u>Title</u>
790-4R1	Auxiliary Shutdown Panel LCD-43
G-286, Rev. 5	Key Auxiliary - One Line Diagram
G-287, Rev. 3	125 VDC and 120 VAC - One Line Diagram
G-285, Rev. 3	Main-One Line Diagram
B-289, Rev. 8	One Line Diagram Sheet 15

f. Other Documents Reviewed

- Fire Protection Audit No. SA-W3-QA-83-05, dated April 21, 1983
- Audit Findings, Recommendations and Observations of Audit No. SA-W3-QA-84-19, dated March 23, 1984
- Fire Protection Audit No. SA-W3-QA-84-03, dated April 9, 1984
- Special Scope Quality Assurance Policy Section II, Chapter 1, "Fire Protection," Revision 0, draft copy, forwarded for internal review and concurrence March 21, 1984
- Relay Setting Book dated April 28, 1981
- FSAR Fire Protection Section 9.5.1 Volumes 1 and 2
- FSAR Figure 8.1 Amendment 32

3. Safe Shutdown Inspection

a. Systems, Procedures, and Fire Protection Features

The following fire areas/zones were inspected and found to meet the requirements for safe shutdown (Sections III.G. and III.L.) of 10 CFR 50, Appendix R, FSAR commitments, and the SER unless otherwise noted:

- (1) Fire area/zone RAB 17, elevation +21' (CCW heat exchanger B)
- (2) Fire area/zone RAB 18, elevation +21' (CCW heat exchanger A)
- (3) Fire area/zone RAB 19, elevation +21' (CCW pump A)
- (4) Fire area/zone RAB 20, elevation +21' (CCW pump A/B)
- (5) Fire area/zone RAB 21, elevation +21' (CCW pump B)
- (6) Fire area/zone RAB 23, elevation +21' (hallway)

- (7) Fire area/zone RAB 39, elevation -35' (Charging pumps A, B, A/B, air handler AH-18, boric acid make up tanks A and B, gravity feed valves 3CHV106A and 3CHV107B, boric acid transfer pump discharge valve 3CHV112 A/B, volume control tank drain valve 2CHV123 A/B, and turbine driven emergency feed water pump A/B).
- (8) Fire area/zone RAB 37, elevation -35' (motor driven emergency feedwater pump A)
- (9) Fire area/zone RAB 38, elevation -35' (motor driven emergency feedwater pump B)
- (10) Fire area/zone RAB Roof, elevation +46' (feedwater valves 2FWV847B, 2FWV852A, 2FWV848B, 2FWV851B, 2FWV849A, 2FWV850B, 2FWV854B, and 2FWV853A)
- (11) Fire area/zone RAB 1 and 1A, elevation +46' (control room envelope and control room proper)

The inspectors examined the licensee's capabilities to meet the requirements of 10 CFR 50, Appendix R, Sections III.G. and III.L. for a fire in the control room. The alternative shutdown capability is intended to be utilized through Procedures OP-901-004, Revision 0, "Off Normal Procedure, Evacuation of Control Room and Subsequent Plant Shutdown"; and OP-901-013, Revision 3, "Off Normal Operating Procedure, Emergency Boration". The alternative shutdown capability was deficient in that:

- (a) It did not consider the effect of a total control room fire. The licensee assumed the loss of one panel only in the analysis of a control room fire. This assumption is based upon the fact that the control room is a continuously manned, secured area, wherein administrative controls preclude smoking or the admissibility of flammable liquids. Thus, a postulated fire that causes total loss of the control room is considered incredible by the licensee.
- (b) It did not consider the effect of the loss of off-site power for at least 72 hours.
- (c) It did not consider the possible effects of interaction between associated circuits of concern. Protection from spurious or maloperations of associated circuits caused by a fire may require the addition of isolation devices, transfer switches or other equipment. At least two controls/instrumentation were identified as not being independent of the control room:
 - Neutron flux (source range) instrumentation
 - Atmospheric dump valves control

As a result, the inspectors were unable to determine if the licensee had correctly identified all the systems or components required for safe shutdown, whether the implementing procedures can be performed with the available shift personnel, and whether the shift personnel had been properly trained.

