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

Report No.: 50-400/86-59

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

Docket No.: 50-400 License No.: CPPR-158

Facility Name: Harris Unit 1

Inspection Conducted: July 21-25, 1986

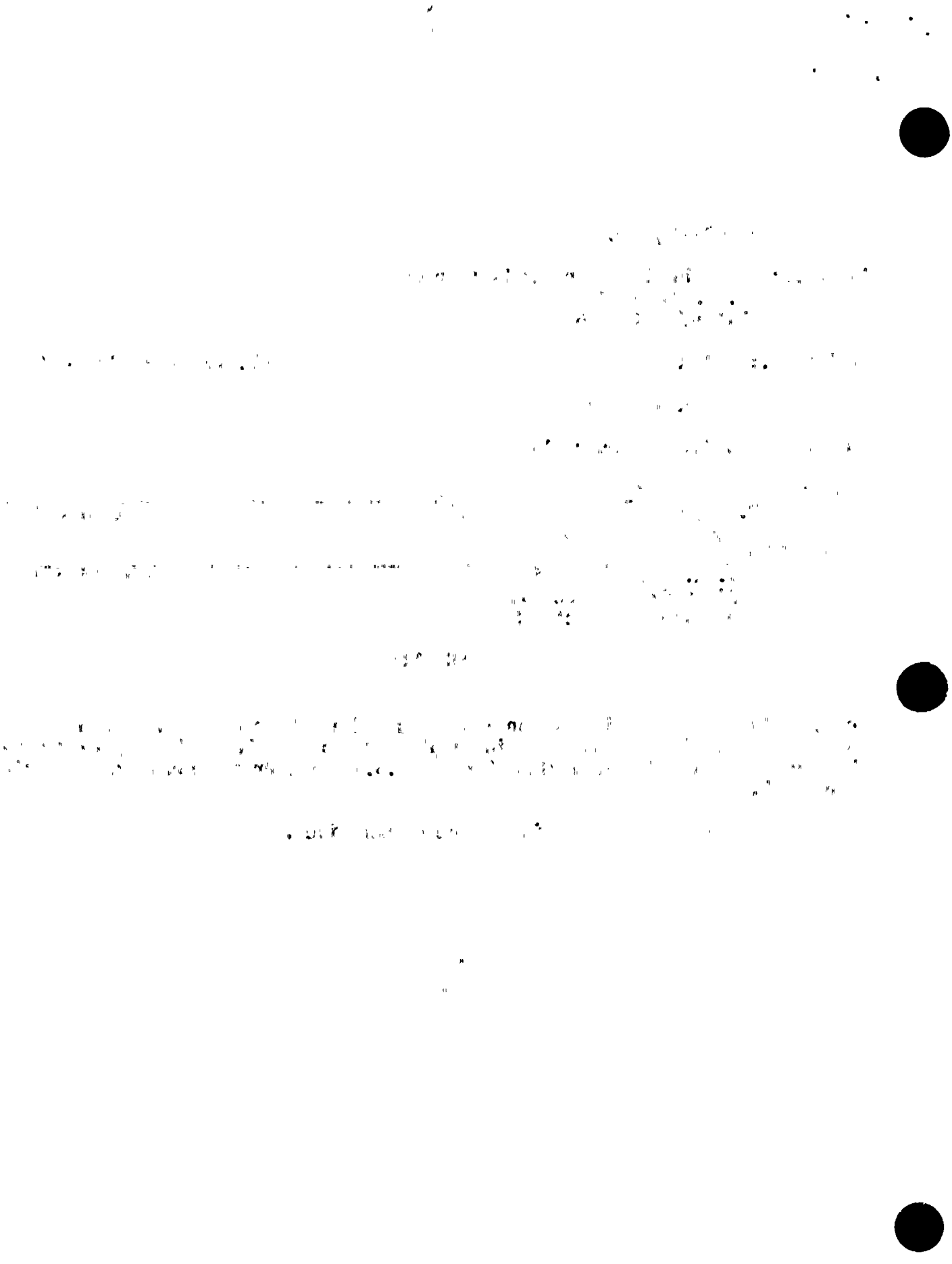
Inspector: P. M. Madden 8/18/86
Date Signed

Approved by: T. E. Conlon, Section Chief 8/21/86
Date Signed
Plant Systems Section
Division of Reactor Safety

SUMMARY

Scope: This announced inspection was conducted in the areas of fire protection and the licensee's actions regarding implementation of the guidance provided in NUREG 0800, Standard Review Plan, Section 9.5.1, Fire Protection Program, Position C.5.b.

Results: No violations or deviations were identified.



