



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

NOV 13 1985

Docket No. 50-461

APPLICANT: Illinois Power Company

FACILITY: Clinton Power Station

SUBJECT: SUMMARY OF MEETING WITH ILLINOIS POWER COMPANY RELATED  
TO FIRE PROTECTION FOR CLINTON POWER STATION

A working meeting among representatives of the Illinois Power Company (IP), Sargent and Lundy (S&L) and the NRC staff was held on November 6 and 7, 1985, in Bethesda, Maryland. The purpose of the meeting was to discuss the following:

- ° Fire protection design, construction, and testing status;
- ° Deviation requests contained in IP's recently submitted (9/6/85) revised fire protection evaluation report and safe shutdown analysis;
- ° Concerns identified in a letter from the NRC staff to IP, dated October 18, 1985 resulting from the staff's September audit of Clinton Power Station; and
- ° SER open issues.

Enclosure 1 identifies the meeting attendees and enclosure 2 contains the meeting agenda.

Enclosures 3 and 4 address the staff's concerns and IP's deviation requests respectively, as identified in the agenda.

Following is a summary of the issues discussed, the staff's positions and recommendations, and IP's commitments.

I. Revisions of safe shutdown analysis deviation requests were discussed.

A. IP was advised that the following deviation requests were evaluated and found acceptable in our recent SSER input:

1. Water tight doors;
2. Partial detection in some fire areas;
3. Partial detection in air intake structures; and
4. Lack of automatic fire suppression in diesel air intake suppression.

B. IP was advised that the lack of area wide automatic fire detection in the diesel generator fuel oil storage tank rooms and day tank

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rooms is not acceptable. IP informed the staff that they would advise their management of our decision and proceed from there.

- C. IP was advised that the following deviation requests would most likely be found acceptable following submittal of minor clarifying information:
  - 1. Steel wall A-2/T-1;
  - 2. Steel wall A-1/A-2;
  - 3. Standby gas treatment; and
  - 4. Circulating screenhouse ventilation penetration.
- D. IP was advised that adequate information/justification had been submitted on the following deviation requests and that they would probably be approved in a future SSER:
  - 1. Unprotected steel in stairways; and
  - 2. Containment wall airlock door and electric & mechanical penetrations.
- E. IP was advised that additional information, drawings, and/or justification was required before the staff could complete its review of the following deviation requests:
  - 1. Floor slab;
  - 2. Security airlock;
  - 3. Bus duct penetration;
  - 4. Additional partial detection deviations;
  - 5. Drywell;
  - 6. Control Room;
  - 7. Partial Suppression in Fire Area A-1;
  - 8. Partial Suppression in Fire Area CB-1;
  - 9. Partial Suppression in Fire Area CB-5; and
  - 10. Partial Suppression in Fire Area F-1.

The staff's review of these deviation requests can not be completed until this additional information is provided.

II. Concerns from NRR/CMEB audit were discussed.

- A. The following items have been adequately addressed by IP, but a formal submittal is required:
  - 1. 2-hour rating of block walls;
  - 2. Reactor building air lock doors;
  - 3. Unprotected steel D/G rooms;
  - 4. Ventilation duct fire dampers;
  - 5. Fire damper assemblies dirty & "S" hook installation;
  - 6. Location of fire pump flow meter discharge;
  - 7. Control room protection;
  - 8. Fire hydrant spacing;
  - 9. Accessibility with 75 feet of fire hose; and
  - 10. Turbine building safety-related conduits.



During the meeting, the applicant agreed to provide the additional clarifying information in their formal submittal to resolve these issues.

B. The following audit concerns require additional justification by the applicant:

1. Cable trays unprotected by automatic sprinkler systems; and
2. Fire protection for the containment and drywell

III. Additional topics of discussion were:

- A. Gas bottle storage in rad-chem laboratory. The applicant has agreed to submit their plans for gas storage/use in the control building.
- B. Functional testing of fire dampers. The staff requested that IP consider development of a technical specification covering functional testing of the fire dampers. Alternatively, the staff suggested that IP consider development of an administrative procedure to cover functional testing of fire dampers. IP agreed to consider the staff's request and to provide a written response containing their decision.
- C. IP's compliance with the staff's guidelines to Appendix A of BTP APCSB 9.5.1 was discussed. IP agreed to review their compliance with these guidelines to ensure that any and all deviations are identified and justified.

At the conclusion of the meeting, IP stated they intended to address those concerns where plant modifications may be required to meet Appendix A or Appendix R and which have a potential impact on fuel load immediately and will inform the staff regarding the results of their evaluation and their commitments.

Original Signed by

Byron L. Siegel, Project Manager  
Licensing Branch No. 2  
Division of Licensing

Enclosures:  
As stated

cc w/o enclosures 3 & 4:  
Meeting Attendees

LB#2/BL/PM  
BSiegel:lb  
11/1/85

LB#2/DL/BC  
WButler  
11/1/85

LB

DISTRIBUTION

Docket File

NRC PDR  
Local PDR  
PRC System  
NSIC  
LB#2 Reading  
Goddard, OELD  
WButler  
BSiegel  
EHylton

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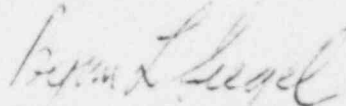
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Byron L. Siegel, Project Manager  
Licensing Branch No. 2  
Division of Licensing

Enclosures:  
As stated

cc w/o enclosures 3 & 4:  
Meeting Attendees

Mr. Frank A. Spangenberg  
Illinois Power Company

Clinton Power Station  
Unit 1

cc:  
Mark Jason  
Assistant Attorney General  
Public Utilities Division  
Office of the Attorney General  
State of Illinois Center  
100 West Randolph Street - 12th Floor  
Chicago, Illinois 60601

Jean Foy, Esquire  
511 W. Nevada  
Urbana, Illinois 61801

Richard B. Hubbard  
Vice President  
Technical Associates  
1723 Hamilton Avenue - Suite K  
San Jose, California 95125

Mr. D. P. Hall  
Vice President  
Clinton Power Station  
P. O. Box 678  
Clinton, Illinois, 61727

Mr. H. R. Victor  
Manager-Nuclear Station Engineering Dpt.  
Clinton Power Station  
P. O. Box 678  
Clinton, Illinois 61727

Sheldon Zabel, Esquire  
Schiff, Hardin & Waite  
7200 Sears Tower  
233 Wacker Drive  
Chicago, Illinois 60606

Resident Inspector  
U. S. Nuclear Regulatory Commission  
RR 3, Box 229 A  
Clinton, Illinois 61727

Mr. R. C. Heider  
Project Manager  
Surgent & Lundy Engineers  
55 East Monroe Street  
Chicago, Illinois 60603

Mr. L. Larson  
Project Manager  
General Electric Company  
175 Curtner Avenue, N/C 395  
San Jose, California 95125

Regional Administrator, Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Enclosure 1

Meeting with Illinois Power Company  
to Discuss Fire Protection Issues

November 6 and 7, 1985

Name	Affiliation
K. Steven West*	NRC/NRR/DE/CMEB
R. L. Ferguson*	NRC/NRR/DE/CMEB
R. A. Parson*	Sargent & Lundy
J. D. Behn*	Sargent & Lundy
R. P. Bhat*	Illinois Power Co.
R. T. Kerestes*	Illinois Power Co.
D. W. Wilson*	Illinois Power Co.
F. A. Spangenberg	Mgr. Licensing & Safety, IPC
L. Langenberg	Sargent and Lundy
S. Perry	Illinois Power Company
P. Hearn	NRC/NRR/DSI/ASB
V. Benaroya*	NRC/NRR/DE/CMEB
P. Telhorst	Illinois Power Co.
B. Siegel*	NRC/NRR/DL/LB-2

\*Attended November 7, 1985 meeting also

Agenda for November 6, 1985  
Meeting on Fire Protection

A. Fire Protection Design, Construction, and Testing Status

B. Deviation Requests

1. Floor Slabs
2. Steel Walls
3. Water Tight Doors
4. Security Air Locks
5. Unprotected Steel in Stairways
6. Circulating Screen House Ventilation Penetration
7. Fire Detection by Water Flow
8. Drywell Suppression in Fire Area C-1
9. Control Room Complex
10. Partial Suppression in Fire Area CB-1
11. Suppression Systems in Fire Area F-1

C. Concerns from NRC 10/18/85 Letter

1. 2-hour rating of block walls
2. Reactor Building air lock doors
3. Electrical bus duct penetration sealing
4. Unprotected structural steel in D/G Rooms
5. Ventilation duct fire dampers
6. Fire damper assemblies dirty/"S" hook installation
7. Cable trays unprotected by automatic sprinkler systems
8. Location of fire pump flow meter discharge
9. Fire hydrant spacing
10. Accessibility with 75 feet of fire hose
11. Control Room protection
12. Turbine Building safety related conduits
13. Fire protection for containment and drywell

D. SER Issues

1. Gas storage bottles in the rad-chem laboratory
2. Deviations from III.F of Appendix R for fire detection
3. New justifications for fire zones with changes since SER 3.
4. Deviations from III.G of Appendix R for Fire Protection

ATTACHMENT (1)  
CLARIFICATIONS

1. No justification was provided for the 2-hour fire resistance rating attributed to the eight-inch thick hollow concrete block walls serving as fire barriers.

Response

Illinois Power's investigation of this issue as a 10CFR50.55(e) is now complete and we have determined that the condition is not safety significant. Justification is provided with the final report for 10CFR50.55(e) (Attachment 3) and the corresponding test report.

2. Structural steel forming a part of the fire barrier in the diesel generator day tank room is not protected. (Section D.1.(j) of Appendix A to BTP APCSB 9.5-1)

Response

We are providing a design clarification, as Attachment (4), for the unprotected steel in this area. Basically, the L4x4 member provided temporary support for the wet concrete of the roof slab and added shear resistance to the joint detail. The angle is welded to an embedment plate and is not required to maintain the integrity of the roof slab. The concrete wall which has the embedment plate is continuous and has no gaps and, therefore, provides a continuous fire barrier.

3. Some ventilation ducts penetrating fire barriers are not equipped with fire rated dampers. (Section D.1.(j) of Appendix A to BTP APCSB 9.5-1)

Response

Illinois Power has completed a review of all HVAC duct penetrations through fire rated barriers. Based on this review, design modifications are being implemented to install fire dampers in duct penetrations located in safe shutdown areas of the plant.

4. The tracks and blades of fire damper assemblies are loaded with dirt and debris and "S" hooks are installed backwards. (Section C.8 of Appendix A to BTP APCSB 9.5-1)

Response

To establish a standard method for testing and documenting the functional ability of fire dampers, we have developed a C&IO Phase Test Procedure (GTP-38). This procedure ensures that fire dampers are:



ATTACHMENT (1)  
CLARIFICATIONS

- a) tested and inspected in accordance with manufacturers instructions.
  - b) free of corrosion and dirt.
  - c) verified to have the proper "S" hook installation.
5. Cable trays outside of the cable spreading room are not protected by automatic sprinkler systems. (Section D.3.(c) of Appendix A to BTP APCSB 9.5-1)

Response

We are providing a design clarification, as Attachment (5), for the fire hazard associated with cable tray loading. In retrospect, we cover the overall philosophy for determining fire loads in each zone. The purpose of adopting a conservative approach philosophy was to ensure that as new cables were added, they would not invalidate the fire loading calculation presented in the FPER. This approach would eliminate the need to amend the fire loadings associated with the cable trays. The calculated values were based on 150% of design fill for cable trays, which is never exceeded in plant design. Also, the average Btu's of energy available per pound of cable insulation was conservatively used at 8200 Btu/lb.

6. The location of the fire pump flow meter discharge outlet relative to the pump intake may adversely affect the fire flow test results. (Section E.2.(c) of Appendix A to BTP APCSB 9.5-1)

Response

The vertical fire pump has a 12" diameter intake that is located 34'-4" down the well from the top of the concrete. The water level is 25'-4" above the bottom of the pump screen inlet. The fire pump flow meter discharge outlet has a 10" diameter that is located 3'-6" down the well from the top of the concrete. The water level is 5'-6" below the bottom of the discharge outlet. This equates to a vertical distance difference of 30'-10" between the pump intake and discharge outlet. The horizontal distance is 5'-8½" between the intake and outlet. Considering the difference in elevation between the inlet and outlet, we feel that this will not adversely affect the flow test results. In addition, this recirculation line will be utilized as part of the preoperational test and the results obtained will be checked against the baseline to determine if there are any adverse effects.

ATTACHMENT (1)  
CLARIFICATIONS

7. Fire hydrant spacing exceeds 250 feet within the Power Block. (Section E.2.(g) of Appendix A to BTP APCSB 9.5-1)

Response

Illinois Power Company has reviewed the spacing of fire hydrants that does not meet the "approximately 250 feet" guideline of Appendix A to BTP APCSB 9.5-1. We are planning to equip some hydrant hose houses with supplemental lengths of 1½" and 2½" hose to provide an acceptable coverage in accordance with the intent of Appendix A and meet the requirements of NFPA-24.

8. In many safety-related areas it may not be possible to reach all locations with 75 feet of fire hose due to congestion and changes in elevation. (Section E.3.(d) of Appendix A to BTP APCSB 9.5-1)

Response

We have been conducting a hose stretch test of all fire hoses throughout the fire zones. The hose stations have been designed to provide accessibility and coverage to all zones. All areas in the plant can be reached by at least one effective hose stream. The 100 feet maximum of 1½ inch hose per Section C.6.c(4) of CMEB 9.5-1 and its associated standpipe system will conform to NFPA-14. Any findings resulting from the hose stretch test will be addressed and modifications will be made as required.

9. The Control Room is not adequately separated from its peripheral rooms by fire rated construction and automatic sprinkler protection is not provided in the peripheral rooms. (Section F.2 of Appendix A to BTP APCSB 9.5-1)

Response

We are providing, as Attachment (6), a design clarification for the Control Room peripheral walls. The Control Room and its peripheral rooms are protected by 1.9 hour fire rated walls, a complete ionization type smoke detection system, portable fire extinguishers and manual hose stations and 3-hour fire-rated floor and ceilings with all openings properly protected. The fire zones have combustible loadings of less than an hour. Therefore, upgrading the peripheral room walls to a 3 hour fire rating does not enhance the level of fire safety above that provided by the existing construction.

ATTACHMENT (1)  
CLARIFICATIONS

10. The Turbine Building contains conduits identified as being safety-related. (Various sections of Appendix A to BTP APCSB 9.5-1 and Appendix R to 10CFR50 that apply to areas containing safety-related equipment).

Response

Some Class 1E electrical cables (in conduits) as well as instrumentation devices that provide inputs to the solid state protection system (SSPS) are housed in the Turbine Building. The principal function of these devices is to provide anticipatory trip for the reactor based upon secondary system parameters. If these cables and/or devices failed, other parameters not measured in the Turbine Building would provide the necessary shutdown signals. Thus, no credit has been taken in the SSA for the parameters measurements. On this basis, all equipment and systems in the Turbine Building are considered non-essential for the safe shutdown of the plant.

ATTACHMENT (2)  
DEVIATIONS

1. The Reactor Building air lock doors are not fire rated. (Section D.1(j) of Appendix A to BTP APCSB 9.5-1)

Response

Deviation 4.2.2.14.1 has been written, and is Attachment (7). This concern will be incorporated into the Safe Shutdown Analysis. The personnel hatch has both an outside and an inside door in the containment. Acceptance testing of these doors was done in accordance with NFPA-252. The hinges and latches of the doors are significantly stronger than those of a metal fire door and will not allow the doors to warp away from the openings in the fire barrier. Based on the substantial construction of these containment hatches, they are at least equivalent to 3-hour rated fire doors.

2. Electrical bus duct penetrations through fire barriers are not sealed. (Section D.1(j) of Appendix A to BTP APCSB 9.5-1)

Response

Deviation 4.2.2.15 has been written, and is Attachment (8). As described in the SSA, in the event of a fire in any of the zones containing these bus duct penetrations, the reactor can be brought to a safe shutdown condition. Thus, the performance goals for the safe shutdown functions are assured.

3. Fire protection means for the containment and drywell have not been provided in accordance with our guidelines. (Section III.G of Appendix R to 10CFR50 and Section F.1 of Appendix A to BTP APCSB 9.5-1)

Response

Deviation 4.2.4.1 has been written, and is Attachment (9). An adequate level of protection is provided to ensure safe shutdown when you consider the minimal combustibles in the area, detection for the reactor recirculation pumps, and spatial separation of safe shutdown cables in conduit. Therefore, an automatic suppression system is not necessary.

U-600222  
L14-35(09-19)-L  
1A.120

ILLINOIS POWER COMPANY



CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

Docket No. 50-461

September 19, 1985

Mr. James G. Keppler  
Regional Administrator  
Region III  
U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

SUBJECT: Potential 10CFR50.55(e) Deficiency 55-85-03  
Firewall Structures Fabricated Using  
Unqualified Material

Dear Mr. Keppler:

On April 4, 1985, Illinois Power Company notified Mr. F. Jablonski, NRC Region III (Ref. IP memorandum Y-26230 dated April 4, 1985) of a potentially reportable deficiency involving firewalls constructed with 8 inch hollow core concrete masonry units (CMUs) that may not meet the three (3) hour fire resistance rating stated in the Clinton Power Station (CPS) Fire Protection Evaluation Report (FPER-1978). This initial notification was followed by one (1) interim report (Ref: IP letter U-10273, D. P. Hall to J. G. Keppler, dated May 3, 1985). Illinois Power's investigation of this issue is complete. Our investigation into this matter has determined that this issue does not represent a reportable deficiency under the provisions of 10CFR50.55(e). This letter is submitted as a final report in accordance with the requirements of 10CFR50.55(e). Attachment A provides the details of our investigation.

We trust that this final report provides you sufficient background information to perform a general assessment of this potentially reportable deficiency and adequately describes our overall approach to resolve this issue.