The licensee must reanalyze the effects of a fire in the control room without limitation to one control panel, such that the equipment and circuits necessary to provide the alternative shutdown capability are electrically isolated from the control room. In addition, the licensee must identify the systems and/or components required for safe shutdown, develop required procedures to implement the alternative shutdown capability, and identify and train sufficient numbers of shift personnel to implement the procedures. The procedures must consider the unavailability of off-site power for 72 hours.

This is considered an open item pending the NRC's review of the licensee's reanalysis and the revised procedures to implement the alternative shutdown capability. (382/8420-01)

Smoke detectors were not installed in the control room cabinets and consoles. Section F.2 of Appendix A to BTP APCS 9.5-1 requires the installation of early warning fire detectors in the control room cabinets and controls. This open item has been referred to NRR for resolution. (382/8420-02)

- (12) Fire area/zone RAB 7, elevation +35' (relay room). The protection for isolation panel SA/SB was found not to be in accordance with Section III.G.2 of Appendix R. Redundant safe shutdown components were not separated by 20 feet free of intervening combustibles or an approved 1-hour fire rated barrier. This is an open item as discussed in paragraph 4.c.

b. Fire Protection Features

In addition, the fire protection features in the following fire areas/zones were inspected and found to meet the requirements of 10 CFR 50, Appendix R (Section III.G.), the FSAR commitments, and the SER, unless otherwise noted:

- (1) Fire area/zone FHB, fuel handling building
- (2) Fire area/zone CT 1, dry cooling tower A
- (3) Fire area/zone CT 2, dry cooling tower B
- (4) Fire area/zone CT 3, wet cooling tower A
- (5) Fire area/zone CT 4, wet cooling tower B
- (6) Fire area/zone RAB 1B, elevation +46' (control room HVAC equipment room)

- (7) Fire area/zone RAB 1C, elevation +46' (control room offices)
- (8) Fire area/zone RAB 1D, elevation 46' (computer room)
- (9) Fire area/zone RAB 2, elevation +46' (HVAC mechanical room)

During the inspection the passive fire protection for the redundant chillers, chilled water pumps and air handlers were found to be not in accordance with NRR guidelines. An exposure fire of sufficient magnitude could cause damage to redundant trains. This open item has been referred to NRR for resolution. (382/8420-03)

- (10) Fire area/zone RAB 3, elevation +46' (HVAC equipment room)
- (11) Fire area/zone RAB 3A, elevation +46' (H&V room, machine room, and elevator shaft)
- (12) Fire area/zone RAB 5, elevation +35' (electrical penetration area B)
- (13) Fire area/zone RAB 6, elevation +35' (electrical penetration area A)
- (14) Fire area/zone RAB 8, elevation +21' (switchgear, computer, computer battery, and M/G set rooms)
- (15) Fire area/zone RAB 9, elevation +21' (auxiliary control panel room)
- (16) Fire area/zone RAB 11, elevation +21' (battery room 3 BS)
- (17) Fire area/zone RAB 12, elevation +21' (battery room 3 ABS)
- (18) Fire area/zone RAB 13, elevation +21' (battery room 3 AS)
- (19) Fire area/zone RAB 15, elevation +21' (emergency diesel generator 3 BS)
- (20) Fire area/zone RAB 15 A, elevation +46' (emergency diesel oil feed tank B)
- (21) Fire area/zone RAB 16, elevation +21' (emergency diesel generator 3 AS)
- (22) Fire area/zone RAB 16A, elevation +46' (emergency diesel oil feed tank A)
- (23) Fire area/zone RAB 25, elevation +21'
- (24) Fire area/zone RAB 27, elevation -7' (communication equipment room)
- (25) Fire area/zone RAB 31, elevation -4'
- (26) Fire area/zone RAB 32, elevation -4' and -35' (auxiliary component cooling water pumps)

The inspector determined that additional local early warning fire detection is necessary around each auxiliary component cooling water pump because of the high bay ceilings in the area. This is an open item pending NRC reinspection of the licensee's corrective action. (382/8420-04)

- (27) Fire area/zone RAB 33, elevation -35' (shutdown cooling heat exchanger)
- (28) Fire area/zone RAB 34, elevation -35' (valve gallery)

- (29) Fire area/zone RAB 35, elevation -35' (safety inspection pump B)
- (30) Fire area/zone RAB 36, elevation -35' (safety inspection pump A)
- (31) Fire area/zone RAB 40, elevation -35' (diesel oil storage tank A)
- (32) Fire area/zone RAB 41, elevation -35' (diesel oil storage tank B)
- (33) Fire area/zone RCB, reactor containment building (all elevations)
- (34) Fire area/zone RAB 4, elevation +35' (cable vault)