REPORT DETAILS

1. Persons Contacted

Licensee Employees

*J. Collins, Manager Operations
*S. Hardy, Harris Plant Engineering Support
*J. Harness, Assistant Plant Manager
*A. Howe, Specialist, Regulatory Compliance
J. Lawrence, HPES, Technical Assistant
D. Markle, Fire Protection, Harris Project Operations Support
*C. McKenzie, Acting Director, QA/QC Operations
*M. Oats, Principal Engineer, Nuclear Licensing
*J. Pinto, HPES-Fire Protection
*J. Smith, Operations
*R. Stewart, HPES-Mechanical
M. Stokes, Fire Protection, Harris Project Operations Support
D. Tibbitts, Acting 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. Humphrey

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 25, 1986, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. 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

a. (Closed) URI (400/86-27-01), Possible Deviation from A Commitment on Fire Barrier Separation of Fuel Handling Building for Receipt of New Fuel. NRC fire protection guidelines of Section C.1.e(1) of Branch Technical Position (BTP) CMEB 9.5-1 state that the fire protection program for buildings storing new reactor fuel and for adjacent areas that could affect the fuel storage area should be fully operational before fuel is received at the site. By letter, dated October 14,

1983, the licensee committed to meet the guidelines of Section C.1.e(1) of BTP CMEB 9.5-1. By letter, dated April 16, 1986, the licensee informed the NRC that it could not meet this commitment because electrical penetrations in a new fuel storage area fire barrier will not be sealed before fuel is received at the site.

On that basis, the licensee established a continuous fire watch on fuel handling building elevation 286' - 0" as a compensatory measure and committed to seal the penetrations by July 1, 1986. On May 12, 1986, the NRC issued a safety evaluation report which approved the compensatory fire protection measures associated with the fuel handling building. In addition, the inspector verified that the licensee completed the penetration seal installations as scheduled. Therefore, this item is closed.

b. (Closed) URI (400/86-27-03), Implementation of the Operations Phase Fire Protection Program Within 90 Days Prior to Fuel Load. The licensees fire protection quality assurance (QA) program for the operational phase is controlled by the policies and requirements of the corporate QA program. FSAR Section 17.2.2.1 requires the corporate QA program to be implemented at least 90 days prior to fuel load. The licensee's fuel load date of July 25, 1986, has been rescheduled to October 1, 1986. The licensee's operational phase fire protection program was fully implemented on April 30, 1986. Therefore, based on the current fuel load schedule, it appears that the licensee's fire protection program has been implemented on a schedule which is consistent with the commitments made in FSAR Section 17.2.2.1. This item is closed.

4. Unresolved Items

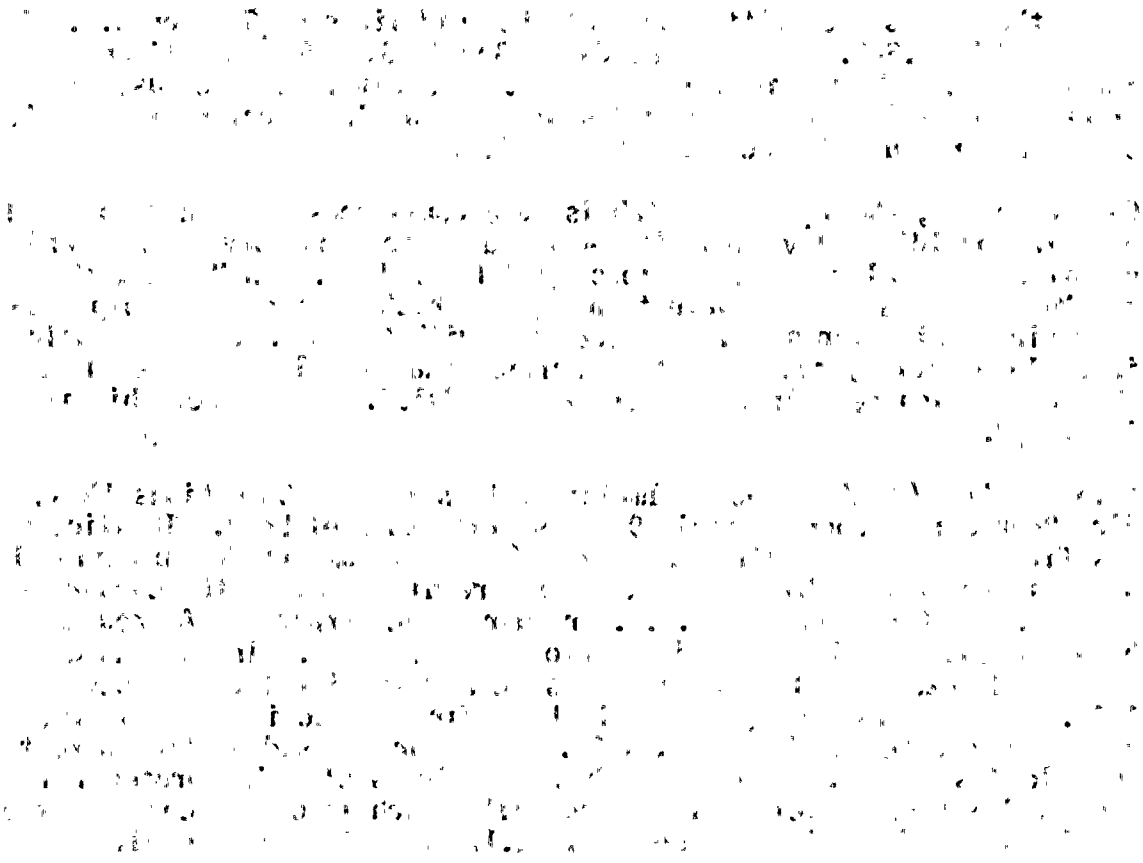
Unresolved items were not identified during the inspection.