Sincerely yours,

D. P. Hall  
Vice President

RLC/lab

Attachment

cc: NRC Resident Office  
Director, Office of I&E, US NRC, Washington, DC 20555  
Illinois Department of Nuclear Safety  
INPO Records Center

851046468

11/PP



ATTACHMENT A

Illinois Power Company  
Clinton Power Station

Docket No. 50-461

Potential 10CFR50.55(e) Deficiency 55-85-03  
Firewall Structures Fabricated Using  
Unqualified Material

Final Report

Statement of Potentially Reportable Deficiency/Background

During the Clinton Independent Design Review (IDR) Fire Protection Walkdown, performed by Bechtel, questions were raised regarding the existing documentation for the fire resistance rating of the hollow core concrete masonry walls constructed at the Clinton Power Station. Subsequent to the questions raised by the IDR personnel, Sargent & Lundy (S&L) and Illinois Power personnel, performing a similar walkdown during December 1984, requested Baldwin Associates to supply documentation regarding the fire resistance rating of the subject block walls. Baldwin Associates (BA) was unable to supply the requested documentation that would support the required fire resistance rating indicated on the S&L Architectural Drawings.

Investigation Results

Illinois Power prepared and implemented an investigation plan to determine the extent of this deficiency at CPS. The investigation plan included the following actions:

1. A review of documentation was performed to determine the possible cause for purchasing unqualified material.
2. A review of documentation was performed to determine the quantity of material that was supplied by vendors other than the prime supplier. The physical properties of the material were also investigated.
3. Sargent & Lundy evaluated the material to determine the fire resistance rating.

A review of the BA purchase orders indicates that the blocks were purchased to minimum strength requirements in accordance with Specification K-2944.



ATTACHMENT A (cont'd)

The Purchase Orders for the hollow masonry units were reviewed to determine the amount of material purchased from each supplier. There were four suppliers; however, Bloomington Builders Supplies, Bloomington, Illinois, provided approximately 91% of the hollow masonry units. Information supplied by Bloomington Builders Supplies indicated that the 8-inch hollow masonry units would have a two hour fire resistance rating.

Corrective Action

Sargent & Lundy reviewed the fire resistance rating of the firewalls, and in letters SLS-I-5092, dated April 29, 1985, and SLS-I-5102, dated May 3, 1985, made the following recommendations:

- 1) Revise the Control Room Fire Walls to two hour barriers.
- 2) Include the Diesel Day Tank Rooms within the Diesel Generator Fire Areas.
- 3) Add a suppression system to the Auxiliary Electric Equipment Room at elevation 781 in the Control Building.

Illinois Power, in letter S-5418, dated May 14, 1985, concurred, and the recommendations were implemented in the update of the Fire Protection Evaluation Report (FPER) and Safe Shutdown Analysis (SSA).

To confirm the manufacturer's test documentation, physical tests were performed on five blocks selected at random, to verify the two hour fire resistant rating. The blocks were tested in accordance with ASTM C140, Sampling and Testing of Concrete Masonry Units, and ASTM C856, Petrographic Examination of Hardened Concrete. The test results of the blocks indicated that the blocks were made of calcareous gravel with a fire resistant rating of approximately 1.9 hours. The fire resistance rating of 1.9 hours has been used in the update of the FPER and SSA.

The twelve inch hollow masonry was not investigated because the estimated effective thickness will provide the required fire resistance rating regardless of the type of aggregate used.

ATTACHMENT A  
(continued)

In the future all new construction or changes in the combustibles in an area will be reviewed for fire protection concerns in accordance with the FPER to assure that the proper fire barriers are provided. NSED Procedure D.20, Processing of Plant Modifications (Normal), D.21, Processing of Plant Modifications (Minor) and D.22, Engineering Interdisciplinary Review of Plant Modifications provide for this review.

Although no additional firewalls are planned for CPS, Field Engineering Change Notice (FECN) No. 11762 was written against S&L Specification K-2944 to require documentation of the fire resistance rating of the concrete masonry used to construct firewalls.

Root Cause

The findings of this investigation were reviewed to determine the root cause. Based on this review it was determined that although the design drawings did specify a 3 hour firewall, BA purchased the masonry units to the minimum strength requirements only, since there was no specification requirement to submit documentation to support the fire resistance rating of the hollow masonry units.

Safety Implications/Significance

Illinois Power's investigation of this issue is complete. S&L has evaluated the findings regarding the fire resistance rating of hollow core concrete masonry units used to construct firewalls at CPS and has determined that the condition is not safety significant within the scope of 10CFR50.55(e) reporting. This evaluation and determination was based on the latest update of the Fire Protection Evaluation Report, the Safe Shutdown Analysis, and was independent of the suppression system added to meet Appendix R requirements.

BALDWIN ASSOCIATES ILLINOIS POWER COMPANY CLINTON POWER <sup>540</sup>	QUALITY CONTROL INSPECTION REPORT	IR NO: C-35-3241
		PAGE 1 OF 1

TYPE OF INSPECTION: BLOCK REMOVAL PER I P WORK REQUEST # C-188

ITEMS INSPECTED: I P WORK REQUEST # C-188 LOCATION: 721' CONTROL BETWEEN T AND V ON 130 LINE 762' C.G. 12' NORTH OF ALAND

ACCEPTANCE CRITERIA: K-2944 AND 27 CPS-1-MW R/11 MATE SERIAL NO: N/A

ID / WELD NUMBER	ITEM / ASSEMBLY DESCRIPTION (TYPE & SIZE)	SERIAL NUMBER ASSEMBLY / PIECE OR HEAT NUMBER	RIR NUMBER	MATERIAL REQUISITION NUMBER	QC INSP INITIAL / DATE
N/A	N/A	N/A	R/P	N/A	ST 5-17-85

OBSERVATIONS: ST 5-17-85  
 WITNESSED REMOVAL OF 5 8" HOLLOW CORE BLOCK. BLOCK #1 WAS REMOVED ON 130 LINE 6' NORTH OF Y LINE ELEV. 795'6". BLOCK #2 WAS REMOVED ON 130 LINE 4'6" NORTH OF X LINE ELEV. 796'. BLOCK #3 WAS REMOVED ON 130 LINE 9'10" NORTH OF Y LINE ELEV. 794'3". BLOCK #4 WAS REMOVED ON 130 LINE 7'6" NORTH OF Y LINE ELEV. 793'. BLOCK #5 WAS REMOVED ON 130 LINE 8'6" NORTH OF Y LINE ELEV. 793'. ALL BLOCK WERE UNIQUELY MARKED AND LOCATION RECORDED ON THEM.  
 WITNESSED REMOVAL OF 5 12" HOLLOW CORE BLOCK FROM STORAGE AREA LOCATED 12' NORTH OF AL AND 15' EAST OF 128 LINE ELEV. 762' CONTROL. THESE BLOCK WERE LEFT OVER FROM MASONRY WORK DONE APPROX. 4' SOUTH OF AL AND 4' EAST OF 124 LINE ELEV. 762' DIESEL GEN. TO THE BOTTOM OF DIESEL GEN. ROOF SLAB. THESE BLOCK WERE ALSO UNIQUELY MARKED AND LOCATION RECORDED ON THEM.

INSPECTOR'S SIGNATURE: John W. Tenger DATE: 5-6-85

REMARKS: REVIEWED BY: [Signature] DATE: 5/19/85

REC'D JUL 02 1985



H. H. HOLMES TESTING LABORATORIES, INC.

Report No. 1

• 170 Shepard Avenue • Wheeling, Illinois 60090 • Area Code 312 • 541-4141

June 27, 1985

Lab No. CH 1753  
File No. 6934.0

Illinois Power Co.  
P.O. Box 675  
Clinton, IL 61727  
Attn. R.E. Alsop

Re: 1985 Miscellaneous Tests

REPORT OF TESTS

Subject : Investigative Analysis of Masonry Block  
Method : ASTM C-114 & C-145  
Specification : ASTM C-90

TEST DATA

<u>Sample No.</u>	<u>Sample I.D.</u>	<u>Block Composition</u>
1	Block 1	Calcareous Gravel
2	Block 2	Calcareous Gravel
3	Block 3	Calcareous Gravel
4	Block 4	Calcareous Gravel
5	Block 5	Calcareous Gravel

Respectfully submitted,

Richard E. Nelson, Jr.  
President

  
Glenn C. Schumacher  
Chemist

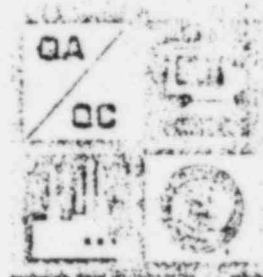
cc: Mike Clem

REN/cb

# United States Testing Company, Inc.

Ultech Services Group

1415 PARK AVENUE  
ROCKY HAVEN, NEW JERSEY 07030 (201) 792-0400 (212) 943-0468



- Quality Programs
- Overseas Inspection
- GeoTechnical Services
- Nondestructive Examination
- Plant & Process Control Support
- Construction Testing & Inspection
- Vendor Surveys & Inspection

Report Date 5-30-85

## REPORT OF TESTS

CLIENT: ILLINOIS POWER CO.

PROJECT: CLINTON POWER STATION UNIT 1

LOCATION: CLINTON, ILLINOIS

SUBJECT: Equivalent thickness and compositional classification

METHOD: ASTM C-140 Sampling and testing concrete masonry units.

TYPE: Manufactured concrete masonry units, 8 inch.

<u>Equipment ID</u>	<u>Cal. Date</u>	<u>Exp. Date</u>
SC-23	5-14-85	11-14-85
SC-1	5-14-85	11-14-85
EME-1	4-24-85	10-24-85

Tested By: G. Miller

Reviewed By: R.J. Beaudet



## UNITED STATES TESTING COMPANY, INC.

## REPORT OF HOLLOW BLOCK UNITS

## SAMPLE IDENTIFICATION

Sample Rec'd: 5-17-45

Block #1 - 130 Line 6' North of Y line, elev. 795'6" Control Building  
 Block #2 - 130 Line 4'6" North of T line, elev. 796'0" Control Building  
 Block #3 - 130 Line 9'10" North of Y line, elev. 794'3" Control Building  
 Block #4 - 130 Line 7'6" North of Y line, elev. 793'0" Control Building  
 Block #5 - 130 Line 9'6" North of Y line, elev. 793'0" Control Building

## FACE AREA DIMENSIONS

Block	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	Avg. L	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	Avg. W	AREA SQ. IN.
#1	$15 \frac{18}{32}$	$15 \frac{19}{32}$	$15 \frac{18}{32}$	$15 \frac{18}{32}$	$7 \frac{20}{32}$	$7 \frac{18}{32}$	$7 \frac{17}{32}$	$7 \frac{18}{32}$	117.7
#2	$15 \frac{18}{32}$	$15 \frac{18}{32}$	$15 \frac{18}{32}$	$15 \frac{18}{32}$	$7 \frac{20}{32}$	$7 \frac{20}{32}$	$7 \frac{19}{32}$	$7 \frac{20}{32}$	118.7
#3	$15 \frac{17}{32}$	$15 \frac{18}{32}$	$15 \frac{18}{32}$	$15 \frac{18}{32}$	$7 \frac{17}{32}$	$7 \frac{18}{32}$	$7 \frac{18}{32}$	$7 \frac{18}{32}$	117.7
#4	$15 \frac{20}{32}$	$15 \frac{20}{32}$	$15 \frac{20}{32}$	$15 \frac{20}{32}$	$7 \frac{18}{32}$	$7 \frac{17}{32}$	$7 \frac{17}{32}$	$7 \frac{17}{32}$	117.7
#5	$15 \frac{18}{32}$	$15 \frac{21}{32}$	$15 \frac{20}{32}$	$15 \frac{20}{32}$	$7 \frac{17}{32}$	$7 \frac{18}{32}$	$7 \frac{18}{32}$	$7 \frac{18}{32}$	118.2

## UNIT WEIGHT AND NET VOLUME

	Dry Wt.	SSD Wt.	Submerged Wt. lbs.	Difference (Displaced Water)
Block 1	38.09	39.98	22.65	17.33 lbs.
2	38.21	39.97	22.48	17.49 lbs.
3	37.28	40.06	22.73	17.33 lbs.
4	41.18	43.57	26.54	17.03 lbs.
5	38.19	39.40	22.19	17.21 lbs.

Block	Weight per cu. ft. = $\frac{\text{Dry Wt.}}{\text{SSD Wt.} - \text{Submerged Wt.}} \times 62.4$	lbs/cu.ft.
1	$\frac{38.09}{17.33} \times 62.4 = 137.15$	137.15
2	$\frac{38.21}{17.49} \times 62.4 = 136.32$	136.32
3	$\frac{37.28}{17.33} \times 62.4 = 134.23$	134.23
4	$\frac{41.18}{17.03} \times 62.4 = 150.89$	150.89
5	$\frac{38.19}{17.21} \times 62.4 = 138.47$	138.47

Block	Net Volume, cu.in. = $\frac{\text{Dry Wt.}}{\text{Unit Wt.}} \times 1728$	Net Volume	Face Area	Thickness
Block 1	$\frac{38.09}{137.15} \times 1728 = 482.23$	482.23	117.7	4.08
Block 2	$\frac{38.21}{136.32} \times 1728 = 482.36$	482.36	118.7	4.06
Block 3	$\frac{37.28}{134.23} \times 1728 = 480.28$	480.28	117.7	4.08
Block 4	$\frac{41.18}{150.89} \times 1728 = 476.72$	476.72	117.7	4.04
Block 5	$\frac{38.19}{138.47} \times 1728 = 476.93$	476.93	118.2	4.02



# HOLLOW CMU TEST DATA

① DATE/TIME OF FILL (ITEM 3D) 11-17-05 AT 1:00 PM

② CMU WEIGHTS (ITEM 3B AND 3E) SOAKED 24 HR

	TEST-A	TEST-B
DRY WEIGHT	42.04	36.44
SSD-1 HR	44.10	37.83
SSD-2 HR	44.30	37.85
SSD-3 HR	44.30	37.85
SSD-4 HR	44.44	37.91
SSD-5 HR	44.44	38.05
SSD-6 HR	44.48	38.08
SSD-8 HR	44.49	38.19
SSD 24 HR	44.47	38.70

③ % ABSORPTION (ITEM 4)

SATURATION TIME (HOURS)	% ABSORPTION		
	SPECIMAN A	SPECIMAN B	AVERAGE
1	2.7	3.8	3.3
2	2.7	3.8	3.3
3	2.7	3.8	3.3
4	3.3	4.0	3.7
5	3.3	4.1	3.8
6	3.4	4.5	3.9
8	3.4	4.9	4.1
24	3.3	4.8	4.0