During the inspection it was determined that the alternative shutdown capability is not electrically independent of the cable vault. Paragraph III.G. of Appendix R requires the alternative shutdown capability to be independent of the area under consideration. As discussed for fire area/zone RAB 1 and 1A (control room envelope and control room proper) the same two examples, neutron flux and atmospheric dump vent valves control, are not independent of the cable vault fire area. The Waterford SER incorrectly states that an alternative shutdown capability has been provided for the cable vault which is electrically independent of the cable vault. This open item has been referred to NRR for resolution (382/8420-05).

By letters dated August 8, September 9, and October 3, 1983, and March 26, 1984, the licensee provided additional information and requested numerous deviations from Section III.G.2 of Appendix R. Each fire area/zone where a deviation has been requested was inspected by an NRR member of the inspection team. The fire areas involved are: RAB 2, RAB 3, RAB 3A, RAB 6, RAB 7, RAB 8, RAB 15, RAB 16, RAB 23, RAB 25, RAB 27, RAB 32, RAB 33, RAB 34, RAB 35, RAB 36, RAB 39, and the reactor containment building. The deviation requests for these areas are considered open items pending NRR action on the licensee's requests. (382/8420-06)

No apparent violations or deviations were identified.

4. Associated Circuits/Cable/Conduit Inspection

The associated circuit concerns evaluated were:

- Common bus associated circuits - The common bus concern is found in circuits, either nonsafety-related or safety-related, where there is a common power source with shutdown equipment and the power source is not electrically protected from the circuit of concern.

- Common enclosure associated circuits - The common enclosure concern is found when redundant circuits are routed together in a raceway or enclosure and they are not electrically protected or fire can destroy both circuits due to inadequate fire protection means.
- Spurious signal associated circuits - The spurious signal concern consists of two parts:
 - False motor, control and instrument readings such as occurred at the 1975 Brown's Ferry fire. These indications could be caused by a fire initiated ground, shorts, or open circuits.
 - Spurious operation of safety-related components that would adversely affect shutdown capability (e.g., RHR isolation valves).

The inspection results were as follows:

a. Common Bus Associated Circuits

The audit consisted of a sample selection of circuits which were checked for fuse, circuit breaker, or relay coordination. Included in the sample were circuits for the

- Component cooling pump 3A, 3B, 3AB
- Auxiliary component cooling pump 3A, 3B
- Emergency feedwater pump EFW 3A, 3B
- Charging pump 3AB
- Auxiliary spray valve 1 CHF 2505 A from from 125 Volt vital AC power

The coordination was found to be satisfactory. In addition, it was determined that relay testing is done as an ongoing basis with 18 months as the maximum frequency.

b. Common Enclosure Associated Circuits

All circuits selected for the audit were found to be electrically protected. In addition, it is the licensee's position that nonsafety-related circuits are never routed from one redundant train to another and a computer program is in effect to flag design errors in routing cables. When nonsafety-related trays or conduits cross over both redundant trains, fire protection means are used to protect one redundant train.

c. Spurious Signal Associated Circuits

The spurious signal evaluations were found to be unsatisfactory because of the following problems:

- (1) A total control room fire has not been analyzed per Appendix R, Section III.G.3, requirements.
- (2) There has not been a documented analysis for the affects of a fire in the isolation panel in the relay room (RAR7). This panel contains both SA and SB circuits as well as S A/B circuits. The relays and interlocks in this panel are on safety-related circuits such as the swing component cooling water pump 3 A/B.
- (3) The Hi-Low pressure interface concern has only been partially analyzed. This analysis addresses only one interface problem discussed in paragraph d. below. The licensee did not provide documentation to show that a complete analysis has been made for all high-low pressure interface boundaries.