5. Permanent Plant Fire Protection Features (Module 64704)

During the week of May 5, 1986, the NRC conducted a pre-licensee inspection of the licensee's methodology associated with their safe shutdown analysis due to fire, alternative shutdown capabilities and the proposed plant fire protection features to protect safe plant shutdown capabilities.

In addition, during this inspection the NRC evaluated the readiness of the plant fire brigade with respect to their capabilities to adequately control and suppress fires in plant areas important to nuclear safety.

As a result of this inspection, the NRC expressed concerns with respect to the overall manual firefighting capabilities of the brigade and the incomplete construction/installation status of the permanent plant fire protection features required to protect the safe shutdown capabilities of the plant.



Based on the May 5-9, 1986 inspection results, a subsequent inspection was conducted during the week of June 3, 1986, to evaluate associated circuits and assess the licensee's fire brigade re-training program.

As a result of this inspection, the NRC expressed some additional fire brigade concerns with respect to brigade fire response time and radio communications. In addition, this inspection identified associated circuit concerns dealing with periodic testing of circuit breaker covered by the licensee's coordination study and the status of the installation of redundant fusing of transfer switches.

Therefore, as a result of the inspection items identified from the May 5-9, 1986 and the June 3-6, 1986 inspections, this inspection was conducted to assess the licensee's status with respect to completing the permanent plant fire protection feature installations (i.e., fire doors, penetration seals, fire detection systems, sprinkler systems, raceway fire barriers, etc.) prior to fuel load and the adequacy of the plant fire brigade's manual firefighting capabilities.

The licensee has tentatively rescheduled their fuel load date from July 25, 1986, to October 1, 1986. Subsequently, they have rescheduled the completion of the following permanent plant fire protection features:

- Emergency Lighting - August 20, 1986
- Fire Area Fire Barriers and Penetration Seals - August 30, 1986
- Raceway Fire Barriers One and Three Hour Types - September 10, 1986 and August 27, 1986, respectively
- Sprinkler Pipe and Hangers - July 25, 1986

a. Status of Completion and Walkdown of Raceway Fire Barriers

In order to assess the current completion status of the raceway fire barriers prior to fuel load, the following sample of electrical pull boxes, conduits, and cable trays which are required to be protected by either a one-hour or three-hour fire barrier enclosure were field inspected by the inspector:

(1) Pull Box Fire Barrier Inspection

Box No.	Fire Rating	Location	Status
B1387	1 hour (HR)	Reactor auxiliary building (RAB) elevation (el) 236' - 0"	Complete
B1555	1 HR	RAB el 261' - 0"	Complete

(cont'd)

Box No.	Fire Rating	Location	Status
B1617	1 HR	Control Building (CB) el 286' - 0"	Complete
B1644	3 HR	RAB el 286' - 0"	Complete
B1658	3 HR	RAB el 286' - 0"	Complete
B1671	1 HR	RAB el 261' - 0"	Not Complete
B1717	3 HR	CB el 286' - 0"	Complete
B1746	3 HR	RAB el 261' - 0"	Complete
B1868	3 HR	Fuel handling building (FHB) outside wall	Complete
B1870	3 HR	FHB outside wall	Complete
B5032	1 HR	RAB el 261' - 0"	Complete
B5036	1 HR	RAB el 261' - 0"	Complete
B5072	3 HR	RAB el 286' - 0"	Complete
B5268	1 HR	RAB el 261' - 0"	Not Complete
B6064	3 HR	RAB el 286' - 0"	Complete