22.2.00  
TEST PREPARED BY

D-W. 36 6/20/05

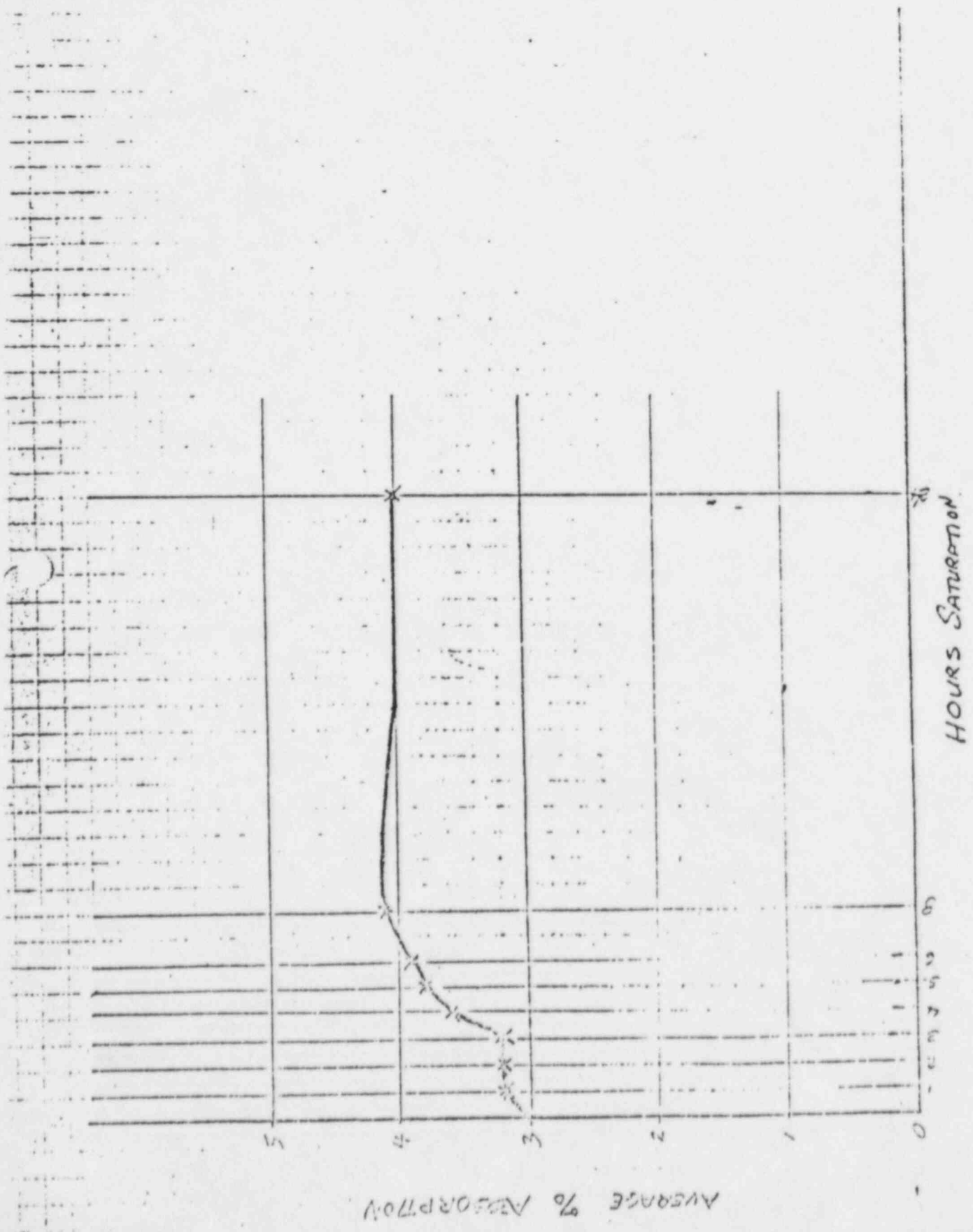
B/C-A-RE

22.2.00  
TEST REVIEWED BY

Gregory 4/20/05

QC-C/A

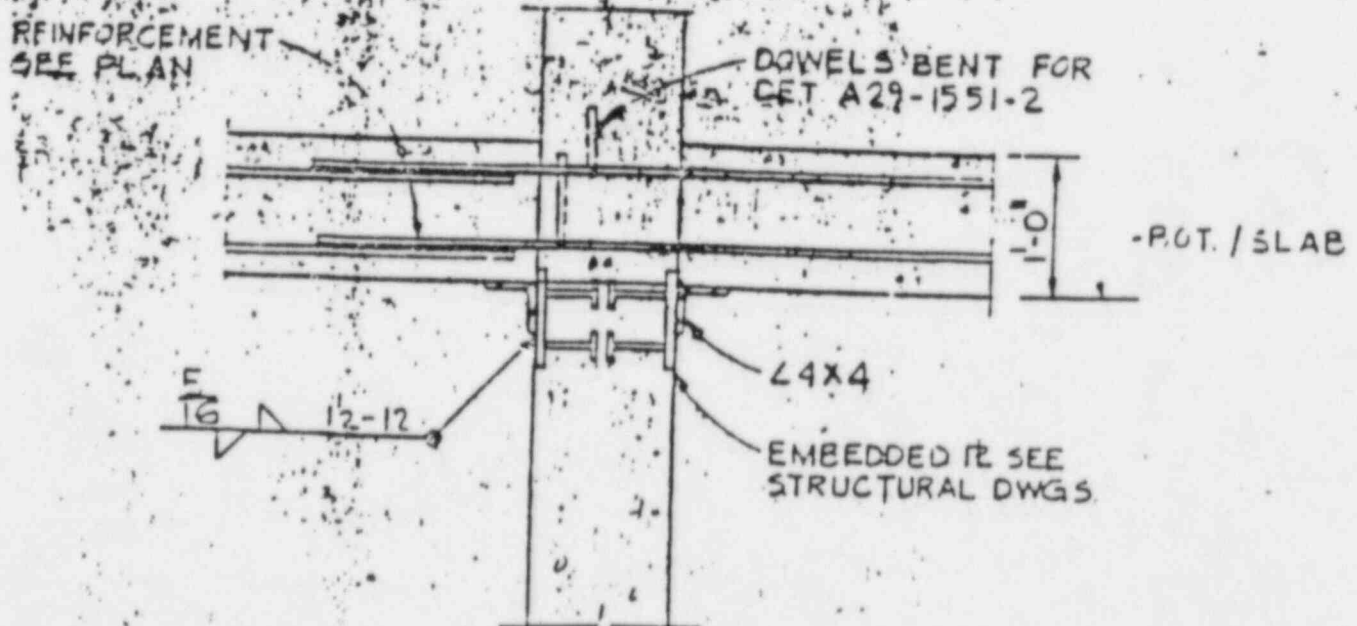
# HOLLOW CMU ABSORPTION TEST RESULTS



- 23) Provide justification why the unprotected steel in the Diesel Generator Day Tank Rooms does not derate the fire barriers.

The L4x4 member in the Diesel Generator Day Tank Room, as shown on the following Detail A21-1070-18, provided temporary support for the wet concrete of the roof slab and adds shear resistance to the joint detail. The angle is welded to an embedment plate similar to other attachments to concrete firewalls. This angle is not required to maintain the integrity of the roof slab.

Additionally, the concrete wall which has the embedment plate for the angle is continuous and has no gaps and therefore provides a continuous fire barrier.



DETAIL A21-1070-18

A29-1551-1 & A29-1551-2

## ATTACHMENT 5

### Design Clarification

#### Automatic Suppression for Safety-Related Cable Trays

##### Reference

APCSB Appendix A Section D.3(c)

"Automatic water sprinkler systems should be provided for cable trays outside the cable spreading room..."

##### NRC Concern

Not all safety-related cable trays are protected from the effects of a potential exposure fire by automatic water suppression systems.

##### Fire Areas Involved

All fire areas outside the cable spreading room.

##### Description of SSD Equipment and Cables

See the Safe Shutdown Analysis Cable Tray Figures 1 through 22.

##### Engineering Justification

The design bases for electrical cable trays at the Clinton Nuclear Plant are described in subsection 3.1.2.3 FPER. Fire protection for electrical cable tray includes the following passive and active measures:

1. Cable Materials: The EPR/Hypolon cables used at Clinton were selected for their ignition resistance and low flame spread and heat release rates. These cables pass the flame spread screening test of IEEE-383. Large scale fire tests (NUREG/CR-0381 September 1978) verified the fire protection feature built into the cable insulation and jacketing materials.
2. Cable Tray Construction: Clinton uses solid bottom steel cable trays except for a few ladder trays directly over equipment to facilitate access to the equipment. Solid bottom trays have been shown by tests conducted by Sandia Laboratories for the USNRC and also tests conducted by Toledo Edison, docketed in the Davis-Besse fire hazard analysis, to provide additional ignition resistance and retard fire propagation between trays.

## Design Clarification

### Automatic Suppression for Safety-Related Cable Trays

A solid bottom tray provides a barrier to direct flame impingement, piloted ignition, which in turn requires the EPR (Hypolon) cables to be heated to a higher temperature auto ignition in order to ignite. For the EPR/Hypolon cables, the auto ignition temperature is greater than 1000°F.

3. Automatic Fire Protection: In most areas containing safety-related cable trays and in all areas containing high concentrations of safety-related cables, automatic ionization fire detectors are provided which alarm in the Control Room in the event of a fire. The ionization detectors will provide early warning of exposure fires.
4. Manual Fire Suppression: Throughout the plant, portable fire extinguishers and hose stations are provided to facilitate manual fire suppression.
5. Automatic Fire Suppression Systems: Automatic sprinkler protection is provided for areas in the plant as described in the FPER and SSA. These include areas in the Control, Diesel Generator, and Auxiliary Buildings.

Design Clarification

Control Room Peripheral Walls

References

1. BTP 9.5-1 Appendix A, Section F.2, stated that the control room should be separated from other areas of the plant by floors, walls, and roofs having a minimum fire resistance rating of 3 hours.
2. NUREG 0853, SER Section 9.5.4.1, February 1982

NRC Concern

The control room is not adequately protected from its peripheral rooms by walls having a fire resistance rating of 3 hours.

Fire Area Involved

Fire Zone CB-6a, c, d - Elevation 800 feet 0 inch  
(see Figures 14a and b and  
Cable Tray Figure 12)

Engineering Justification

The control room is located on the 800 foot elevation of the control building. As shown in Figure FP-14b, the peripheral rooms adjacent to the main control room include the technical support center, shift supervisor's office, planning and scheduling room, results records room, and emergency food storage room. These rooms, except the technical support center, will be separated from the main control room by a 1.9 hour fire-rated fire barrier. The technical support center will be separated from the main control room by a directional 1.9 hour fire-rated wall as shown in Figure 14b. The floor and ceiling of elevation 800 feet 0 inch are 3 hour fire-rated with all openings properly protected.

The control room and peripheral rooms are protected by a complete ionization type smoke detection system. Portable fire extinguishers and manual hose stations are also provided in the vicinity of the rooms. These fire zones are low hazard zones with combustible loadings of less than 1 hour. In the event of a fire in the peripheral rooms, the reactor can be brought to a safe shutdown condition utilizing the remote shutdown panel located in the Division 1 switchgear room of the auxiliary building at elevation 781 feet 0 inch. Safe shutdown capability is described in Subsection 3.3.6.2 of the Safe Shutdown Analysis.



Design Clarification  
Control Room Peripheral Walls

Therefore, upgrading the peripheral room walls to a 3 hour fire rating does not enhance the level of fire safety above that provided by the existing construction.

( 4.2.2.14.1 Containment Airlocks

Description of Deviation

The airlock doors (hatches) provided in the containment and drywell boundaries are not tested or labeled as 3-hour fire doors.

----- Reference -----

NUREG-0853, SER, Section 9.5.2.2

Door openings should be protected with equipment rated doors, frames, and hardware that have been tested and approved by a nationally recognized testing laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room.

( Fire Areas Involved

The following fire areas and zones are involved in this deviation:

<u>Door Location</u>	<u>Fire Areas/Zones Separated</u>
Elevation 737'-0" SW Quadrant Equipment Hatch	F-1m/C-2/C-1
Elevation 737'-0" Column/Row-AD East Personnel Hatch	C-2/C-1
Elevation 737'-0" NE Quadrant Personnel Hatch	A-2d/C-2
Elevation 828'-3" NE Quadrant Personnel Lock/Walkway	C-2/CB-1i

Description of Safe Shutdown Cables and Equipment

Fire Area C-2 separates the containment from the fuel and auxiliary buildings. The containment walls are not used to separate redundant safe shutdown divisions. Safe shutdown cables are shown on Figures \_\_\_\_\_ through \_\_\_\_\_.

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Engineering Justification

The airlock doors (hatches) provided in the containment and drywell boundaries are not tested or labeled as 3-hour fire doors. The containment boundary, including penetrations (i.e., doors and cable penetrations), is designed for worst case accident parameters as described in CPS-FSAR Subsection 6.2.1.1.3. Each of the airlock type doors addressed in this deviation is designed to withstand the pressures and temperatures associated with design-basis accidents. Each opening is protected by massive steel hatches with multiple-point latches on both ends of the airlock. Each airlock consists of two doors. The space between the doors is devoid of any combustibles.

Acceptance testing of fire doors in accordance with NFPA 252 "Fire Test of Door Assemblies" (ASTM E-152) identifies the most important condition of acceptance as the ability of the door to "remain in place during both the fire test and the hose stream test." The hinges and the latches of the airlock doors are significantly stronger than those on a metal fire door and would not allow the doors to significantly warp away from the openings in the fire barrier in the event of a fire.

( There is no temperature restriction (as in penetration seals) to the temperature rise or limitation on the unexposed side of the fire door. Doors usually fail a fire test due to the door being "bowed" into the test furnace in addition to the possible failure of the hardware holding the door in place.

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There is no exposure to the doors from inside the containment since all the cable trays (only in Fire Area C-2, all cables are in conduit in Fire Area C-1) are located on the elevation above the equipment and personnel hatches. No combustibles are located in the immediate area outside of these hatches. Even an exposure fire adjacent to one of these doors would not void the integrity of these doors due to the massive heat sink of the door itself.

( Based on the design and construction of the doors, the structural integrity imposed on the doors, and the lack of combustibles inside the containment, the airlock doors are equivalent to 3-hour fire doors.

#### 4.2.2.15 Unsealed Bus Ducts Through Fire Barriers

##### Description of Deviation

Three-hour fire barriers in which bus ducts penetrate are unsealed on the inside of the duct.

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##### Reference

NUREG-0853, SER, Section 9.5.2.1

Floors, walls, and ceilings enclosing separate fire areas should have minimum fire rating of three hours. Penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

The fire areas involved in this deviation are listed on Table 4.2.2.15-1 and the locations of the 480-volt bus duct openings are listed on Table 4.2.2.15-2.

##### Description of Safe Shutdown Equipment and Cables

The description of safe shutdown equipment and cables is given in the appropriate section of the Clinton FPER and SSA.

##### Engineering Justification

###### 4.16-kV and 6.9-kV Bus Ducts

There are twenty-two 4.16-kV and 6.9-kV bus duct penetrations unsealed on the inside in 3-hour fire-rated barriers. None of these barriers are necessary to ensure safe shutdown. The bus

duct penetrations are constructed entirely of approximately 11 gauge (.125 inch thickness) metal construction that is bolted to the barrier on each side of the penetration. As evaluated by a fire protection engineer, the construction of the duct assembly, as well as the bolted attachment of the duct to the wall on both sides of the floor/wall, provides protection equivalent to that provided by a fire door or damper. Thus, the sealing of the inside of the 4.16-kV and 6.9-kV bus ducts is not necessary.

#### 480-Volt Bus Ducts

There are four 480-volt bus duct penetrations unsealed on the inside in 3-hour fire-rated barriers. The bus duct penetrations consist entirely of heavy metal construction that are seismically supported and bolted to the barrier on each side of the penetrations.

The sheet metal enclosure around the bus duct is approximately six inches by eight inches. The gap between the sheet metal enclosure and the 3-hour fire-rated barrier is sealed with a three-hour fire-rated seal. As evaluated by a fire protection engineer, the bus duct penetrations (based on their substantial construction) are equivalent to a 3-hour barrier.

All the fire zones affected by the 480-volt bus duct penetrations have ionization fire detection installed throughout the zone on both sides of the penetration. In addition, the duct at S-119 at elevation 762 feet 0 inch (Fire Zone A-2k to A-1b) is protected by an automatic wet pipe sprinkler system in Fire Zone A-1b.



Based on the construction of the bus ducts, a fire protection engineer's evaluation of the bus ducts, and the fire detection and suppression systems provided, the sealing of the inside of the 480-volt bus ducts is not necessary.

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4.2.4.1 DRYWELL SUPPRESSION IN FIRE AREA C-1Description of Deviation

An automatic suppression system is not provided in Fire Area C1. Cables associated with safe shutdown pass within 20 feet of their redundant counterparts.

A deviation concerning the partial fire detection system for this area is discussed in Subsection 4.2.3.1.

Reference

10 CFR 50, Appendix F, Sections III.G.2.d and e states that cables and equipment of redundant trains must be separated by a horizontal distance of more than 20 feet with no intervening combustibles or the applicant will install fire detectors and an automatic suppression system in the fire area.

Fire Area(s) Involved

Fire Area C-1 - Elevations 707 feet 0 inch through 828 feet 0 inch (see Figures FP-2a and 2b through FP-7a and 7b and Cable Tray Figures 2 through 6).

Description of Safe Shutdown Equipment and Cables

Cables and equipment required for safe shutdown are listed on Table \_\_\_\_\_ and shown on Figures \_\_\_\_\_ through \_\_\_\_\_.

Engineering Justification

All cables, except those attached beneath the reactor, are in conduit. Separation of safe shutdown conduits is greater than 20 feet except at elevation 764 feet 0 inch, where they cross over each other and run parallel within 1 foot of each other. Each SRV is powered by both Division 1 and 2. A sufficient number of SRVs would be available assuming that all cabling and equipment were disabled within any 20-foot horizontal portion of the drywell. It should be noted that the SRVs also have extensive vertical separation from the only in situ fire hazard in this fire area, which is the lubricating oil contained within the two reactor recirculation pump motors.

Each reactor recirculation pump motor utilizes self-lubricated bearings with lubricating oil cooled by cooling coils installed within the reservoirs. A pressurized oil system is not utilized. This design minimizes piping connections to the oil reservoir. The heavy construction and the nonpressurized design of this lubricating system minimize susceptibility to leakage. Thus, a fire due to the spray of the recirculation pump lubricating oil is not credible. If a fire occurred at the recirculation pump motors, it would be detected by the ultraviolet fire detection systems.

The drywell is inaccessible during operation, and when opened, stringent administrative controls are implemented to monitor personnel and equipment ingress and egress. Therefore, an exposure fire from transient combustibles is not credible.

Based on the minimal combustibles in the area, detection for the reactor recirculation pumps, and spatial separation of safe shutdown cables in conduit, an adequate level of protection is provided to ensure safe shutdown. Therefore, an automatic suppression system in this fire area is not necessary.

# SSA Deviations

ENCLOSURE 4

Spec No.	Title	No.
4.2.2.1	Floor Slab	1
.2	Steel Wall (A-2/T-1)	2
.3	Steel Wall (A-1/A-2)	3
.4	Watertight Doors	4
.5	Security Airlock	5
.9	Standby Gas Treatment	6
.11	Unprotected Steel in Stairways	7
.13	Circulating/Screenhouse Ventilation Penetration	8
.14	Containment Wall - Airlock Door. Elec. Pen. + Mech. Pen.	9
.15	Bus Duct Penetrations	10
4.2.3.1	Partial Detection	11
.2	Fire Detection by Water Flow	12
.3	Air Intake Structures	13
4.2.4.1	Drywell	14
.2	Control Room	15
.3	Diesel Air Intake Structures	16
.4	Partial Suppression in Fire Area A-1	17
.5	Partial Suppression in Fire Area CB-1	18
.6	Partial Suppression in Fire Area CB-S	19
.7	Partial Suppression in Fire Area F-1	20

#### 4.2.2.1 FLOOR SLABS (A-1/A-3)

##### Description of Deviation

The floor slabs at elevation 737 feet 0 inch and 762 feet 0 inch where they meet the containment wall have an unsealed 2-inch air gap. These slabs separate Fire Area A-1 from A-3. The air gap is required for post-LOCA accident ventilation.

##### References

1. BTP 9.5-1 Appendix A, Section D.1.j.
2. NUREG-0853 SER Section 9.5.2.1, February 1982.
3. NUREG-0853 Supplement No. 1, SER Section 9.5.2.1, July 1982, references that floors, walls, and ceilings enclosing separate fire areas should have a minimum fire rating of 3 hours and penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

- Fire Zone A-3a, - Elevation 712 feet 0 inch (see Figures FP-2a and 2b and  
A-3c Cable Tray Figure 2)
- Fire Zone A-1e - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable  
Tray Figure 3)
- Fire Zone A-3e - Elevation 762 feet 0 inch (see Figures FP-4a and 4b and Cable  
Tray Figure 4)

##### Description of Safe Shutdown Equipment and Cable

Fire Zone A-3c contains a Division 2/Method 2 safe shutdown valve 1E12-F021 and auxiliary building floor drain tank and pumps. The Division 2 cable that services valve 1E12-F021 (col./row 102/AC-AD) enters from Fire Zone A-3b in the east corridor.