This is considered an open item. (382/8420-07)

Some spurious signal items were reviewed and found to be acceptable. They were:

- Current transformer secondaries. The primary concern was for the diesel generator differential relays. The licensee had analyzed this circuit and protected one circuit by wrapping the tray of one redundant circuit. The motor load current transformers are provided with transducers that provide acceptable isolation.
- A review of the licensee's system for providing protection for redundant safe shutdown circuits was made by selecting conduits and trays with SA and SB labels. This selection was made on a random basis in the plant. Only redundant circuits that were close together were selected for analysis. Samples were chosen for fire area 8, 17, 18, 23, and containment. In each case the conduits and trays selected contained circuits that would not adversely affect safe shutdown.

d. Hi-Lo Pressure Interface

The only analyzed hi-lo pressure interface was for the shutdown cooling isolation valves; however, the licensee has not provided 1-hour fire barrier and fire detection and suppression systems in all areas in which the valves' control cables are routed. During the inspection, the licensee verbally committed to rack out the power supply to the motor operated isolation valves to prevent their spurious operation due to a fire. This is considered an open item pending the NRC's review of the breakers lock out capabilities and the procedural controls to be used by the licensee. (382/8420-08)

No apparent violations or deviations were identified.

5. Emergency Lighting

During plant tours the inspectors observed that the 8-hour emergency lighting units in the emergency diesel generator rooms A and B on E1. +21.00, were located behind ductwork and piping. In the event the diesel generators need to be started and/or loaded at the local control panel, sufficient emergency lighting illumination is needed for personnel to perform this action. The inspectors reviewed the placement of these units and the number of obstructions located in these areas. Based on this review it appeared that sufficient illumination of the control panels could not be attained.

The inspectors discussed with the licensee the need to assure that adequate emergency illumination is available in all areas needed for the operation of safe shutdown equipment and access and egress routes to such areas. The inspectors identified two areas of the plant, required for safe shutdown or access to a safe shutdown area, which appeared not to have lighting unit lamps aimed properly. These areas were identified as the stairwell to the Auxiliary Component Cooling Water pump area originating on E1. +7.00 continuing down to E1. -35.00, and along the corridor outside the emergency diesel generator rooms on E1. +21.00.

This is considered an open item pending licensee action and reinspection by the NRC. (382/8420-09)

On April 11, 1984, at the request of the inspectors, a full discharge test was performed on two emergency lighting units to determine the operability of the units in their installed condition. The following two lighting units were chosen during the inspectors' plant tours:

- (a) Auxiliary Control Panel Room, RAB 9, E1. +21.00 - located on the south wall across from the remote shutdown panel.
- (b) Relay Room, RAB 7, E1. +35.00 - remote type unit located on the north wall.

Both of these lighting units continued to light after 8 hours. In addition, the 8-hour emergency lighting units preoperational test procedure and results were reviewed for technical adequacy.

No apparent violations or deviations were identified.

6. Reactor Coolant Pumps Oil Collection System

The inspectors examined the licensee's oil collection systems for the four reactor coolant pump motors and determined that the capacity of the container is not sufficient for the four pumps. Also it was not apparent that the overflow was conducted to a safe area presenting no fire hazard to safety-related equipment.

No items of noncompliance or deviations were identified.

This is considered an open item pending resolution of this item by NRR. (382/8420-10)

7. Fire Barriers

a. Deficient 1-Hour Fire Barrier Wrap

Three areas of the plant were identified by the inspectors where the 1-hour fire barrier (B&B Insulation) wrap had been installed and since removed or unsecured from cable trays; or where the fire wrap was found torn causing the present installation to differ from the tested configuration. The identified areas were:

- (1) The Switchgear Envelope, fire zone RAB 8 on Elevation +21', fire wrapping had been removed near door 212A,
- (2) The Relay Room, fire zone RAB 7 on elevation +35', (a) fire wrap had been torn above door 208A and near the entrance/exit path to the area; and (b) in the far fire zone, fire wrap was lying on top of an unidentified cable tray which was not secured to the tray, and
- (3) Control Room Heating and Ventilating Room, fire zone RAB 1B on elevation +46', where the fire wrap appeared to have been removed from cable trays behind the chillers.

This is considered an open item pending the licensee's completion of the present re-review of all 1-hour fire barrier wrap required for compliance with 10 CFR 50, Appendix R, Section III.G., per construction completion/rework Procedure ASP-IV-140, and reinspection by the NRC. (382/8420-11)

b. Incomplete and Deficient Penetration Fire Barrier Seals

On April 12, 1984, the inspectors observed an incomplete fire barrier wall located in the Relay Room, fire zone RAB 7 on elevation +35' along the entire west wall of the room between the block wall and the ceiling. Prior to the inspection team's departure from the site, the licensee had installed scaffolding to complete the fire barrier.