(2) Cable tray fire barrier inspection

Cable Tray No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
C1300	1 HR	310	RAB el 261' - 0"	43%
C1812	1 HR	106	RAB el 261' - 0"	64%

(cont'd)

Cable Tray No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
P1305	1 HR	188	RAB el 261' - 0"	57%
P1816	1 HR	106	RAB el 261' - 0"	66%
X1303	1 HR	144	RAB el 261' - 0"	19%
X1803	1 HR	23	RAB el 261' - 0"	100%
X1806	1 HR	128	RAB el 261' - 0"	54%

(3) Conduit Fire Barrier Inspection

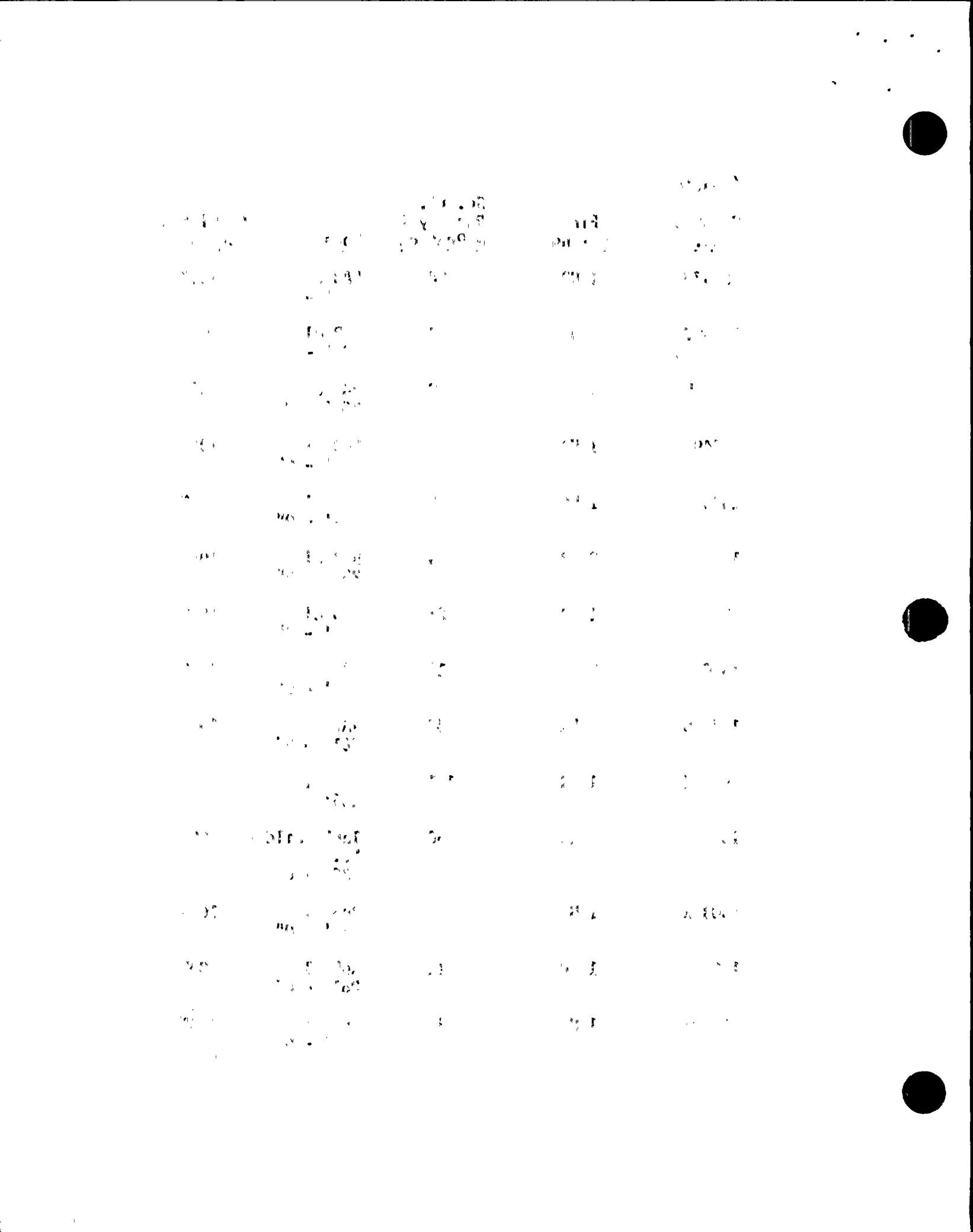
Conduit No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
10071Q	3 HR	60	RAB el 286' - 0"	100%
10149J	1 HR	36	CB el 286' - 0"	100%
10310A	1 HR	45	CB el 286' - 0"	64%
10333A	1 HR	269	RAB el 236' - 0"	54%
10333A	3 HR	28	RAB el 236' - 0"	0%
11950G	1 HR	36	RAB el 261' - 0"	100%
12211A	3 HR	59	Tank Building No. 1 el 236' - 0"	100%