Fire Zone A-1e contains a Division 2/Method 2 safe shutdown valve 1E12-F042C and is located over the containment equipment maintenance area.

Fire Area A-3e does not contain any Division 1 or 2 safe shutdown cable or equipment.

##### Engineering Justification

The 2-inch air gap between the 3-hour fire-rated floor slabs separating Fire Areas A-1 and A-3 and the containment building wall at elevation 737 feet 0 inch is required for ventilation and seismic criteria. The concern is that a fire propagates from the lower elevation up through the gap to the next elevation. The fire load in the immediate vicinity of the air gap is low.

Fire Zone A-3c, which contains the auxiliary building floor drain tank pump, has a fire load of 16,000 Btu/ft<sup>2</sup>.

Fire Zone A-1e, the next elevation up, does not have fixed combustibles. As a contaminated equipment maintenance area only, transient combustibles would be located in this zone.

The next fire zone up (A-3e) at elevation 762 feet 0 inch contains 24,000 Btu/ft<sup>2</sup> of cable insulation.

The floor slabs are a minimum of 14 inches of reinforced concrete and are 3-hour fire-rated with the exception of the air gap. All other electrical and mechanical penetrations are sealed with a 3-hour fire-rated seal.

All zones have fire extinguishers and hose stations. Fire Zone A-3e also has a complete ionization fire detection system with alarm and annunciation in the control room. Due to the narrow width of Fire Zone A-3e, the smoke generated from the elevations below will be picked up and alarmed by the ionization detection in Fire Zone A-3e.

Based on the safe shutdown analysis and the low fire loading in these zones, a fire in these three fire zones will not affect the plant's ability to safely shut down using the Method 1 safe shutdown systems.



#### 4.2.2.2 STEEL WALL (A-2/T-1)

##### Description of Deviation

The steel wall separating the auxiliary building (Fire Area A-2) and the turbine building (Fire Area T-1) in the main steam tunnel at elevation 755 feet 0 inch is not fire rated.

##### Reference

NUREG-0853, SER, Section 9.5.2.1 references that floors, walls, and ceilings enclosing separate fire areas should have a minimum fire rating of 3 hours and penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

- Fire Zone A-2f - Elevation 755 feet 0 inch (see Figures FP-3a, 3b, 4a, 4b, 5a, and 5b)
- Fire Zone T-1e - Elevation 755 feet 0 inch (see Figures FP-21a, 21b, 22a, 22b, 23a, and 23b)

##### Description of Safe Shutdown Equipment and Cables

Fire Zone A-2f is the auxiliary building side of the main steam tunnel. The safe shutdown equipment in this zone consists of a shutdown cooling outboard suction isolation valve (1E12-F008), an RCIC injection shutoff valve (1E51-F013), and RHR and RCIC steam supply line outboard valve (1E51-F064). All three of these valves are Division 1 operated valves. This fire zone is not accessible during plant operations.

Fire Zone T-1e is the turbine building side of the main steam tunnel. The main steam and feedwater lines from Fire Zone T-1e pass through Fire Zone A-2f and service equipment in the containment building. Fire Zone T-1e does not contain any safe shutdown equipment or cables; however, Electrical Division 1E cable and equipment are located in this fire zone. This fire zone has a partial automatic wet pipe sprinkler system and an automatic fire detection system (see Figure FP-21b).

##### Engineering Justification

The steel wall and its associated penetrations are not fire rated. There are no fixed combustibles within 40 feet of the steel wall in Fire Zone A-2f except for the gasketing and ductwork associated with HVAC area coolers. In addition, the presence of transient combustibles is unlikely, since this zone is not accessible during normal plant operation. In Fire Zone T-1e, the primary hazard would be a turbine oil fire from oil piping located beneath the turbine. The plant is protected from this hazard by a partial wet-pipe sprinkler system in the entrance to the steam tunnel.

If a fire occurs in Fire Zone A-2f, safe shutdown can be achieved by using the redundant Method 2 shutdown flow path as shown in Figure I.8-7.

Based on the partial suppression system, the negligible combustibles in the immediate area, and the plant's ability to safely shut down with a fire in this plant area, the steel wall and its associated penetrations do not need to be fire rated.

#### 4.2.2.3 STEEL WALL (A-1/A-2)

##### Description of Deviation

The steel air lock walls that separate Fire Area A-1 (Fire Zone A-1b) from Fire Area A-2 (Fire Zone A-2d) are not 3-hour fire-rated barriers.

##### Reference

NUREG-0853 SER, Section 9.5.2.1 references that floors, walls and ceilings enclosing separate fire areas should have minimum fire rating of 3 hours and penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

Fire Zone A-1b - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3)

Fire Zone A-2d - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3)

##### Description of Safe Shutdown Equipment and Cables

Fire Zone A-1b is a general access area in the auxiliary building. Division 1 safe shutdown cables are located on the east side of the zone from Columns 121 to 124 and Division 2 safe shutdown cables are located on the west side of the zone from Columns 102 to 104. The fire zone is protected by complete ionization fire detection and a partial wet-pipe sprinkler system between column/row 114-124/S-T.

Fire Zone A-2d is a general hallway and containment building personnel hatch area. Division 1 safe shutdown cables pass through this fire zone from Fire Zone A-1b to the fuel building (see Cable Tray Figure 3).

##### Engineering Justification

The steel air lock walls that separate Fire Zone A-1b from Fire Zone A-2d are not 3-hour fire rated barriers. A fire in Fire Zone A-2d could affect the Division 1 safe shutdown cables in this zone. Division 2/Method 2 systems would be available to safely shut down the plant.

In the event of a fire in Fire Zone A-1b, the same Division 1 safe shutdown cables which are routed through Zone A-2d could be affected. The Division 2 safe shutdown cables located on the opposite side of the fire zone are more than 130 feet away and are separated by an automatic wet-pipe sprinkler system located between column/row 114-124/S-T. Thus, there is adequate separation between Division 2/Method 2 and Division 1/Method 1 cables in Fire Zone A-1b, and the plant can be safely shut down.

Based on the adequate separation between safe shutdown divisions, partial suppression, and the plant's ability to safely shut down with a fire in the vicinity of the steel wall, the steel air lock walls will not need to be fire rated.

#### 4.2.2.4 WATERTIGHT DOORS (A-1/A-2/A-3/F-1/M-1/M-2)

##### Description of Deviation

Watertight doors are not tested or labeled as 3-hour rated fire doors. The doors are part of the plant's fire area boundaries in the auxiliary, fuel and circulating water screen-house.

##### Reference

NUREG-0853, SER, Section 9.5.2.2 references that door openings should be protected with equivalent rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room.

##### Fire Areas Involved

- |            |                        |   |   |
|------------|------------------------|---|---|
| Fire Zone  | A-1a                   | - | Elevation 701 feet 6 inches (see Figures FP-2a and 2b and Cable Tray Figure 2)  |
| Fire Zones | A-2a,<br>A-2b,<br>A-2c | - | Elevation 707 feet 6 inches (see Figures FP-2a and Cable Tray Figure 2)         |
| Fire Zones | A-3a,<br>A-3b,<br>A-3c | - | Elevation 707 feet 6 inches (see Figures FP-2a and 2b and Cable Tray Figure 2)  |
| Fire Zones | F-1a,<br>F-1b          | - | Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2)    |
| Fire Area  | M-1                    | - | Elevation 699 feet 0 inch (see Figures FP-25 and 25b and Cable Tray Figure 22)  |
| Fire Zone  | M-2b                   | - | Elevation 699 feet 0 inch (see Figures FP-25a and 25b and Cable Tray Figure 22) |

##### Description of Safe Shutdown Equipment and Cables

Fire Zone A-1a is a general access corridor at elevation 707 feet 6 inches. This zone contains Division 1/Method 1 safe shutdown cables and instrument panels. These cables terminate in or pass through Fire Zones A-2a, A-2b, and A-2c. Fire Zone A-1a also contains Division 2/Method 2 safe shutdown cables and instrument panels. These cables terminate in or pass through Fire Zones A-3a and A-3b. There is a partial ionization fire detection system and a hose station in this zone.

Fire Zone A-2a is the RCIC pump room and is at elevation 707 feet 6 inches. This zone contains the RCIC pump and supporting equipment, as well as Division 1 and 2

instruments and valves. Fire Zone A-2a also contains Method 1 safe shutdown equipment. A partial ionization fire detection system and a hose station are located in this zone.

Fire Zone A-2b begins at elevation 707 feet 6 inches. This zone contains RHR pump 1-A and heat exchanger A, as well as Division 1 and 2 instruments and valves. Fire Zone A-2b also contains Method 1 safe shutdown equipment. A partial ionization fire detection system and a hose station are located in this zone.

Fire Zone A-2c is an LPCS pump room and is at elevation 707 feet 6 inches. This zone contains safe shutdown cables in conduit routed to Fire Zone A-2b for valve 1E12-F024A, Method 1 safe shutdown. The equipment located within this zone is not necessary for safe shutdown. There is an ionization fire detection system and a hose station in Fire Zone A-2c.

Fire Zone A-3a begins at elevation 707 feet 6 inches. This zone contains RHR pump 1-B, heat exchanger B, and Division 2 instrument panel and valves. Method 2 safe shutdown equipment is also located in this fire zone. A partial ionization fire detection system and hose station is located in this zone.

Fire Zone A-3b is the RHR pump 1-C room and is at elevation 707 feet 6 inches. RHR pump 1-C and Division 2 valves and instruments are located in the zone. Fire Zone A-3b contains Method 2 safe shutdown equipment. This fire zone has a partial ionization fire detection system and a hose station.

Fire Zone A-3c on elevation 712 feet 0 inch consists of a general hallway and the auxiliary building floor drain pumps and tank. Division 2 safe shutdown cable in conduit to valve 1E12-F021 is located within this zone. Fire Zone A-3c has portable fire extinguisher.

Fire Zone F-1a (at elevation 712 feet 0 inch) consists of the drywell chillers, drywell water chiller pumps, and the gamma scanner room. No safe shutdown cables or equipment are located within 50 feet of the watertight door. Fire Zone F-1a is equipped with portable fire extinguishers and hose stations.

Fire Zone F-1b (at elevation 712 feet 0 inch) contains the HPCS pump and supporting equipment. This equipment is needed in case of a fire in Fire Zone A-3f (elevation 781 feet 0 inch). Division 3 cable trays and Division 2 instrumentation are also located in Zone F-1b. An ionization fire detection system and a portable fire extinguisher are located within this zone.

Fire Area M-1 consists of a room containing Division 1/Method 1 shutdown service water system safe shutdown cable and equipment and is located at elevation 699 feet 0 inch. There is an ionization fire detection system in Fire Area M-1.

Fire Zone M-2b contains Division 2/Method 2 shutdown service water system safe shutdown cables and equipment and is located at elevation 699 feet 0 inch. Fire Zone M-2b has an ionization fire detection system.



Engineering Justification

There are seven watertight doors installed in 3-hour fire rated barriers in the auxiliary building and two watertight doors installed in 3-hour fire rated barriers in the circulating water screen house. Doors requiring a deviation are shown on Figures FP-2b and 25b.

The doors have been evaluated by a fire protection engineer to be equivalent to 3-hour rated fire doors based upon the following:

- o The acceptance testing of fire doors in accordance with NFPA 252, "Fire Test of Door Assemblies" (ASTM-152), identifies the most important condition of acceptance as the ability of the door to "remain in place during both the fire test and the hose stream test."
- o These substantial steel doors are equipped with multiple (4-point) latching. The hinge shaft is 2.75-inch-diameter steel. The latch pins are 1-inch-diameter steel; two are located on each side.
- o The hinges and the latches of the watertight doors are significantly stronger than those of a metal fire door and would not allow the door to warp away from the opening in the fire barrier.

Based on the substantial construction of the watertight doors, they are at least equivalent to 3-hour rated fire doors.

#### 4.2.2.5 SECURITY AIR LOCK CB-6/CB-7, CB-6/CB-1

##### Description of Deviation

The security airlock doors in the 3-hour rated fire barrier around the control room complex are not tested or labeled as 3-hour fire-rated doors.

##### References

NUREG-0853, SER Section 9.5.2.2 references that door openings should be protected with equivalent rated doors, frames and hardware that have been tested and approved by a nationally recognized laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room.

##### Fire Areas Involved

- Fire Zone CB-1h - Elevation 800 feet 0 inch (See Figures FP-14a and 14b and Cable Tray Figure 12)
- Fire Zone CB-6d - Elevation 800 feet 0 inch (See Figures FP-14a and 14b and Cable Tray Figure 12)
- Fire Area CB-7 - Elevation 800 feet 0 inch (See Figures FP-14a and 14b and Cable Tray Figure 12)

##### Description of Safe Shutdown Equipment and Cables

Fire Zone CB-1h is a stairwell tower that passes through the control building from elevation 702 feet 0 inch through elevation 825 feet 0 inch. At elevation 800 feet 0 inch, Fire Zone CB-1h contains a janitor's closet. No safe shutdown cables are located in the fire zone. Fire Zone CB-1h contains portable fire extinguishers and hose stations for manual fire fighting.

Fire Zone CB-6d is the entry point to the control room complex and is located at elevation 800 feet 0 inch. This fire zone contains Division 1/Method 1 and Division 2/Method 2 safe shutdown cable and equipment. An ionization detection system is provided in Fire Zone CB-6d as well as portable fire extinguishers and hose stations.

Fire Zone CB-7 is a stairwell tower that passes through the control building from elevation 702 feet 0 inch through elevation 825 feet 0 inch. At elevation 800 feet 0 inch, Zone CB-7 includes a hallway that extends over the auxiliary building. This area does not contain any Division 1/Method 1 or Division 2/Method 2 safe shutdown cables or equipment. An ionization detection system is located in Fire Zone CB-7 at this elevation. Portable fire extinguishers and hose stations are provided for manual fire fighting.

##### Engineering Justification

The three security air lock doors in the south corridor, which separate the control room complex from the access stairwells by 3-hour fire barriers, are not fire-rated doors.

The east door separates Fire Zone CB-1h from CB-6d. The nearest fire load in the vicinity of the door is located in the janitor's closet, with a fire load of approximately 100 Btu/ft<sup>2</sup>. The air lock contains no in situ combustibles. The exit door of the air lock is a 3-hour fire-rated fire door in a 2-hour fire-rated wall. Based on the substantial construction of the security door, the presence of the air lock barriers, and the absence of combustibles, the door provides adequate fire resistance.

There are two air locks that separate Fire Area CB-7 from the control room complex, Fire Area CB-6. The nearest combustibles to the air lock doors are in the corridor of Fire Area CB-7. The average fire loading in this hallway is approximately 123,000 Btu/ft<sup>2</sup>. The landing of Fire Area CB-7 in front of the doors contains no in situ combustibles.

The air locks contain no in situ combustibles. The exit door of each air lock is a 3-hour rated fire door in a 2-hour rated wall. The floor and ceiling of the air locks have fire ratings of 3 hours. Based on the substantial construction of these security doors, the presence of the air lock barriers, and the minimum 2-hour fire resistance of the doors and walls between these doors and adjacent zones, the doors provide adequate fire resistance.

#### 4.2.2.9 VENTILATION PIPING

##### Description of Deviation

Ventilation piping that penetrate 3-hour fire-rated walls and floors do not have fire dampers.

##### Reference

NUREG-0853, SER Section 9.5.2.1, references that floors, walls, and ceilings enclosing separate fire areas should have a minimum 3-hour fire rating. Penetrations in these barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved:

- Fire Zone A-1e - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2a - Elevations 707 feet 6 inches through 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).
- Fire Zone A-2b - Elevations 707 feet 6 inches through 781 feet 0 inch (see Figures FP-2a and 2b through 5a and 5b and Cable Tray Figures 2 and 3).
- Fire Zone A-2c - Elevations 707 feet 6 inches through 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).
- Fire Zone A-2d - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2g - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2h - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2i - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2j - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2k - Elevation 762 feet 0 inch (see Figures FP-4a and 4b and Cable Tray Figure 4).
- Fire Zone A-2n - Elevation 781 feet 0 inch (see Figures FP-5a and 5b and Cable Tray Figure 5).

- Fire Zone A-3a - Elevations 707 feet 6 inches through 762 feet 0 inch (see Figures FP-2a and 2b through 5a and 5b and Cable Tray Figures 2 and 3).
- Fire Zone A-3b - Elevations 707 feet 6 inches through 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).
- Fire Zone A-3c - Elevations 707 feet 6 inches through 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).
- Fire Zone A-3d - Elevation 762 feet 0 inch (see Figures FP-4a and 4b and Cable Tray Figure 4).
- Fire Zone A-3f - Elevation 781 feet 0 inch (see Figures FP-5a and 5b and Cable Tray Figure 5).
- Fire Zone CB-1c - Elevation 719 feet 0 inch (see Figures FP-9a and 9b and Cable Tray Figure 8).
- Fire Zone F-1a - Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).
- Fire Zone F-1b - Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).
- Fire Zone F-1p - Elevations 712 feet 0 inch through 781 feet 0 inch (see Figures FP-2a and 2b through 5a and 5b and Cable Tray Figures 4 and 5).

Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>
A-1e	Yes
A-2a	Yes
A-2b	Yes
A-2c	Yes
A-2d	Yes
A-2g	No
A-2h	No
A-2i	No
A-2j	No

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>
A-2k	Yes
A-2n	Yes
A-3a	Yes
A-3b	Yes
A-3c	Yes
A-3d	Yes
A-3f	Yes
CB-1c	Yes
F-1a	Yes
F-1b	Yes
F-1p	Yes

#### Engineering Justification

Various 3-hour rated floors and walls are penetrated by the standby gas treatment system ventilation piping (VG). The annular space between the pipe and the barrier is sealed with an approved and tested penetration seal. The VG system piping exhaust is routed through various fire zones and has exhaust ventilation openings in the fire zones (located away from the fire barrier). The primary concern is that the lack of fire dampers would allow a fire to propagate from one side of the barrier to the other side.