This is considered an open item pending licensee's completion per construction completion/rework procedure ASP-IV-140, and NRC reinspection of this fire barrier wall. (382/8420-12).

The inspectors also observed deficient silicone foam penetration fire barrier seals located in the Relay Room, fire zone RAB 7 on elevation +35' in numerous locations throughout the area where once installed sealant had been removed.

This is considered an open item pending the licensee's completion of the present re-review of all silicone foam penetration fire barrier seals per construction completion/rework procedure ASP-IV-140, and NRC reinspection. (382/8420-13)

c. Testing of Fire Dampers

At the request of the inspectors, a surveillance test was performed by the licensee on four ventilation duct and wall penetration fire dampers to determine the operability of the dampers in their installed condition. The tested dampers were as follows:

(1) Ventilation Duct Fire Dampers

- (a) Relay Room, fire zone RAB 7, elevation +35', not numbered (nonsafety-related), one 3-hour rated damper located in the north wall exhaust duct.
- (b) Relay Room, fire zone RAB 7, elevation +35', numbered FD-53, (safety related) one 3-hour rated damper located in the east wall supply duct.
- (c) Auxiliary Control Panel Room, fire zone RAB 9, elevation +21', numbered FD-24 (safety related), one 3-hour rated damper located in the west wall supply duct.

(2) Wall Penetration Fire Damper

Relay Room, fire zone RAB 7, elevation +21', numbered FD-75 (safety related), one 3-hour rated damper located in the east wall transfer grill.

All four fire dampers closed completely during the surveillance test.

d. Fire Doors

The inspectors raised a concern regarding doors which are located within rated walls but for which the licensee was unable to provide certified test data from a nationally recognized testing laboratory demonstrating their fire resistance capabilities. The following 35 doors lack this documentation:

<u>DOOR NO.</u>	<u>LOCATION RAB/NO</u>
D24	15
D28	22
D29	16
D71	1C
D75	3
<u>DOOR NO.</u>	<u>LOCATION RAB/NO.</u>
D77	1
D78	1D
D46	24
D47	24
D85	18
D84	1
D91	1D
D121	27B
D123	27C
D128	5
D141	30
D144	30
D161	31
D163	34
D165	39
D170	36
D174	5
D175	4
D178	4
D179	L-8A/9A
D192	6
D218	7
D219	7
D242	33
D259	1A
D250	33
D252A	39
D228	7
D262	1C
D22	13

A letter of equivalence has been provided by the door manufacturer for these doors without adequate test data to support their fire resistance rating. Past experience has shown that a letter of equivalence is provided when the door in question lacks an attached fire rating label from a nationally recognized laboratory or because the door has been modified to the extent that the performance of the door assembly under fire conditions is unknown.

As a result of discussions with NRR personnel, LP&L initiated a study to identify and document any outstanding exceptions to the technical requirements of Appendix R. This study has been submitted to the NRC, dated March 26, 1984, and requests relief from certain technical requirements of Appendix R. One of the areas for which relief was requested is installed fire doors. The licensee contracted with Underwriters Laboratories (UL) to perform a field inspection to review the as-installed conditions of the plant fire doors. Underwriters Laboratories' summary identified over 100 specific variances from established UL criteria and previously recorded data on fire doors. The fire door variances identified by UL have been included in the Waterford study submitted to NRR on March 26, 1984.

This is considered an open item pending resolution of this issue by NRR. (382/8420-14)

No apparent violations or deviations were identified.

8. Fire Protection/Prevention Program

a. Summary

This inspection was conducted to determine whether the licensee had established a program for fire protection and prevention that is in conformance with regulatory requirements, SAR commitments, and industry guides and standards.

The NRC inspector reviewed the licensee's fire protection program description and operating procedures. This review determined that the licensee's program includes the following elements unless otherwise stated:

- (1) Qualified personnel are designated to implement the program.
- (2) Combustible materials, flammable and combustible liquids, and gas are restricted or controlled in areas containing safety-related equipment and components.
- (3) Welding and cutting operations and other activities involving open flame ignition sources in safety-related areas are properly controlled by a work permit.
- (4) Transient combustibles are restricted and controlled in safety-related areas.
- () Fire protection systems and fire brigade equipment maintenance, inspection, and testing requirements and frequency are defined.