(cont'd)

Conduit No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
12761A	1 HR	116	RAB el 236' - 0"	93%
12761E	1 HR	155	RAB el 236' - 0"	93%
12762A	1 HR	274	RAB el 236' - 0"	28%
12774A	1 HR	75	RAB el 236' - 0"	90%
15000V	1 HR	34	RAB el 261' - 0"	100%
15002B	1 HR	4	RAB el 236' - 0"	75%
15002G	1 HR	3	RAB el 261' - 0"	100%
15002H	1 HR	3	RAB el 261' - 0"	100%
15405S	1 HR	9	RAB el 261' - 0"	33%
15418S	1 HR	11	RAB el 261' - 0"	45%
15422L	1 HR	3	RAB el 261' - 0"	100%
15429G	3 HR	2	CB el 286' - 0"	100%
15429H	3 HR	1	CB el 286' - 0"	100%
15430Q	1 HR	20	RAB el 261' - 0"	100%
15434P	3 HR	4	RAB el 236' - 0"	100%

(cont'd)

Conduit No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
15437U	1 HR	54	RAB el 261' - 0"	100%
15438V	3 HR	4	RAB el 236' - 0"	100%
15449L	1 HR	9	RAB el 261' - 0"	100%
15449U	1 HR	2	RAB el 261' - 0"	100%
15449V	1 HR	2	RAB el 261' - 0"	100%
15465R	3 HR	14	RAB el 286' - 0"	100%
15465R	1 HR	21	RAB el 261' - 0"	100%
15465S	3 HR	15	RAB el 286' - 0"	100%
15465S	1 HR	42	RAB el 261' - 0"	100%
15485N	1 HR	151	RAB el 236' - 0"	82%
16001E	3 HR	60	Tank Building No.1 el 236' - 0"	99%
16030R	1 HR	11	RAB el 261' - 0"	100%
16030S	1 HR	11	RAB el 261' - 0"	100%
16030T	1 HR	11	RAB el 261' - 0"	100%



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Conduit No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
16034U	1 HR	2	RAB el 261' - 0"	100%
16034R	1 HR	22	RAB el 261' - 0"	100%
16034Q	1 HR	24	RAB el 261' - 0"	100%
16034V	1 HR	2	RAB el 261' - 0"	100%
16034Y	1 HR	2	RAB el 261' - 0"	100%
16034Z	1 HR	22	RAB el 261' - 0"	100%
16040R	1 HR	21	RAB el 261' - 0"	100%
16078E	1 HR	24	RAB el 261' - 0"	100%
16078F	1 HR	24	RAB el 261' - 0"	100%
16106E	1 HR	33	CB el 286' - 0"	90%
16178T	1 HR	101	RAB el 261' - 0"	93%
1642B	1 HR	71	CB el 286' - 0	95%
16247A	1 HR	216	CB el 286' - 0"	63%
16247B	1 HR	138	RAB el 261' - 0"	75%