The off-gas treatment ventilation system main header is constructed of 14-inch welded steel pipe that is seismically supported. Two basic piping loops are provided.

#### Piping Loop No. 1

Piping loop No. 1 is routed through elevation 712 feet of the fuel building and elevations 712 feet and 737 feet of the control building. The VG system provides exhaust via a 6-inch stub into the main loop, from the RHR pump room, HPCS and LPCS sump room, RWCU pump room, and the radwaste pipe tunnel. Exhaust from each pipe opening is between 300 and 400 cfm.

All the fire zones through which piping loop No. 1 is routed contain ionization fire detection that alarm and annunciate in the control room except Fire Zones F-1a, A-2g, A-2h, A-2i, and A-2j. Piping loop No. 1 is rated through fire zones with low combustible loadings as follows:



<u>Fire Zone</u>	<u>Combustible Loading</u>
A-2a	18,000 Btu/ft <sup>2</sup>
A-2b	30,000 Btu/ft <sup>2</sup>
A-2c	19,000 Btu/ft <sup>2</sup>
A-2g	25,000 Btu/ft <sup>2</sup>
A-2h	26,000 Btu/ft <sup>2</sup>
A-2i	27,000 Btu/ft <sup>2</sup>
A-2j	15,000 Btu/ft <sup>2</sup>
A-3a	30,000 Btu/ft <sup>2</sup>
A-3b	22,000 Btu/ft <sup>2</sup>
A-3c	16,000 Btu/ft <sup>2</sup>
F-1a	29,000 Btu/ft <sup>2</sup>
F-1b	35,100 Btu/ft <sup>2</sup>

Around the containment building where it would abut the auxiliary building, a 2-inch ventilation and seismic gap is provided (see Deviation 4.2.2.1). Even if a fire did develop on any of the elevations of the auxiliary building, it would not create sufficient pressure to penetrate the VG system pipe, propagate down the pipe, and discharge into another fire area due to the seismic gap.

#### Piping Loop No. 2

Piping loop No. 2 is routed vertically up the east and west sides of the auxiliary building (elevations 737 feet, 761 feet, and 781 feet) and contains a 6-inch ventilation stub on each elevation. These two risers are cross-connected by a pipe running through the fuel building (Zone F-1p) with a 10-inch ventilation stub.

All the fire zones through which piping loop No. 2 is routed contain ionization fire detection that alarms and annunciates in the control room except Fire Zones A-2d and A-1e.

Safe shutdown Method 1 equipment and cables are located on the east side of the auxiliary building; safe shutdown Method 2 equipment and cables are located on the west side of the auxiliary building. The vertical risers of the VG system that penetrate the various elevations communicate only with the same method of safe shutdown. The opposite method of safe shutdown is separated by 3-hour fire walls except for the piping routed through Zone F-1p that cross connects the two risers. This cross connection is located in a zone that consists of two full elevations of the fuel building with negligible combustible loading. There is also a 2-inch ventilation and seismic gap where the fuel building wall abuts the south side of the containment building. The distance the piping loop is routed in the zone is approximately 300 feet, with one stub opening. Due to the

volume of the zone with negligible combustibles, it is not credible for a fire to penetrate the VG loop, travel down the cross connection loop, and discharge into opposite shutdown method zones. Therefore, based on the low combustibles, the detection provided, the construction of the penetration, and the pressure of the seismic gap, fire dampers are not required.

#### 4.2.2.11 UNPROTECTED STEEL IN STAIRWAYS

##### Description of Deviation

Enclosed stairwells are constructed of 1.9-hour hollow concrete blocks with openings protected by fire-rated doors and labeled frames. Steel columns framed into these walls on the stairwell side are not protected.

##### Reference

10 CFR 50, Appendix R, Section III.G.2.a requires separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier.

##### Fire Area(s) Involved:

- Fire Zone CB-1h - Elevations 702 feet 0 inch through elevation 825 feet 0 inch (see Figures FP-8 through FP15a and 15b and Cable Tray Figures 7 through 13)
- Fire Area CB-7 - Elevations 702 feet 0 inch through 825 feet 0 inch (see Figures FP-8 through FP-15a and 15b and Cable Tray Figures 7 through 13)

##### Description of Safe Shutdown Equipment and Cable

Fire Area CB-7 and Fire Zone CB-1h do not contain any safe shutdown related cable or equipment associated with Method 1 or 2 safe shutdown systems. Both are stairways that communicate from elevation 702 feet through elevation 825 feet.

##### Engineering Justification

The enclosed stairwells are constructed of 1.9-hour fire-rated hollow concrete blocks with all door openings protected by fire-rated doors. Unprotected steel columns are framed into these walls on the stairway side only. Since the function of the stairway is to minimize smoke infiltration during a fire, as well as to provide quick access to a building's various elevations by the fire brigade, having exposed steel on the inside does not degrade the function of the stairwell.

Since the stairwells are devoid of combustibles, the existing fire barriers provide sufficient protection and are adequate.

Since no safe shutdown equipment or cable listed for safe shutdown Method 1 and 2 are located in these fire areas, safe shutdown of the plant can be achieved.

#### 4.2.2.13 CIRCULATING SCREEN HOUSE VENTILATION PENETRATION

##### Description of Deviation

Building ventilation is ducted through Fire Area M-1. The duct has a transition at the ceiling of Fire Area M-1 to a 12-inch pipe and then penetrates the floor to the lower elevation of Fire Zone M-2c. This penetration is not provided with a fire damper.

##### Reference

NUREG-0853, SER Section 9.5.2.1, February 1982 references that floors, walls, and ceilings enclosing separate fire areas should have minimum fire rating of 3 hours and penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

- Fire Zone M-1 - Elevation 699 feet 0 inch (see Figures FP-25a and 25b and FP-26a and Cable Tray Figure 22)
- Fire Zone M-2b - Elevation 699 feet 0 inch and elevation 657 feet 6 inches (see Figures FP-25a and 25b and Cable Tray Figure 22)
- Fire Zone M-2c - Elevation 600 feet 0 inch and elevation 657 feet 6 inches (see Figures FP-25a and 25b and Cable Tray Figure 22)

##### Description of Safe Shutdown Equipment and Cable

Fire Area M-1 consists of the Division 1/Method 1 shutdown service water pump, strainer, cooling unit, and motor control center. Fire Zone M-2b contains the Division 2 shutdown service water pump, strainer, cooling unit, and motor control center. Fire Zone M-2c consists of the circulating water screen house and below grade pipe tunnel at elevation 657 feet 6 inches. Fire Zone M-2c contains the shutdown service water cables that serve valves ISX011A and ISX011B.

##### Engineering Justification

The 3-hour fire rated floor between Fire Area M-1 and Fire Zone M-2c contains a ventilation penetration without a 3-hour fire damper. The concern is the propagation of fire from the underside (Fire Zone M-2c) into Fire Area M-1. Fire Area M-1 contains no cable trays and has an average combustible loading of 20,000 Btu/ft<sup>2</sup>. All other electrical and mechanical penetrations in the floor are sealed to provide a 3-hour fire rating. The power and control cables that serve the normally closed valves (ISX011A and ISX011B) located in Fire Zone M-2c are required for safe shutdown.

Since the valves do not need to change position, loss of power cables will not present a problem. Control cables are connected to a limit switch. A hot short of the limit switch will not change the position of a valve since the control switch contacts are open. Both Fire Area M-1 and Fire Zone M-2c contain low combustible loadings. Automatic

ionization detection is provided in Fire Area M-1 and Fire Zone M-2b in addition to extinguishers and hose stations. Based on the protection provided and the low combustible loading, the floor slabs provide an adequate barrier without providing a fire damper.

4.2.2.14.1 CONTAINMENT AIRLOCKSDescription of Deviation

The airlock doors (hatches) provided in the containment and the drywell boundaries are not tested or labeled as 3-hour fire doors.

Reference

NUREG-0853, SER, Section 9.5.2.2 references that door openings should be protected with equipment-rated doors, frames, and hardware that have been tested and approved by a nationally recognized testing laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room.

Fire Areas Involved

The following fire areas and zones are involved in this deviation:

<u>Door Location</u>	<u>Fire Areas/Zones Separated</u>
Elevation 737 feet 0 inch SW Quadrant Equipment Hatch	F-1m/C-2/C-1
Elevation 737 feet 0 inch Column/Row-AD East Personnel Hatch	C-2/C-1
Elevation 737 feet 0 inch NE Quadrant Personnel Hatch	A-2d/C-2
Elevation 828 feet 3 inches NE Quadrant Personnel Lock/Walkway	C-2/CB-1i

Description of Safe Shutdown Cables and Equipment

Fire Area C-2 separates the containment from the fuel and auxiliary buildings. The containment walls are not used to separate redundant safe shutdown divisions. Safety-related cables/trays are shown on Cable Tray Figures 2 through 5.

Engineering Justification

The airlock doors (hatches) provided in the containment and drywell boundaries are not tested or labeled as 3-hour fire doors. The containment boundary, including penetrations (i.e., doors and cable penetrations), is designed for worst-case accident parameters as described in CPS-FSAR, Subsection 6.2.1.1.3. Each of the airlock-type doors addressed in this deviation is designed to withstand the pressures and temperatures associated with design-basis accidents. Each opening is protected by massive steel hatches with



multiple-point latches on both ends of the airlock. Each airlock consists of two doors. The space between the doors is devoid of combustibles.

NFPA 252 "Fire Test of Door Assemblies" (ASTM E-152) identifies the most important condition of acceptance testing as the ability of the door to "remain in place during both the fire test and the hose stream test." The hinges and the latches of the airlock doors are significantly stronger than those on a metal fire door and would not allow the doors to significantly warp away from the openings in the fire barrier in the event of a fire.

There is no temperature restriction (as in penetration seals) to the temperature rise or limitation on the unexposed side of the fire door. Doors usually fail a fire test due to the door being "bowed" into the test furnace in addition to the possible failure of the hardware holding the door in place.

An exposure fire adjacent to one of these doors would not void the integrity of these doors because of the massive heat sink of the door itself.

Based on the design and construction of the doors, the airlock doors are equivalent to 3-hour fire doors.

#### 4.2.2.14.2 CONTAINMENT ELECTRICAL PENETRATION SEALS

##### Description of Deviation

Containment and drywell electrical penetration seals have not been tested or labeled as 3-hour fire rated seals.

##### Reference

NUREG-0853, SER, Section 9.5.2.1 references that floors, walls, and ceilings enclosing separate fire areas should have a minimum fire rating of 3 hours. Penetrations in these barriers, including conduits and piping, should be sealed or closed to provide a fire-resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

<u>Penetration Location</u>	<u>Fire Area</u>
Floor Elevation 762 feet 0 inch Northeast Quadrant	A-2m/C-2
Floor Elevation 762 feet 0 inch Northeast Quadrant	A-2o/C-2
Floor Elevation 762 feet 0 inch Northwest Quadrant	A-3e/C-2
Floor Elevation 781 feet 0 inch Northwest Quadrant	A-3g/C-2

##### Description of Safe Shutdown Equipment and Cables

Electrical penetrations at elevations 771 feet 0 inch and 773 feet 0 inch from Fire Area A-2 (Zone A-2m) to Fire Area C-2 contain no safe shutdown cables. Electrical penetrations at elevations 771 feet 0 inch and 773 feet 0 inch from Fire Area A-3 (Zone A-3e) to Fire Area C-2 contain no safe shutdown cables.

Electrical penetrations at elevations 792 feet 0 inch, 794 feet 0 inch, and 796 feet 0 inch from Fire Area A-2 (Zone A-2o) to Fire Area C-2 contain safe shutdown cables associated only with shutdown Method 1 (Division 1). Electrical penetrations at elevations 792 feet 0 inch and 796 feet 0 inch from Fire Area A-3 (Zone A-3g) to Fire Area C-2 contain safe shutdown cables associated only with shutdown Method 2 (Division 2). These penetration areas are separated by the steam tunnel (3-hour rated barriers) in both auxiliary and containment buildings.

The horizontal (circumferential) distance of open space between the Division 1 and 2 electrical penetration areas is in excess of 250 feet (270° angular separation).

##### Engineering Justification

The containment boundary, including electrical penetrations, is designed for worst-case accident parameters as described in CPS-FSAR, Subsection 6.2.1.1.3. Each of the electrical penetrations outlined in FSAR Section 3.8, Table 3.8-5, is designed to withstand the pressures and temperatures associated with design-basis accidents. Although they

have not been subjected to the ASTM E-119 fire test, their construction will prevent the propagation of a fire through the containment boundary.

The most significant fire hazards in the vicinity of the electrical penetrations are unprotected cables. The EPR-insulated hypolon jacketed cables, however, are inherently flame-retardant cables in which vertical or horizontal fire propagation is extremely difficult.

The separation of Division 1 and Division 2 electrical penetrations\* within the containment wall is such that, even in the unlikely event that a penetration seal failed, only one division of safe shutdown cables would be affected. Thus in the event of a fire, safe shutdown is assured.

\*As shown on Cable Tray Figures 4 and 5

#### 4.2.2.14.3 CONTAINMENT PIPING PENETRATIONS

##### Description of Deviation

Piping that penetrates the 3-hour fire-rated wall of the containment is not externally sealed to provide a fire-resistance rating at least equal to that of the containment wall itself.

##### Reference

NUREG-0853, SER, Section 9.5.2.1 references that floors, walls, and ceilings enclosing separate fire areas should have a minimum fire rating of 3 hours. Penetrations in these barriers, including conduits and piping, should be sealed or closed to provide a fire-resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

All fire areas adjacent to the containment wall are involved.

##### Description of Safe Shutdown Equipment and Cables

The description of safe shutdown equipment and cables is given in the appropriate sections of the Clinton FPER and SSA.

##### Engineering Justification

The containment wall, including the piping penetrations, is designed for worst-case accident parameters as described in CPS-FSAR Subsection 6.2.1.1.3. Each of the penetrations listed in FSAR Section 3.8, Table 3.8-5, has been designed to withstand the pressures and temperatures associated with design-basis accidents.

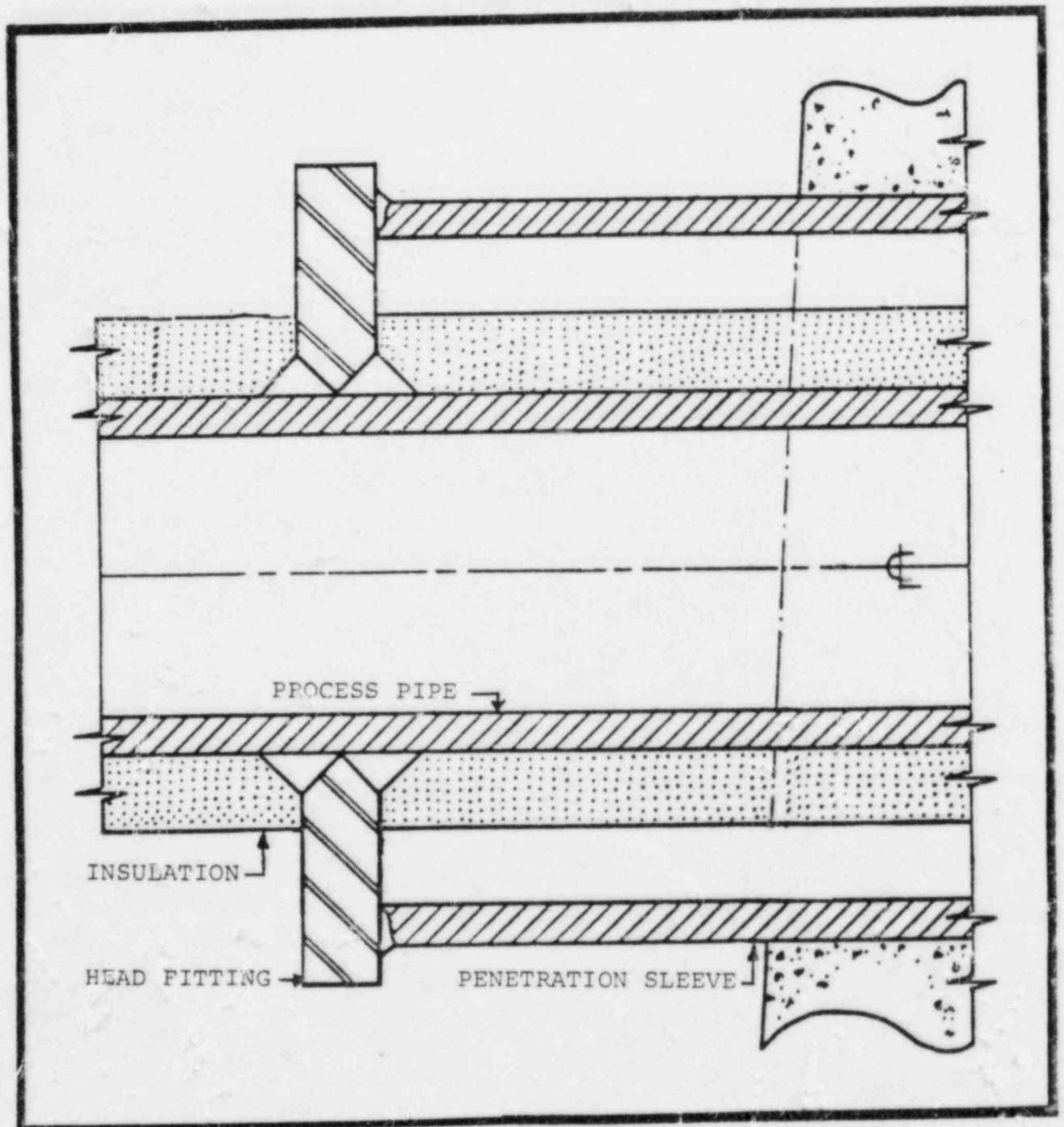
All piping that penetrates the containment wall has a penetration headfitting assembly. A typical headfitting assembly is shown on Figure 4.2.2.14.3-1. The headfitting assembly consists of a minimum 0.28-inch-thick steel sleeve embedded in the containment wall that extends beyond the face of the wall on both sides. A minimum 0.375-inch-thick steel headfitting plate is welded to the sleeve and to the pipe passing through the penetration, forming an airtight seal.