- (6) Fire reporting instructions for all plant personnel are included in general employee training.
- (7) Fire brigade organization and qualification of brigade members are stipulated.
- (8) Fire brigade training and retraining requirements, including periodic drills have been established and implemented.
- (9) Fire fighting strategies have been developed for all safety-related areas of the plant and copies are maintained in the control room and at each fire locker.

During the procedure review, the NRC inspector identified numerous inconsistencies, contradictions, and differences between the program description and operating procedures. This was discussed with licensee representatives. The NRC inspector was informed by the licensee that it had recently changed policy with respect to the composition of the fire brigade; brigade personnel will now be designated from operations personnel only. This basic change and other management organizational changes would be reflected in future revisions to the operating procedures and the program documents. PMD-PE-010 would be cancelled with pertinent portions incorporated in other procedures. Pending issuance of the revised procedures and cancellation of PMD-PE-010, this will be considered an open item. (382/8420-15)

It was pointed out to the licensee's representatives that the proposed manning policy could affect the minimum shift manning requirements for normal operations, safe shutdown operations, and/or emergency response manning. This should be carefully analyzed along with the development of the procedure for safe shutdown with loss of offsite power. This is further discussed in paragraph 3.a.(11) of this inspection report.

b. Housekeeping Procedure

Review of the licensee's administrative procedure for housekeeping disclosed a lack of definitive administrative controls as required by 10 CFR 50, Appendix R, Section III.K.7. Pending revision of "Housekeeping Procedure," UNT-7-006, this is considered an open item. (382/8420-16)

c. Fire Fighting Equipment Inventory

Fire Protection Procedure FP-1-004, "Fire Fighting Equipment, Inventory, Specifications, and Maintenance," paragraph 6.1.5, designates fire locker number 4 as the storage point for equipment requiring cleaning, maintenance, or replacement found in fire lockers 1, 2, or 3 during the monthly inventory and inspection checks; however, Procedure FP-1-003, paragraph 6.6.2.4, states

that fire locker number 4 is to be used by emergency fire teams that respond from the OSC and/or the support fire brigade. FP-1-004 does not provide for segregation of the questionable equipment nor does it provide for disposition of the equipment beyond simply reporting it to the fire protection engineer. The licensee has agreed to review these procedures and revise them as required. Pending the review and revision of Procedures FP-1-003 and FP-1-004, prior to issuance of the operating license, is considered an open item (382/8420-17).

The NRC inspector also noted that the quantity of items for turnout gear were not specified in the fire locker equipment inventory forms, attachments 7.1 - 7.4 to FP-1-004. This does not appear to meet the requirements of NFPA-27 to which the licensee is committed in the FSAR, Chapter 9.5.1 or 10 CFR 50, Appendix R, Section III.H. Failure to develop an adequate surveillance procedure to ensure that the minimum inventory of personnel protective equipment is verified is considered to be a deviation from the above commitment. (382/8420-18)

d. Fire Hose Testing Procedure

Procedure MM-3-024, dated February 18, 1984, paragraph 8.2.4(3), incorrectly states the rate of pressure increase per minute when hydrostatically testing fire hose. The Waterford fire protection staff concurs with this finding and plans to revise this procedure.

This is considered an open item pending revision of this procedure prior to its use. (382/8420-19)

e. Fire Extinguishers Maintenance Procedure

Procedure MM-7-010, Revision 1, dated May 1, 1983, failed to list a check for the required 6-year maintenance on portable fire extinguishers being of the stored pressure type with 12-year containers. Further, a check for the required hydrostatic test on portable fire extinguishers was not specified.

Amendment No. 32 of the FSAR dated June 1, 1983, states, in part, ". . . the installation and maintenance of these portable fire extinguishers are in accordance with the guidelines of the NFPA Standard No. 10."

Paragraph 4-4.1.2 of NFPA 10 adopted in 1978 states that, "Every 6 years, stored pressure extinguishers that require a 12 year hydrostatic test shall be emptied and subjected to the applicable maintenance procedures."

Paragraph 5-3, as specified in table 5-3 of NFPA 10 adopted in 1975, requires a hydrostatic test interval for extinguishers of the dry chemical, stored pressure type, with mild steel shells to be performed every twelve (12) years.