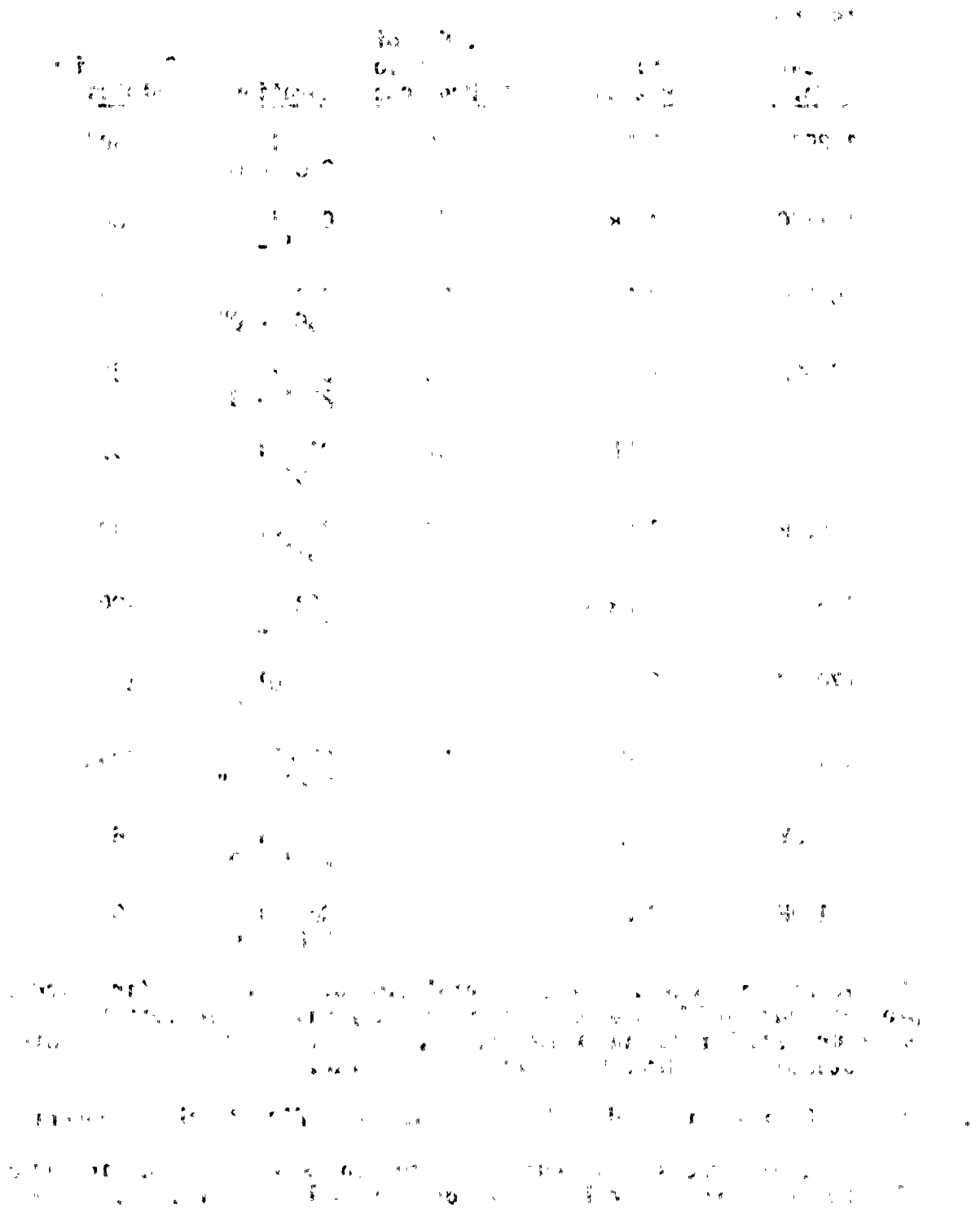
(cont'd)

Conduit No.	Fire Rating	Sq. Ft. of Raceway To Be Protected	Location	% Completion Status
16254B	1 HR	44	CB el 286' - 0"	50%
16254C	1 HR	79	CB el 286' - 0"	86%
16260C	3 HR	56	RAB el 286' - 0"	99%
16263P	1 HR	68	CB el 286' - 0"	49%
16277Y	3 HR	57	RAB el 286' - 0"	99%
17012P	1 HR	2	RAB el 261' - 0"	100%
17012Q	1 HR	22	RAB el 261' - 0"	100%
17084W	1 HR	22	RAB el 261' - 0"	100%
17134M	1 HR	53	CB el 286' - 0"	100%
17153Y	1 HR	148	RAB el 261' - 0"	63%
17179F	3 HR	72	RAB el 286' - 0"	99%

The licensee indicated that upon completion of the raceway fire barrier program that 28,744 square feet of raceway will be protected by a one-hour fire barrier wrap and that 9,412 square feet of raceway will be protected by a three-hour fire barrier wrap.

b. Status of Completion and Walkdown of Fire Area Fire Barrier Boundaries

The inspector assessed the current completion status of the fire area fire barriers by performing a walkdown of selected fire area fire



barriers. The following summarizes the incomplete fire protection features associated with the inspected fire area fire barriers:

(1) Reactor auxiliary building elevation 190' 0" (Fire Area 1-A-Bal)

- Two-hour fire barrier enclosure around north stairwell penetration seals not complete.

(2) Reactor auxiliary building elevation 236' 0" (Fire Area 1-A-Bal)

- Three-hour fire barrier wall located along column line 43 from columns B-L is not completed. The fire door and penetration seals are not fully installed.

(3) Reactor auxiliary building elevation 261' 0" (Fire Area 1-A-Bal)

- Three-hour fire barrier wall located along column line 43 from column B-L is not completed. The fire door and penetration seals are not fully installed.