The headfitting assemblies have been evaluated by a fire protection engineer as providing protection equivalent to that provided by a fire door or damper.

Based on the substantial construction of the piping penetration headfitting assemblies, the piping penetrations in the containment wall do not need to have a rated external seal.

FIGURE 4.2.2.14.3-1

TYPICAL PENETRATION HEADFITTING ASSEMBLY



#### 4.2.2.15 UNSEALED BUS DUCTS THROUGH FIRE BARRIERS

##### Description of Deviation

Bus duct penetrations have not been tested or labeled as 3-hour fire rated penetrations.

##### Reference

NUREG-0853, SER, Section 9.5.2.1 references that floors, walls and ceilings enclosing separate fire areas should have minimum fire rating of three hours. Penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.

##### Fire Areas Involved

The fire areas involved in this deviation are listed on Table 4.2.2.15-1, and the locations of the 480-volt bus duct openings are listed on Table 4.2.2.15-2.

##### Description of Safe Shutdown Equipment and Cables

The description of safe shutdown equipment and cables is given in the appropriate sections of the Clinton FPER and SSA.

##### Engineering Justification - 4.16-kV and 6.9-kV Bus Ducts

There are twenty 4.16-kV and 6.9-kV bus duct penetrations in 3-hour fire rated barriers. The bus duct penetrations are constructed of 0.125-inch thick steel construction that is bolted to the barrier on each side of the penetration. As evaluated by a fire protection engineer, the construction of the duct assembly, as well as the bolted attachment of the duct to the wall on both sides of the floor/wall, provides protection equivalent to that provided by a fire door or damper.

##### Engineering Justification - 480-Volt Bus Ducts

There are four 480-volt bus duct penetrations in 3-hour fire rated barriers. The bus duct penetrations consist of 0.125-inch thick steel construction and are seismically supported and bolted to the barrier on each side of the penetrations.

The steel enclosure around the bus duct is approximately 6 inches by 8 inches. The gap between the steel enclosure and the 3-hour fire rated barrier is sealed with a 3-hour fire-rated material. All the fire zones affected by the 480-volt bus duct penetrations have ionization fire detection installed throughout the zone on both sides of the penetration.

As evaluated by a fire protection engineer, the construction of the bus ducts, the 3-hour fire rated seals on the outside of the penetrations, and the local fire detection provide protection equivalent to that provided by a fire door or damper.



## CPS

Table 4.2.2.15-1

Locations of 4.16-kV and 6.9-kV Bus Ducts

<u>Fire Zones on Both Sides of Barrier</u>	<u>Elevation (ft)</u>	<u>Number of Openings</u>	<u>Number of Bus Ducts</u>	<u>Location</u>
R-li and A-lb	737	1	1	S-122
CB-le and A-lb	751/737*	1	1	S-124
T-lf and A-lb	737	3	3	S-102 S-107 S-117
A-lb and Exterior Wall	737	1	3	U-102
A-lb and A-3d	737 and 762 (Floor)	5	5	S-102 U-105 V-105 U-105 U-105
A-lb and A-2k	762 (Floor)	4	4	U-121 U-121 U-121 U-121
R-lp and A-2k	762	1	1	S-122
CB-lf and A-2k	762	1	1	T-124
T-lh and A-3d	762	1	1	S-102
R-lp and CB-lf	762	2	2	S-128 S-133

\*CB-le is at elevation 751 and A-lb is at elevation 737.

## CPS

Table 4.2.2.15-2

Locations of 480-Volt Bus Ducts

<u>Fire Zones</u>	<u>Elevation (ft)</u>	<u>Number of Openings</u>	<u>Number of Bus Ducts</u>	<u>Location</u>
A-3d and A-lb	762	1	1	S-104
A-2k and A-lb	762	1	1	S-119
A-3f and A-2k	781	1	1	S-119
CB-7 and CB-7	800	1	1	AB-124

**4.2.3.1.1 FIRE AREA A-1**Description of Deviation

Complete area fire detection is not provided in Fire Area A-1. Fire detection is not provided in Fire Zones A-1c, A-1d, and A-1e.

Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

Fire Area Involved

- Fire Zone A-1c - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-1d - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-1e - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).

Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Area</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
A-1c	No	No
A-1d	No	No
A-1e	Yes	Yes

Engineering Justification

Fire detection is not provided in Fire Zones A-1c, A-1d, and A-1e. Fire Zone A-1c is a health physics instrument storage room and Fire Zone A-1d is an anticontamination clothing storage room. These two zones do not contain any safety-related cables or equipment and both zones are surrounded by Fire Zone A-1b, which has a complete ionization detection system. Portable fire extinguishers and hose stations are provided in the vicinity of these zones. In the event of a fire in either of these zones, safe shutdown can be achieved. Thus, fire detection in Fire Zones A-1c and A-1d is not necessary.

Fire Zone A-1e is the contaminated equipment maintenance area. The in situ combustible loading in this zone is less than 1000 Btu/ft<sup>2</sup>. The Division 2 safe shutdown valve, 1E12-F042C, and its associated cables are located over 75 feet away from its redundant

safe shutdown cables in Fire Zone A-1b and a wet-pipe suppression system separates the redundant cables (for coverage, see Figure FP-3b). Fire Zone A-1b, which surrounds Fire Zone A-1e, has a complete ionization detection system. Based on this zone's low combustible loading, spatial separation, partial suppression, and the fire detection system in the adjacent fire zone, fire detection for Fire Zone A-1e is not necessary.

**4.2.3.1.2 FIRE AREA A-2**Description of Deviation

Complete area fire detection is not provided in Fire Area A-2. Fire detection is not provided in Fire Zones A-2b, A-2d, A-2e, A-2f, A-2g, A-2h, A-2i, and A-2j.

Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

Fire Area Involved

- Fire Zone A-2b - Elevation 707 feet 6 inches through 781 feet 0 inch (see Figures FP-2a and 2b through 5a and 5b and Cable Tray Figures 2 through 5).
- Fire Zone A-2d - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2e - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2f - Elevation 737 feet 0 inch through 762 feet 0 inch (see Figures FP-3a, 3b, 4a, and 4b and Cable Tray Figures 3 and 4).
- Fire Zone A-2g - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2h - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2i - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).
- Fire Zone A-2j - Elevation 750 feet 6 inches (see Figures FP-3a and 3b and Cable Tray Figure 3).

Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
A-2b	Yes	Yes
A-2d	Yes	Yes

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
A-2e	Yes	Yes
A-2f	Yes	Yes
A-2g	No	Yes
A-2h	No	Yes
A-2i	No	Yes
A-2j	No	Yes

Engineering Justification

Fire detection is not provided in Fire Zones A-2b, A-2d, A-2e, A-2f, A-2g, A-2h, A-2i, and A-2j. Fire Zone A-2b is the Division 1 RHR pump and heat exchanger room. The zone is open, between column/row 114-117/U-containment, from elevation 707 feet 6 inches through 781 feet 0 inch through which the RHR heat exchanger extends. Ionization fire detection is provided at elevation 707 feet 6 inches between column/row 117-121/U-containment. Since the majority of the combustibles in this fire zone are located at elevation 707 feet 6 inches, additional detection for the upper elevations will not significantly increase the level of fire protection in the fire zone. Therefore, providing additional fire detection in Fire Zone A-2b is not necessary.

Fire Zone A-2d consists of a general hallway and containment building personnel hatch area and contains a Division 1 safe shutdown cable tray and Division 1 safety-related instruments. Cable insulation is the primary combustible in this fire zone, resulting in a fire loading of 30,000 Btu/ft<sup>2</sup>. Based on the ignition resistance of these cables (IEEE-383 qualified) and their low concentration in this fire zone, fire detection is not necessary in Fire Zone A-2d.

Fire Zone A-2e consists of the MSIV leakage control system room. The Division 1 and 2 safe shutdown cables and conduits have been analyzed in the Safe Shutdown Analysis, subsection 3.1.2.2, for a fire. HVAC ductwork insulation is the primary combustible in this fire zone, resulting in a fire loading of 15,100 Btu/ft<sup>2</sup>. In the event of a fire in this fire zone, failure of these cables will not prevent a safe shutdown by Method 2 safe shutdown systems. Due to minimal combustible loading in this zone and the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone A-2e.

Fire Zone A-2f is the main steam pipe tunnel, and contains Division 1 safe shutdown cables and equipment. The associated circuits/spurious operation analysis has demonstrated the ability of the MSIVs to close in the event of a fire (Safe Shutdown Analysis, Appendix A). The fire loading in this fire zone is less than 1000 Btu/ft<sup>2</sup> and in the event of a fire in this fire zone, safe shutdown can be achieved. Based on the ability of the MSIVs to close in the event of a fire and the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone A-2f.



Fire Zones A-2g, A-2h, A-2i, and A-2j, which contain safety-related equipment and cables, do not contain any cables or equipment required for safe shutdown. In the event of a fire in any of these fire zones, safe shutdown can be achieved. Based on the ability to achieve safe shutdown in the case of a fire and the lack of safe shutdown cables or equipment in these fire zones, fire detection is not necessary in Fire Zones A-2g, A-2h, A-2i, and A-2j.

#### 4.2.3.1.3 FIRE AREA A-3

##### Description of Deviation

Complete area fire detection is not provided in Fire Area A-3. Fire detection is not provided in Fire Zones A-3a and A-3c.

##### Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Area Involved

- Fire Zone A-3a - Elevation 707 feet 6 inches through 762 feet 0 inch (see Figures FP-2a and 2b through 5a and 5b and Cable Tray Figures, 2, 3, and 4).
- Fire Zone A-3c - Elevation 707 feet 6 inches through 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).

##### Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
A-3a	Yes	Yes
A-3c	Yes	Yes

##### Engineering Justification

Fire Zone A-3a is open to elevation 707 feet 6 inches through 762 feet 0 inch and consists of the RHR heat exchanger B room at elevation 737 feet 0 inch. Ionization fire detection is provided at elevation 707 feet 6 inches. Since the majority of the combustibles in this fire zone are located at elevation 707 feet 6 inches, additional detection for the upper elevations will not significantly increase the level of fire protection in the fire zone. Therefore, providing additional fire detection in Fire Zone A-3a is not necessary.

Fire Zone A-3c consists of a general hallway and floor drain pump rooms. The fire loading in this zone is 16,000 Btu/ft<sup>2</sup>. In case of a fire in this fire zone, Division I/Method I systems can be used to safely shut down the plant. Based on the low fire loading in this zone and availability of a redundant safe shutdown train, fire detection is not necessary in Fire Zone A-3c.

#### 4.2.3.1.4 FIRE AREA C-1

##### Description of Deviation

A complete fire detection system is not provided in the drywell area, Fire Area C-1. A fire detection system has been provided only for the reactor recirculation pumps/motors.

##### Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Area Involved

Fire Area C-1 - Elevation 723 feet 1-3/4 inches (see Figures FP-2a and 2b and Cable Tray Figure 2).

##### Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
C-1	Yes	Yes

##### Engineering Justification

Fire Area C-1 consists of the drywell volume of the containment building at elevation 723 feet 1-3/4 inches. The reactor vessel is located within the area. The principal potential fire hazard in this fire area is the lubricating oil contained within the two reactor recirculation pump motors. Each motor utilizes self-lubricated bearings with lubricating oil cooled by cooling coils installed within the reservoirs. Therefore, a pressurized oil system is not utilized. This design minimizes piping connections to the oil reservoir. The heavy construction and the nonpressurized design of this lubricating system minimizes susceptibility to leakage. If leakage were to occur, ignition enhancing spray would be unlikely.

An ultraviolet fire detection system has been provided for the reactor recirculation pump motors. Based on the low potential for a fire in this fire area, the fire detection system that is installed is sufficient and additional fire detection coverage is not necessary in Fire Area C-1.

4.2.3.1.5 FIRE AREA CB-1Description of Deviation

Complete area fire detection is not provided in Fire Area CB-1. Fire detection is not provided in Fire Zones CB-1a, CB-1b, CB-1d, CB-1h, and CB-1i.

Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

Fire Area Involved

- Fire Zone CB-1a - Elevation 702 feet 0 inch through 712 feet 0 inch (see Figures FP-8a and 8b and Cable Tray Figure 7).
- Fire Zone CB-1b - Elevation 702 feet 0 inch (see Figures FP-8a and 8b and Cable Tray Figure 7).
- Fire Zone CB-1d - Elevation 737 feet 0 inch (see Figures FP-10a and 10b and Cable Tray Figure 9).
- Fire Zone CB-1h - Elevations 702 feet 0 inch through 825 feet 0 inch (see Figures FP-8a and 8b through 15a and b and Cable Tray Figures 8 through 11 and 13).
- Fire Zone CB-1i - Elevation 825 feet 0 inch (see Figures FP-15a and 15b and Cable Tray Figure 13).

Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
CB-1a	Yes	Yes
CB-1b	No	Yes
CB-1d	Yes	Yes
CB-1h	No	No
CB-1i	No	No

Engineering Justification

Fire Zone CB-1a was originally intended for Unit 2 diesel generators and fuel storage. It includes a general access corridor at elevation 719 feet 0 inch. The fire loading in t

fire zone is 300 Btu/ft<sup>2</sup>. In the event of a fire, the plant can be shut down using Division 1/Method 1 equipment. Based on the ability to achieve safe shutdown and the low fire loading in this fire zone, fire detection is not necessary in Fire Zone CB-1a.

Fire Zone CB-1b is the general access area at elevation 702 feet 0 inch of the control building, and it includes the hydrogen recombiner rooms and the drywell purge filter units room. The floor is 9-foot reinforced concrete. The walls are 12-inch minimum reinforced concrete or 11-5/8-inch minimum solid concrete block. The north and west walls are 3-hour fire rated. The ceiling is 12-inch minimum reinforced concrete and is not fire rated. The floor area is 25,295 ft<sup>2</sup> with a fire loading of 44,000 Btu/ft<sup>2</sup>.

Each of the three drywell purge filter units is protected by a manual deluge fire suppression system; therefore, fire detection has not been provided. For a fire occurring in Fire Zone CB-1b, hot and cold shutdown can be achieved from the appropriate safe shutdown system.

Fire Zone CB-1d consists of the rad-chem laboratory area. Partial detection is located in the rad-chem office and the rad-chem hot lab and cold lab, as shown in Figure FP-10b. The fire loading in this fire zone is 17,000 Btu/ft<sup>2</sup>. In the event of a fire, the plant can be shut down using Division 1/Method 1 equipment. Based on the low fire loading and the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone CB-1d.

Fire Zone CB-1i contains the air handling equipment for the control room and auxiliary building. The primary combustible sources in this fire zone, the control room air filter packages, are protected by manual deluge sprinkler systems and a partial ionization detection system as shown on Figure FP-15b. In the event of a fire in this fire zone, safe shutdown can be achieved. Based on the detection system provided for the primary combustibles in this zone and the ability to achieve safe shutdown, additional fire detection in Fire Zone CB-1i is not necessary.

Fire Zone CB-1h is a stairwell tower. The zone contains no safety-related cable or equipment. A fire in this zone will not prevent a safe plant shutdown. Therefore, fire detection in Fire Zone CB-1h is not necessary.

#### 4.2.3.1.6 FIRE AREA CB-5

##### Description of Deviation

Fire detection is not provided in Fire Zone CB-5b.

##### Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Area Involved

Fire Zone CB-5b - Elevation 781 feet 0 inch (see Figures FP-13a and 13b and Cable Tray Figure 11).

##### Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
CB-5b	No	Yes

##### Engineering Justification

Fire Zone CB-5b is the Division 3 battery room at elevation 781 feet 0 inch. This fire zone contains the Division 3 batteries and battery room exhaust fan, both of which are safety related. The fire loading in this fire zone is 29,000 Btu/ft<sup>2</sup>, mainly due to combustible battery materials. In the event of a fire, safe shutdown can be achieved. Based on the low combustible loading for this fire zone and the ability to safely shut down the plant in the event of a fire, no fire detection is necessary in Fire Zone CB-5b.



#### 4.2.3.1.7 FIRE AREA F-1

##### Description of Deviation

Complete area fire detection is not provided in Fire Area F-1. Fire detection is not provided in Fire Zones F-1a, F-1d, F-1e, F-1f, F-1g, F-1h, F-1i, F-1j, F-1k, F-1m, F-1n, and F-1o.

##### Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Area Involved

- |                |   |   |
|----------------|---|---|
| Fire Zone F-1a | - | Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).   |
| Fire Zone F-1c | - | Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).   |
| Fire Zone F-1d | - | Elevation 707 feet 6 inches (see Figures FP-2a and 2b and Cable Tray Figure 2). |
| Fire Zone F-1e | - | Elevation 707 feet 6 inches (see Figures FP-2a and 2b and Cable Tray Figure 2). |
| Fire Zone F-1f | - | Elevation 707 feet 6 inches (see Figures FP-2a and 2b and Cable Tray Figure 2). |
| Fire Zone F-1g | - | Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).   |
| Fire Zone F-1h | - | Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2).   |
| Fire Zone F-1i | - | Elevation 707 feet 6 inches (see Figures FP-2a and 2b and Cable Tray Figure 2). |
| Fire Zone F-1j | - | Elevation 735 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).   |
| Fire Zone F-1k | - | Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).   |
| Fire Zone F-1m | - | Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).   |

Fire Zone F-ln - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).

Fire Zone F-lo - Elevation 737 feet 0 inch through 748 feet 6 inches (see Figures FP-3a and 3b and Cable Tray Figure 3).

Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
F-la	Yes	Yes
F-lc	No	No
F-ld	No	No
F-le	No	No
F-lf	No	No
F-lg	No	No
F-lh	No	Yes
F-li	No	Yes
F-lj	No	No
F-lk	No	Yes
F-lm	Yes	Yes
F-ln	Yes	Yes
F-lo	No	No

Engineering Justification

Fire Zone F-la consists of the drywell chillers, drywell water chiller pumps, and the gamma room. The floor is 9-foot 8-inch minimum concrete and is not fire rated. The walls are 36-inch minimum concrete. The walls adjacent to the containment building, service building, auxiliary building, and diesel-generator building are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. There are two stair systems in this zone: one enclosed stair and one open stair up to elevation 737 feet 0 inch. The floor area is 8639 ft<sup>2</sup> with a fire loading of 29,000 Btu/ft<sup>2</sup>.

Solid bottom BOP cable trays are routed between the Division 1 and 2 cables such that these trays are horizontally separated from the Division 1 and 2 cables by distances in

excess of 15 feet and 6 feet, respectively. An exposure fire in the vicinity of the Division 1 conduits would have to ignite the BOP cables located a horizontal distance of approximately 15 feet away, propagate at least 75 feet along the BOP cable trays, and then ignite the Division 2 cables located at a horizontal distance of 6 feet. Such a scenario is highly unlikely due to the ignition resistance of the cables (IEEE 383 qualified) in the BOP trays in conjunction with the low heat release and flame spread rates for these cables. In the event of a fire in the zone, at least one shutdown method will be available. The performance goal for the safe shutdown functions is assured by Method 1 or 2. Therefore, no fire detection is necessary.

Fire Zone F-1c consists of the fuel building floor drain pumps. The floor is 9-foot 9-inch minimum concrete and is not fire rated. The walls are 24-inch concrete or 27-5/8-inch solid concrete block. The walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. The floor area is 195 ft<sup>2</sup> with a fire loading of 35,100 Btu/ft<sup>2</sup>. There is an ionization fire detection system located in the zone. Portable fire extinguishers and hose stations are provided for manual fire fighting. In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

Fire Zone F-1d consists of the fuel building floor drain pumps. The floor is 9-foot 9-inch minimum concrete and is not fire rated. The walls are 24-inch concrete or 27-5/8-inch solid concrete block. The walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. The floor is 195 ft<sup>2</sup> with a fire loading of 39,400 Btu/ft<sup>2</sup>. Portable fire extinguishers and hose stations are provided for manual fire fighting. In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

Fire Zone F-1e consists of the fuel building equipment drain tank. The floor is 9-foot 8-inch minimum concrete and is not fire rated. The walls are 24-inch minimum concrete or 27-5/8-inch solid concrete block. The containment wall is a 3-hour fire rated wall. The remaining walls are not fire rated. The ceiling is 24-inch minimum concrete with an open hatch and is not fire rated. The floor area is 295 ft<sup>2</sup> with a fire loading of 15,000 Btu/ft<sup>2</sup>. Portable fire extinguishers and hose stations are provided for manual fire fighting. In the event of a fire in this zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

Fire Zone F-1f consists of the fuel building equipment drain pumps. The floor is 9-foot 8-inch minimum concrete and is not fire rated. The wall is 24-inch minimum concrete or 28-inch solid concrete block. The north wall and the containment building wall are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated. The floor area is 168 ft<sup>2</sup> with a fire loading of 17,000 Btu/ft<sup>2</sup>. Portable fire extinguishers and hose stations are provided for manual fire fighting. In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

Fire Zone F-1g consists of the fuel cask pump area. The floor is 9-foot 8-inch minimum concrete and is not fire rated. The wall is 24-inch minimum concrete or 19-5/8-inch solid concrete block. The walls are not fire rated. The ceiling is 24-inch minimum concrete and is not fire rated. The floor area is 356 ft<sup>2</sup> with a fire loading of 15,500 Btu/ft<sup>2</sup>. Portable fire extinguishers and hose stations are provided for manual fire

fighting. In the event of a fire in this zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

Fire Zone F-1h consists of a valve room that contains a safety-related Division 1 valve. Loss of the Division 1 valve would not prohibit safe shutdown of the plant as the valve is not required for safe shutdown. In the event of a fire in Fire Zone F-1h, at least one shutdown method will be available. Based on the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone F-1h.

Fire Zone F-1i consists of the fuel pool cooling and cleanup pump rooms, and contains safety-related Division 1 and Division 2 instruments. Division 1 and Division 2 area coolers, and Division 1 and Division 2 fuel pool cooling and makeup pumps. None of this equipment is necessary for safe shutdown. In the event of a fire, safe shutdown can be achieved. Based on the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone F-1i.

Fire Zone F-1m consists of the general area of elevation 737 feet 0 inch of the fuel building and contains the RCIC storage tank instrument panels, the fuel building motor control centers, and the railroad track. An automatic detection system that activates an automatic preaction sprinkler system is provided in the railroad bay. In the event of a fire in this fire zone, at least one shutdown method will be available. Based on the ability to achieve safe shutdown and partial detection, additional fire detection is not necessary in Fire Zone F-1m.

Fire Zone F-1n consists of the fuel pool heat exchangers A and B. The fire loading in this fire zone is 15,000 Btu/ft<sup>2</sup>. In the event of a fire in this zone, at least one shutdown method will be available. Based on the low fire loading and the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone F-1n.

Fire Zone F-1o consists of the pipe tunnel. The floor is 24-inch concrete and is not fire rated. There are six 4-inch floor drains. The walls are either 36-inch reinforced concrete or 11-5/8-inch minimum solid concrete block. The walls adjacent to the diesel and auxiliary buildings are 3-hour fire rated. The remaining walls are not fire rated. The ceiling is 12-inch minimum concrete and is not fire rated. The floor area is 842 ft<sup>2</sup> with a fire loading of 15,000 Btu/ft<sup>2</sup>. Portable fire extinguishers and hose stations are provided for manual fire fighting. In the event of a fire in this fire zone, safe shutdown can be achieved as discussed in Subsection 3.5.1 of the Safe Shutdown Analysis.

#### 4.2.3.1.8 FIRE AREA M-2

##### Description of Deviation

Fire detection is not provided in Fire Zone M-2c.

##### Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Area Involved

Fire Zone M-2c - Elevation 699 feet 0 inch (see Figures FP-25a and 25b and Cable Tray Figure 22).

##### Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Zone</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
M-2c	Yes	Yes

##### Engineering Justification

Fire Zone M-2c consists of the circulating water screen house and the below-grade pipe tunnel. In the event of a loss of power, the two safe shutdown valves in this fire zone are not a concern since the valves are normally closed. A hot short of the valve control cable will not open the valves since the limit switch contacts are open and Method 1 systems can be utilized to bring the plant to safe shutdown. Based on the ability to achieve safe shutdown, fire detection is not necessary in Fire Zone M-2c.

#### 4.2.3.1.9 FIRE AREA CB-7

##### Description of Deviation

Complete area fire detection is not provided in Fire Area CB-7.

##### Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Area Involved

Fire Area CB-7 - Elevation 702 feet 0 inch through 825 feet 0 inch (see Figures FP-15a and 15b and Cable Tray Figure 12).

##### Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Area</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
CB-7	No	Yes

##### Engineering Justification

Fire Area CB-7 includes a stairwell tower that is enclosed by 2-hour fire rated walls and a corridor at elevation 800 feet 0 inch where the walls are 3-hour fire rated and an ionization detection system is installed. None of the safety-related equipment in this area is required for safe shutdown. In the event of a fire in this fire area, safe shutdown can be achieved. Based on the ability to achieve safe shutdown, additional fire detection is not necessary in Fire Area CB-7.



**4.2.3.1.10 FIRE AREA C-2**Description of Deviation

Complete area fire detection is not provided in Fire Area C-2.

Reference

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

Fire Areas Involved

Fire Area C-2 - Elevations 712 feet 0 inch through 828 feet 3 inches (see Figures FP-2a and 2b through 7a and 7b and Cable Tray Figures 4, 5, and 6).

Description of Safe Shutdown or Safety-Related Equipment and/or Cables

<u>Fire Area</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
C-2	Yes	Yes

Engineering Justification

Complete area fire detection is not provided in Fire Area C-2. Linear thermal detectors are provided for all cable trays containing safe shutdown cables. Also, all safety-related cable trays approximately greater than 35% full are provided with linear thermal detectors. Based on the ability to achieve safe shutdown and partial detection, additional detection is not necessary in Fire Area C-2.

The safe shutdown cables and equipment located in this fire area belong to both methods of safe shutdown systems as shown on Figures 4.2.3.1.10-1 through 4.2.3.1.10-6. Cables associated with each method of safe shutdown have been evaluated. The remote shutdown system cables are important only when shutdown is controlled from the remote shutdown panel. In the event of a fire inside the containment building, shutdown operations will be controlled from the main control room.

The Division 1 and 2 RHR cables serve safe shutdown valves 1E12-F042A, 1E12-F042B, 1E12-F037A, 1E12-F037B, 1E12-F027A, 1E12-F027B, 1E12-F028A, 1E12-F028B, and 1E12-F009.

Division 1 and 2 nuclear boiler cables designated safe shutdown serve ADS valves 1B21-F041B, C, D, and F, 1B21-F047A and C, and 1B21-F051G; SRV valves 1B21-F051C and D; and instruments 1B21N081A and B and 1B21N078A and B. Although Division 1 and 2 shutdown cables and equipment occupy the same fire area, the divisions are separated by a distance of at least 60 feet, and with the exception of the south end at elevation 803 feet, there are no intervening combustibles between the Division 1 and 2 systems.

Above floor elevation 803 feet, Division 2 cable trays are routed within 6 feet of Division 1 trays. The Division 1 trays contain Division 1 safe shutdown cables 1RH61C and 1RH61D. At that point, however, there are no Division 2 safe shutdown cables. Division 2 safe shutdown cables enter the Division 2 trays at a point where the separation from the Division 1 trays is 80 feet. The concern here is a fire in the Division 1 trays spreading to the Division 2 trays and then propagating down the tray and damaging Division 2 safe shutdown cable. This will be prevented by placing a fire break in the Division 2 trays.

At elevation 737 feet there are the Division 2 cables serving temperature elements ITE-CM004, ITE-CM006, and ITE-CM008 (cables ICM80K, ICM80L, and ICM80M). These cables feed indicators in the main control room. These cables are located on the Division 1 side of the containment annulus. A fire would not disable these cables since they are routed in conduit only 2 feet above the normal suppression pool level (elevation 731 feet 5 inches) and below the lowest floor, which is at elevation 737 feet 0 inch.

Even though the Division 1 and 2 cables are separated, operation of some Division 2 valves (1E12-F009, 1E51-F063, and 1E12-F076) is required by Division 1 shutdown systems. Valve 1E12-F009 must be opened to proceed from hot to cold shutdown using RHR in the shutdown cooling mode, or an alternate method can be used (see Figure 1.8-4 or 1.8-7). Valve 1E51-F063 is the RCIC steam supply line isolation inboard valve and thus is required to remain open until the cold shutdown systems are brought into operation. The valve is normally open; therefore damage to power cable 1RI01C will not prevent shutdown. Cable 1RI02D is connected to a limit switch. A hot short of a limit switch will not close the valve since the control switch contacts are open. Finally, valve 1E51-F076, the RCIC steam line warmup line, will not disable the RCIC system if it spuriously operates.

Based on the above discussion and with the installation of the fire break, a fire in this area could only damage one division of safe shutdown cables and equipment.

DABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1CM77S	C73847	C-2	K1E	1TE-CM001
1CM77T	C73847	C-2	K1E	1TE-CM001
1CM77U	C73847	C-2	K1E	1TE-CM003
1CM77W	C73847	C-2	K1E	1TE-CM007
1CM77X	C73847	C-2	K1E	1TE-CM007
1CM76A	C73847	C-2	K1E	1TE-CM003
1CM77U	C73849	C-2	K1E	1TE-CM003
1CM76A	C73849	C-2	K1E	1TE-CM003
1CM77W	C73851	C-2	K1E	1TE-CM007
1CM77X	C73851	C-2	K1E	1TE-CM007
1CM77W	C73854	C-2	K1E	1TE-CM007
1CM77X	C73854	C-2	K1E	1TE-CM007
1CM77W	C73856	C-2	K1E	1TE-CM007
1CM77X	C73856	C-2	K1E	1TE-CM007
1CM77S	C73865	C-2	K1E	1TE-CM001
1CM77T	C73865	C-2	K1E	1TE-CM001
1CM77S	C73866	C-2	K1E	1TE-CM001
1CM77T	C73866	C-2	K1E	1TE-CM001
1CM80J	C73869	C-2	K2E	1TE-CM002
1CM80K	C73869	C-2	K2E	1TE-CM004
1CM80L	C73869	C-2	K2E	1TE-CM006
1CM80M	C73869	C-2	K2E	1TE-CM008
1CM80N	C73869	C-2	K2E	1TE-CM010
1CM80P	C73869	C-2	K2E	1TE-CM012
1CM80Q	C73869	C-2	K2E	1TE-CM014
1CM80R	C73869	C-2	K2E	1TE-CM016
1RS61C	C73869	C-2	K2E	1TE-CM008
1RS61E	C73869	C-2	K2E	1TE-CM004
1CM80N	C73870	C-2	K2E	1TE-CM010
1CM80P	C73870	C-2	K2E	1TE-CM012
1CM80Q	C73870	C-2	K2E	1TE-CM014
1CM80R	C73870	C-2	K2E	1TE-CM016
1CM80N	C73872	C-2	K2E	1TE-CM010
1CM80P	C73873	C-2	K2E	1TE-CM012
1CM80Q	C73873	C-2	K2E	1TE-CM014
1CM80R	C73873	C-2	K2E	1TE-CM016
1CM80P	C73874	C-2	K2E	1TE-CM012
1CM80Q	C73876	C-2	K2E	1TE-CM014
1CM80R	C73876	C-2	K2E	1TE-CM016
1CM80Q	C73877	C-2	K2E	1TE-CM014
1CM80R	C73878	C-2	K2E	1TE-CM016
1CM80R	C73879	C-2	K2E	1TE-CM016
1CM80J	C73880	C-2	K2E	1TE-CM002
1CM80J	C73881	C-2	K2E	1TE-CM002
1CM80K	C73883	C-2	K2E	1TE-CM004
1RS61E	C73883	C-2	K2E	1TE-CM004
1CM80J	C73885	C-2	K2E	1TE-CM002
1CM80K	C73885	C-2	K2E	1TE-CM004
1RS61E	C73885	C-2	K2E	1TE-CM004
1CM80L	C73886	C-2	K2E	1TE-CM006
1CM80J	C73887	C-2	K2E	1TE-CM002
1CM80K	C73887	C-2	K2E	1TE-CM004

1C480L	C73887	C-2	K2E	1TE-CM006
1R581E	C73887	C-2	K2E	1TE-CM004
1C480M	C73889	C-2	K2E	1TE-CM008
1R581C	C73889	C-2	K2E	1TE-CM008
1C480J	C73890	C-2	K2E	1TE-CM002
1C480K	C73890	C-2	K2E	1TE-CM004
1C480L	C73890	C-2	K2E	1TE-CM006
1C480M	C73890	C-2	K2E	1TE-CM008
1R581C	C73890	C-2	K2E	1TE-CM008
1R581E	C73890	C-2	K2E	1TE-CM004

CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
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1CM77S	C73846	C-2	K1E	1TE-CM001
1CM77T	C73846	C-2	K1E	1TE-CM001
1CM77U	C73846	C-2	K1E	1TE-CM003
1CM77W	C73846	C-2	K1E	1TE-CM007
1CM77X	C73846	C-2	K1E	1TE-CM007
1CM78A	C73846	C-2	K1E	1TE-CM003
1CM77S	C73847	C-2	K1E	1TE-CM001
1CM77T	C73847	C-2	K1E	1TE-CM001
1CM77U	C73847	C-2	K1E	1TE-CM003
1CM77W	C73847	C-2	K1E	1TE-CM007
1CM77X	C73847	C-2	K1E	1TE-CM007
1CM78A	C73847	C-2	K1E	1TE-CM003
1CM80J	C73869	C-2	K2E	1TE-CM002
1CM80K	C73869	C-2	K2E	1TE-CM004
1CM80L	C73869	C-2	K2E	1TE-CM006
1CM80M	C73869	C-2	K2E	1TE-CM008
1CM80N	C73869	C-2	K2E	1TE-CM010
1CM80P	C73869	C-2	K2E	1TE-CM012
1CM80Q	C73869	C-2	K2E	1TE-CM014
1CM80R	C73869	C-2	K2E	1TE-CM016
1RS81C	C73869	C-2	K2E	1TE-CM008
1RS81E	C73869	C-2	K2E	1TE-CM004
1CM77S	C74010	C-2	K1E	1TE-CM001
1CM77T	C74010	C-2	K1E	1TE-CM001
1CM77U	C74010	C-2	K1E	1TE-CM003
1CM77W	C74010	C-2	K1E	1TE-CM007
1CM77X	C74010	C-2	K1E	1TE-CM007
1CM78A	C74010	C-2	K1E	1TE-CM003