Failure to develop an adequate surveillance procedure to ensure that portable fire extinguishers are verified in an acceptable condition is considered to be a deviation from a commitment. (382/8420-20)

f. Audits

The NRC inspector also reviewed fire protection audits SA-W3-QA-83-05, dated April 21, 1983; SA-W3-QA-84-03, dated April 19, 1984; and the audit findings, recommendations, and observations of audit SA-W3-QA-84-19, dated March 23, 1984. Audit SA-W3-83-05 also contained a consultant's audit report dated March 11, 1983. The NRC inspector found that a number of the findings, recommendations and observations were also identified during this inspection by the NRC team members. It was also noted that the findings of the consultant's audit were never formally published as is the QA department's normal practice and, therefore, were never addressed by the operation's or constructor's corrective action programs. The need for timely identification and response was discussed with the licensee's representatives and acknowledged as a basic policy requirement.

After reviewing the audits, subsequent audit response correspondence and the FSAR Section 9.5.1, it is not clear which QA program the licensee intends to implement for fire protection. The special scope, "Quality Assurance Policy," Section II, Chapter 1, "Fire Protection," Revision 0, forwarded for internal review and concurrence on March 21, 1984, proposes the fire protection QA program contained in APCSB 9.5-1, Appendix A of August 23, 1976, enhanced by enclosure 1 to NRC Generic Letter 82-21, dated October 6, 1982. This was discussed with the licensee's representatives and they agreed that clarification and revisions to the FSAR, fire protection procedures, and QA program were needed. Pending the required reviews and revisions this is considered an open item. (382/8420-21)

g. Fire Brigade Training

The inspectors examined the implementation of the licensee's fire brigade training program implemented on April 1, 1983, per inter-office correspondence dated May 17, 1983. This program includes the required annual refresher practice session, quarterly classroom training and fire drills for each brigade member.

After reviewing ten individual fire brigade members qualification records, the following was identified: (1) two of ten individuals failed to attend the annual refresher practice session, (2) two of ten individuals failed to attend the quarterly classroom training for the first quarter of 1984, and (3) due to an ongoing transferring of recording systems for training attendance, the inspector was not able to perform an adequate fire drill attendance review.

This is considered an open item pending verification that individuals performing as members of the fire brigade have received the required training. (384/8420-22)

ii. Outside Hose Cabinets

The inspectors examined the licensee's outside hose cabinets by visually inspecting the condition of installed fire protection equipment. Included in the cabinets were two 2-1/2" nozzles, five 50' lengths of 2-1/2" fire hose, four 50' lengths of 1-1/2" fire hose, 8 spanner wrenches, 2 hydrant wrenches, 2 gated wye valves, two 1-1/2" nozzles, and one 2-1/2" to 1-1/2" reducer. The inspection was performed using the commitments of the Waterford Nuclear Station FSAR (National Fire Protection Association Standard No. 24). No problems were identified.

i. Fuel Oil Supply to Diesel Fire Pumps

Each diesel fire pump obtains its fuel from its own fuel oil tank which, in turn, is filled from the Fuel Oil Storage Tank (ABF-MTNK-0001) used to supply fuel to the auxiliary boiler. Surveillance Procedure CE-2-100, Revision 0, requires sampling of the diesel fuel from each diesel fire pump storage tank every 92 days, and gives specific acceptance criteria for water sediment content, and viscosity; however, no requirement exists for sampling the Fuel Oil Storage Tank (ABF-MTNK-0001) since there are no requirements regarding the quality of the fuel oil burned in the auxiliary boiler. The licensee was informed that Surveillance Procedure CE-2-100 must guarantee the quality of the fuel used by the diesel fire pumps by either, (1) sampling the respective diesel fire pump fuel storage tank after every addition of fuel from tank ABF-MTNK-0001, or (2) guaranteeing the quality of the fuel in tank ABF-MTNK-0001 thru periodic sampling of its contents. This is considered an open item pending review of the licensee's corrective action. (382/8420-23)

9. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspectors, and which involve some action on the part of the NRC, or licensee, or both. Open items disclosed during the inspection are discussed in paragraphs 3.a.(11), 3.b.(9), 3.b.(26), 3.b.(34), 3.b., 4.c., 4.d., 5, 6, 7.a., 7.b., 7.d., 8.a., 8.b., 8.c., 8.d., 8.e., 8.f., 8.g., and 8.i.

10. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) on April 13, 1984. The inspectors summarized the scope and findings of the inspection.