- Three-hour fire barrier floor slab separating reactor auxiliary building elevations 236'- 0" from 26' 0" is not complete. The penetration seals are not fully installed.

(4) Reactor Auxiliary Building Elevation 261'- 0" (Fire Area 1-A-EPA)

- Three-hour fire barrier walls enclosing electrical penetration area "SA" are not complete. The fire doors and penetration seals are not fully installed.

(5) Reactor Auxiliary Building Elevation 261'- 0" (Fire Area 1-A-EPB)

- Three-hour fire barrier floor slab is not complete. The penetration seals are not fully installed.

(6) Reactor Auxiliary Building Elevation 286' 0" (Fire Area 1-A-SWGR-A)

- Three-hour barrier walls enclosing the "A" train switchgear room are not complete. The penetration seals are not fully installed.

(7) Reactor Auxiliary Building Elevation 286' 0" (Fire Area 1-A-SWGR-B)

- Three-hour fire barrier walls enclosing the "B" train switchgear room are not complete. The fire doors and penetration seals are not fully installed.

(8) Control Building Elevation 305' 0" (Fire Area 12-A-CR)

- Three-hour fire barrier floor slab in the control room is not complete. The penetration seals are not fully completed.

The licensee indicated that, as of July 18, 1986, there were 1,796 fire barrier penetration seals remaining to be installed.

c. Status of Completion and Walkdown of Automatic Sprinkler Protection

The inspector performed a walkdown of the automatic sprinkler protection being installed in the following plant areas/fire zones:

(1) Diesel Generator Building

- Diesel Generator Rooms
- Diesel Fuel Day Tank Rooms

(2) Diesel Oil Storage Tank Area

(3) Reactor Auxiliary Building

- Elevation 190' - 0" RHR Pump Area - Fire Zones 1-A-1-PA and 1-A-1PB
- Elevation 216' - 0" Fire Zones 1-A-2-MP
- Elevation 236' - 0" Fire Zones 1-A-3-MP, 1-A-3-PM, 1-A-3-COM 1, 1-A-3-COM E, 1-A-3-DOM B, and 1-A-3-COR
- Elevation 261' - 0" Fire Zones 1-A-EPA, 1-A-EPB, 1-A-4-CHLR, 1-A-COM B, 1-A-4-COM E, 1-A-4-COM I, 1-A-CHFB, and 1-A-4-CHFA

The layout and the placement of the sprinkler heads within the areas inspected appeared to be adequate. The subject sprinkler systems, upon completion, should be capable of providing sufficient fire control in the event that an exposure fire was to occur.

6. Inspector Followup Items (IFI)

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

a. (Closed) IFI (400/85-40-02), Revisions Required to Fire Protection/ Prevention Procedures in Order to Meet NRC Guidelines. The licensee has revised procedure FPP-001, Fire Protection - Conduct of Operation, Section 5.19 to incorporate the necessary restrictions on smoking in safety-related areas of the plant. In addition, the licensee revised

TI-105 Fire Protection Training, Section 3.2.3 to require that each fire brigade team will be drilled at a frequency of at least once per calendar quarter, with the interval not to exceed 92 days. The licensee also revised Section 3.2.5 of Procedure TI-105 to allow responses to actual fires, if properly critiqued, to be documented as one drill per year per shift team. Therefore, it appears that the subject procedure revisions meet the intent of the NRC Fire Protection/ Prevention Guidelines with respect to smoking restrictions and fire brigade drill frequency. On that basis, this item is considered to be closed.

b. (Closed) IFI (400/85-40-06), Fire Brigade Equipment and Storage Lockers are Required to be Provided Prior to Fuel Load. The licensee has implemented the fire brigade equipment staging area in the turbine building on elevation 261' - 0 ". Therefore, this item is closed.

c. (Closed) IFI (400/85-40-11), Re-evaluation of Sprinkler System Obstructions. The NRC identified, during the May 5, 1986, NRC Fire Protection Audit areas in the Reactor Auxiliary Building where overlapping sprinkler obstructions were not addressed. These obstructions occur where elements (ductwork, pipe, cable tray, etc.) in combination exceed the 48" single element width specified in NFPA 13.

In order to identify the areas where these types of obstructions occurred, the licensee organized a walkdown team. This team consisted of individuals from the sprinkler design, safe shutdown, hanger design, detection design and 1.29 analysis groups.

The licensee's walkdown identified sprinkler obstructions on elevations 216, 236 and 261 of the Reactor Auxiliary Building. The major obstructions were in the areas of the access aisles. Some obstructions existed above safe shutdown equipment on elevation 261. The original sprinkler design had identified some single 48" obstructions in which additional heads were added below the obstructions to provide adequate coverage. In some cases, these heads were utilized for overlapping obstructions.

After the walkdown, the licensee issued approximately 50 field modifications to provide additional sprinkler coverage. The following is a summary of the subject sprinkler system modifications:

	Elev. / Total	216	236	261
Additional Sprinkler Heads		6	39	55
Additional Sprinkler Pipe	1400 Ft.			
Additional Seismic Supports	70			
Additional Non-seismic Supports	150			

This item is closed.

d. (Closed) IFI (400/85-40-15), Review of Completed Fire Detection System Inspections and Pre-operational Tests. The licensee implemented a complete fire detection system walkdown of safe shutdown plant areas in order to determine the adequacy of the placement and layout of ionization, thermal and ultra-violet fire/smoke detection devices.

As a result of these walkdowns under Field Change Request (FCR) I-2791, the licensee added two additional thermal detectors and relocated 12 thermal and reoriented the ultra-violet detectors in the Diesel Generator Building.

In addition, the licensee has instituted their fire Detection System Start-up and Pre-operational Test Program. This program is described in Startup Manual V, Test Nos. 1-6180-P-01, P-02, P-03, P-04, and P-05. Pre-operational tests for fire detection for outlying structures, as outlined by pre-operational Test No. 1-6108-P-01 was completed on July 18, 1986.

Currently, the remaining fire detection system pre-operational tests are in progress and will be completed prior to fuel load. Therefore, this item is closed.

e. (Closed) IFI (400/86-26-01), Verification of Design and Procedural Changes Required to Maintain RCP Seal Integrity in the Event of Fire. In order to assure that a spurious signal will not preclude RCP seal flow in the event of a control room fire, the licensee implemented FCR I-3343. This FCR performed a design change which assures valve 2CC-V191SA located inside containment will fail open upon transferring the valve circuit to the auxiliary control panel. FCR I-3343 was completed on May 15, 1986, and abnormal operating procedure (AOP) -004, Safe Shutdown in Case of Fire or Control Room Inaccessibility, was revised appropriately by the licensee to outline the necessary manual operator action required to maintain RCP seal integrity. This item is closed.

f. (Closed) IFI (400/86-26-05), Failure of Fire Brigade to Demonstrate Proper Manual Firefighting Techniques During a Fire Drill. The inspector, during the June 3-6, 1986 inspection, witnessed two unannounced fire brigade drills. The firefighting techniques utilized by the brigade during these drills were found to be satisfactory. In addition, during this inspection, the inspector reviewed the fire brigade drill critiques for drills 86-2-A, 86-2-B, 86-2-C, 86-2-D and 86-3-E and were found to be satisfactory with respect to the firefighting techniques utilized by the fire brigade. Therefore, this item is closed.

g. (Closed) IFI (400/86-42-02), Review Completed Installation Work for Redundant Fuses. IE Information Notice 85-09, Isolation Transfer Switches and Post-Fire Shutdown Capability, was issued January 31, 1985. This Notice identifies a potential problem concerning fuses in control circuits that are common for operation of equipment from the

Control Room and Alternate Hot Shutdown area. A fire in the Control Room could cause these common fuses to blow before transfer is made to the Alternate Hot Shutdown area. If the control circuit is needed at the Alternate Shutdown area to energize a piece of equipment and if the fuse(s) blew before transfer, equipment would not be operable without replacing the blown fuse(s). Under FCR-I-3220, I-3199, I-3245 and FCR-E-5865, the licensee installed double fusing to diesel generator engine control panel 1A-SA and 1B-SB to protect against spurious tripping of the diesel generator breakers. The licensee on June 24, 1986, had fully completed the work associated with these FCRs, therefore, this item is closed.

h. (Closed) IFI (400/86-42-05), Inadequate Fire Response Methods Utilized by the Fire Brigade. The licensee has implemented the permanent fire brigade staging area in this turbine building on Elevation 261' - 0". On the staging area wall, they have incorporated quick response mounts for the fire brigade's self-contained breathing apparatus, and turnout gear racks for the on-duty fire brigade's personal protective fire-fighting equipment. Also, the licensee's fire protection staff is in the process of developing quick response equipment carts similar to the Perry Design. In addition, until the permanent carts are completed, the licensee's staff has implemented temporary carts as an interim measure and has placed them in service in the fire brigade staging area. The licensee intends to have the permanent carts in place and have them staged in various RAB locations and in the fire brigade staging area prior to fuel load. Therefore, this item is closed.