CABLE NO.	ROUTE PT.	ZONE	SEG CODE	ASSOC. EQUIP.
1NB66A	C71248	C-2	K1E	1B21-N081A
1R275A	C71248	C-2	K1R	1B21-N076A
1R576A	C71250	C-2	K1E	1B21-N076B
1R576C	C71250	C-2	K1E	1B21-N076B
1R427F	C71256	C-2	C1E	1E12-F027A, 1E12-F042
1R427E	C71256	C-2	P1E	1E12-F042A
1CM77S	C73846	C-2	K1E	1TE-CM001
1CM77T	C73846	C-2	K1E	1TE-CM001
1CM77U	C73846	C-2	K1E	1TE-CM003
1CM77W	C73846	C-2	K1E	1TE-CM007
1CM77X	C73846	C-2	K1E	1TE-CM027
1CM78A	C73846	C-2	K1E	1TE-CM003
1CM80J	C73869	C-2	K2E	1TE-CM002
1CM80K	C73869	C-2	K2E	1TE-CM004
1CM80L	C73869	C-2	K2E	1TE-CM006
1CM80M	C73869	C-2	K2E	1TE-CM008
1CM80N	C73869	C-2	K2E	1TE-CM010
1CM80P	C73869	C-2	K2E	1TE-CM012
1CM80Q	C73869	C-2	K2E	1TE-CM014
1CM80R	C73869	C-2	K2E	1RE-CM016
1R581C	C73869	C-2	K2E	1TE-CM008
1R581E	C73869	C-2	K2E	1TE-CM004
CM77S	C73896	C-2	K1E	1TE-CM001
1CM77T	C73896	C-2	K1E	1TE-CM001
1CM77U	C73896	C-2	K1E	1TE-CM003
1CM77W	C73896	C-2	K1E	1TE-CM007
1CM77X	C73896	C-2	K1E	1TE-CM027
1CM78A	C73896	C-2	K1E	1TE-CM003
1NB65A	C7976	C-2	K2E	1B21-N081B
1R276A	C7976	C-2	K2R	1B21-N076B
1NB65A	C7977	C-2	K2E	1B21-N081B
1R276A	C7977	C-2	K2R	1B21-N076B



CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1R461D	17R56	C-2	C1E	1E12-F027A, 1E12-F028
1R461C	17R57	C-2	P1E	1E12-F028A
1CM80J	17R60	C-2	K2E	1TE-CM002
1CM80K	17R60	C-2	K2E	1TE-CM004
1CM80L	17R60	C-2	K2E	1TE-CM006
1CM80M	17R60	C-2	K2E	1TE-CM008
1CM80N	17R60	C-2	K2E	1TE-CM010
1CM80P	17R60	C-2	K2E	1TE-CM012
1CM80Q	17R60	C-2	K2E	1TE-CM014
1CM80R	17R60	C-2	K2E	1TE-CM016
1NB65A	17R60	C-2	K2E	1B21-N081B
1R076A	17R60	C-2	K2R	1B21-N078B
1R561C	17R60	C-2	K2E	1TE-CM008
1R561E	17R60	C-2	K2E	1TE-CM004
1R417C	17R61	C-2	P2E	1E12-F009
1R102C	17R61	C-2	P2E	1E51-F063
1R115C	17R61	C-2	P2E	1E51-F076
1NB35E	17R62	C-2	C2E	1B21-F051C, 1B21-F051
1NB37D	17R62	C-2	C2E	1B21-F041B, C, D, F; 1B2
1R417D	17R62	C-2	C2E	1E12-C002B, 1E12-F009
1R102D	17R62	C-2	C2E	1E51-F063
1R115D	17R62	C-2	C2E	1E51-F076
1CM80J	17R70	C-2	K2E	1TE-CM002
1CM80K	17R70	C-2	K2E	1TE-CM004
1CM80L	17R70	C-2	K2E	1TE-CM006
1CM80M	17R70	C-2	K2E	1TE-CM008
1CM80N	17R70	C-2	K2E	1TE-CM010
1CM80P	17R70	C-2	K2E	1TE-CM012
1CM80Q	17R70	C-2	K2E	1TE-CM014
1CM80R	17R70	C-2	K2E	1TE-CM016
1NB65A	17R70	C-2	K2E	1B21-N081B
1R076A	17R70	C-2	K2E	1B21-N078B
1R561C	17R70	C-2	K2E	1TE-CM008
1R561E	17R70	C-2	K2E	1TE-CM004
1NB35E	17R71	C-2	C2E	1B21-F051C, D, S
1NB37D	17R71	C-2	C2E	1B21-F041B, C, D, F; 1B
1R417D	17R71	C-2	C2E	1E12-C002B, 1E12-F009
1R428E	17R71	C-2	C2E	1E12-F027B, 1E12-F042
1R462D	17R71	C-2	C2E	1E12-F027B, 1E12-F002
1R464D	17R71	C-2	C2E	1E12-F037B
1R102D	17R71	C-2	C2E	1E51-F063
1R115D	17R71	C-2	C2E	1E51-F076
1R417C	17R72	C-2	P2E	1E12-F009
1R428D	17R72	C-2	P2E	1E12-F042B
1R462C	17R72	C-2	P2E	1E12-F028B
1R464C	17R72	C-2	P2E	1E12-F037B
1R102C	17R72	C-2	P2E	1E51-F-63
1R115C	17R72	C-2	P2E	1E51-F076
1R428E	C71191	C-2	C2E	1E12-F027B, 1E12-F042
1R428D	C71192	C-2	P2E	1E12-F042B
1R463C	C71411	C-2	P1E	1E12-F037A
1R463D	C71412	C-2	P1E	1E12-F037A

1CM80J	17R21	C-2	K2E	1TE-CM002
1CM80K	17R21	C-2	K2E	1TE-CM004
1CM80L	17R21	C-2	K2E	1TE-CM006
1CM80M	17R21	C-2	K2E	1TE-CM008
1CM80N	17R21	C-2	K2E	1TE-CM010
1CM80P	17R21	C-2	K2E	1TE-CM012
1CM80Q	17R21	C-2	K2E	1TE-CM014
1CM80R	17R21	C-2	K2E	1TE-CM016
1NB65A	17R21	C-2	K2E	1B21-N081B
1RP76A	17R21	C-2	K2R	1B21-N078B
1RS81C	17R21	C-2	K2E	1TE-CM008
1RS81E	17R21	C-2	K2E	1TE-CM004
1NB35E	17R23	C-2	C2E	1B21-F051C, D, G
1NB37D	17R23	C-2	C2E	1B21-F041B, C, D, F; 1B2
1RH17D	17R23	C-2	C2E	1E12-C002B, 1E12-F009
1RI02D	17R23	C-2	C2E	1E51-F063
1RI15D	17R23	C-2	C2E	1E51-F076
1RH17C	17R24	C-2	P2E	1E12-F009
1RI02C	17R24	C-2	P2E	1E51-F063
1RI15C	17R24	C-2	P2E	1E51-F076
1CM80J	17R21	C-2	K2E	1TE-CM002
1CM80K	17R21	C-2	K2E	1TE-CM004
1CM80L	17R21	C-2	K2E	1TE-CM006
1CM80M	17R21	C-2	K2E	1TE-CM008
1CM80N	17R21	C-2	K2E	1TE-CM010
1CM80P	17R21	C-2	K2E	1TE-CM012
1CM80Q	17R21	C-2	K2E	1TE-CM014
1CM80R	17R21	C-2	K2E	1TE-CM016
1NB65A	17R21	C-2	K2E	1B21-N081B
1RP76A	17R21	C-2	K2R	1B21-N078B
1RS81C	17R21	C-2	K2E	1TE-CM008
1RS81E	17R21	C-2	K2E	1TE-CM004
1NB35E	17R23	C-2	C2E	1B21-F051C, D, G
1NB37D	17R23	C-2	C2E	1B21-F041B, C, D, F; 1B2
1RH17D	17R23	C-2	C2E	1E12-C002B, 1E12-F009
1RI02D	17R23	C-2	C2E	1E51-F063
1RI15D	17R23	C-2	C2E	1E51-F076
1RH17C	17R24	C-2	P2E	1E12-F009
1RI02C	17R24	C-2	P2E	1E51-F063
1RI15C	17R24	C-2	P2E	1E51-F076
1RH27E	17111A	C-2	P1E	1E12-F042A
1RH61C	17111A	C-2	P1E	1E12-F028A
1RH63C	17111A	C-2	P1E	1E12-F037A
1NB35D	17111B	C-2	C1E	1B21-F051C, D, G
1NB37C	17111B	C-2	C1E	1B21-F041B, C, D, F; 1B2
1RH27F	17111B	C-2	C1E	1E12-F027A, 1E12-F042
1RH61D	17111B	C-2	C1E	1E12-F027A, 1E12-F028
1RH63D	17111B	C-2	C1E	1E12-F037A
1MS59M	17111C	C-2	K1E	1B21-N007
1MS60L	17111C	C-2	K1E	1B21-N010
1MS60M	17111C	C-2	K1E	1B21-N014
1NB35D	17114B	C-2	C1E	1B21-F051C, D, G
1NB37C	17114B	C-2	C1E	1B21-F041B, C, D, F; 1B2
1RH17D	C71036E	C-2	C2E	1E12-C002B, 1E12-F009

1R-17D	C71236E	C-2	C2E	1E12-C002B, 1E12-F009
1R-15D	C71237E	C-2	C2E	1E51-F075
1R-15D	C71237E	C-2	C2E	1E51-F075
1NB35D	C71271E	C-2	C1E	1B21-F051C, D, G
1NB35D	C71271E	C-2	C1E	1B21-F051C, D, G
1NB37C	C71271E	C-2	C1E	1B21-F041B, C, D, F; 1B2
1NB37C	C71271E	C-2	C1E	1B21-F041B, C, D, F; 1B2
1R-28E	C71197	C-2	C2E	1E12-F027B, 1E12-F042
1R-28D	C71198	C-2	P2E	1E12-F042B
1R-27F	C71255	C-2	C1E	1E12-F027A, 1E12-F042
1R-27E	C71257	C-2	P1E	1E12-F042A

CABLE NO.	ROUTE PT.	ZONE	SED CODE	ASSOC. EQUIP.
1R461D	17R56	C-2	C1E	1E12-F027A, 1E12-F028
1R461C	17R57	C-2	P1E	1E12-F028A
1CM80J	17R60	C-2	K2E	1TE-CM002
1CM80K	17R60	C-2	K2E	1TE-CM004
1CM80L	17R60	C-2	K2E	1TE-CM006
1CM80M	17R60	C-2	K2E	1TE-CM008
1CM80N	17R60	C-2	K2E	1TE-CM010
1CM80P	17R60	C-2	K2E	1TE-CM012
1CM80Q	17R60	C-2	K2E	1TE-CM014
1CM80R	17R60	C-2	K2E	1TE-CM016
1NB65A	17R60	C-2	K2E	1B21-N081B
1R076A	17R60	C-2	K2R	1B21-N078B
1RS61C	17R60	C-2	K2E	1TE-CM008
1RS61E	17R60	C-2	K2E	1TE-CM004
1RH17C	17R61	C-2	P2E	1E12-F009
1R102C	17R61	C-2	P2E	1E51-F063
1R115C	17R61	C-2	P2E	1E51-F076
1NB35E	17R62	C-2	C2E	1B21-F051C, D, G
1NB37D	17R62	C-2	C2E	1B21-F041B, C, D, F, 1B2
1RH17D	17R62	C-2	C2E	1E12-C002B, 1E12-F009
1R102D	17R62	C-2	C2E	1E51-F063
1R115D	17R62	C-2	C2E	1E51-F076
1CM60J	17R70	C-2	K2E	1TE-CM002
1CM60K	17R70	C-2	K2E	1TE-CM004
1CM60L	17R70	C-2	K2E	1TE-CM006
1CM60M	17R70	C-2	K2E	1TE-CM008
1CM60N	17R70	C-2	K2E	1TE-CM010
1CM60P	17R70	C-2	K2E	1TE-CM012
1CM60Q	17R70	C-2	K2E	1TE-CM014
1CM60R	17R70	C-2	K2E	1TE-CM016
1NB65A	17R70	C-2	K2E	1B21-N081B
1R076A	17R70	C-2	K2R	1B21-N078B
1RS61C	17R70	C-2	K2E	1TE-CM008
1RS61E	17R70	C-2	K2E	1TE-CM004
1NB35E	17R71	C-2	C2E	1B21-F051C, D, G
1NB37D	17R71	C-2	C2E	1B21-F041B, C, D, F, 1B2
1RH17D	17R71	C-2	C2E	1E12-C002B, 1E12-F009
1R428E	17R71	C-2	C2E	1E12-F027B, 1E12-F042
1R462D	17R71	C-2	C2E	1E12-F027B, 1E12-F028
1R464D	17R71	C-2	C2E	1E12-F037B
1R102D	17R71	C-2	C2E	1E51-F063
1R115D	17R71	C-2	C2E	1E51-F076
1RH17C	17R72	C-2	P2E	1E12-F009
1R428D	17R72	C-2	P2E	1E12-F042B
1R464C	17R72	C-2	P2E	1E12-F028B
1R464C	17R72	C-2	P2E	1E12-F037B
1R102C	17R72	C-2	P2E	1E51-F063
1R115C	17R72	C-2	P2E	1E51-F076
1R428E	C71191	C-2	C2E	1E12-F027B, 1E12-F042
1R428D	C71192	C-2	P2E	1E12-F042B
1R463C	C71411	C-2	P1E	1E12-F037A
1R463D	C71412	C-2	C1E	1E12-F037A

1A-64C	C71435	C-2	P2E	1E12-F037B
1A-64D	C71436	C-2	C2E	1E12-F037B
1A-62C	C72586	C-2	P2E	1E12-F026B
1A-62D	C72587	C-2	C2E	1E12-F027B, 1E12-F028
1A-61C	C72588	C-2	P1E	1E12-F026A
1A-61D	C72589	C-2	C1E	1E12-F027A, 1E12-F028

CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
19-62C	C72566	C-2	P2E	1E12-F028R
19-62D	C72587	C-2	C2E	1E12-F027B, 1E12-F028
19-61C	C72568	C-2	P1E	1E12-F026A
19-61D	C72589	C-2	C1E	1E12-F027A, 1E12-F028
19-62C	C73189	C-2	P2E	1E12-F028R
19-62D	C73190	C-2	C2E	1E12-F027B, 1E12-F028



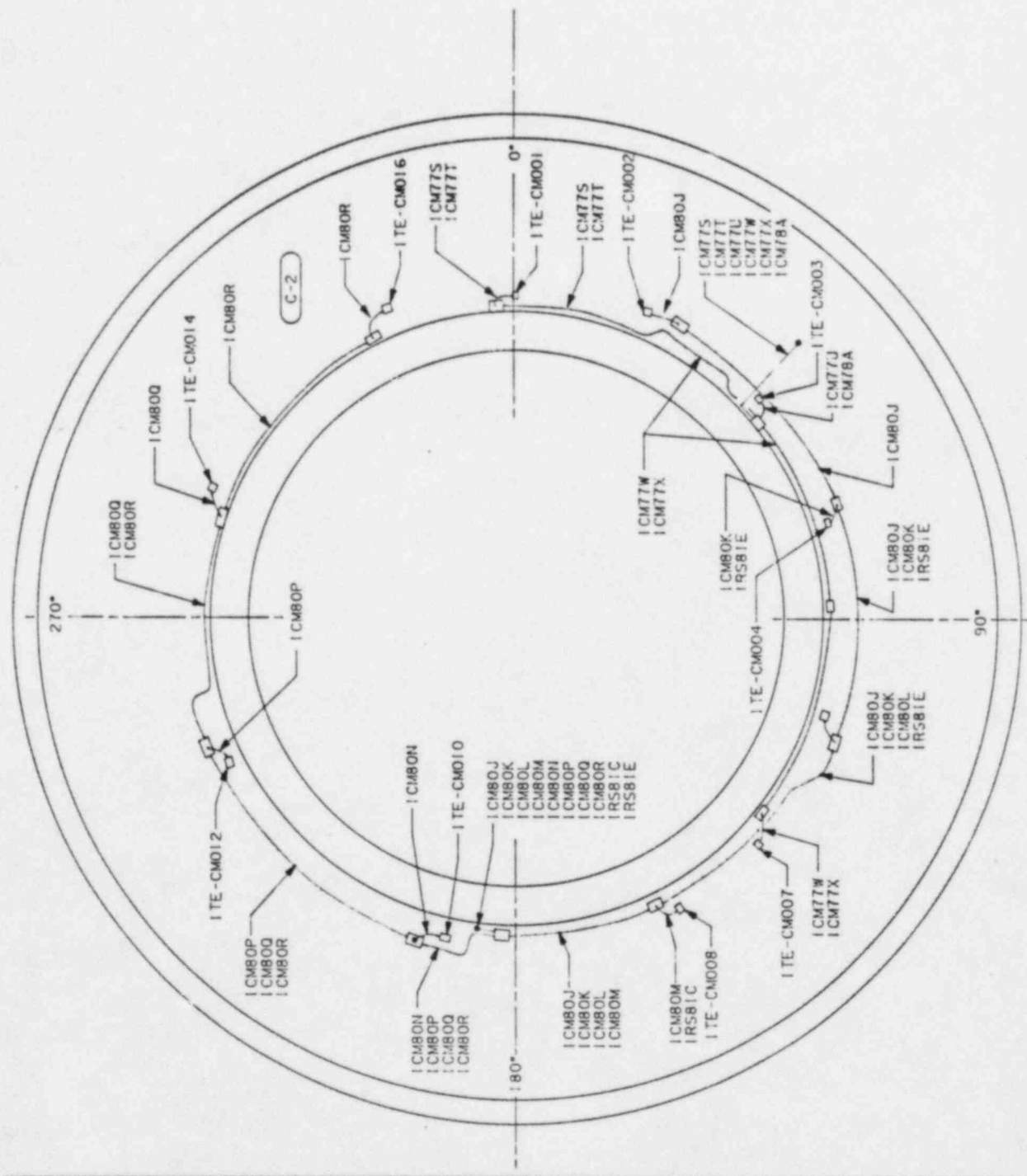
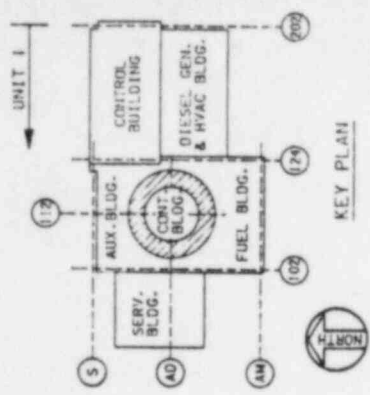
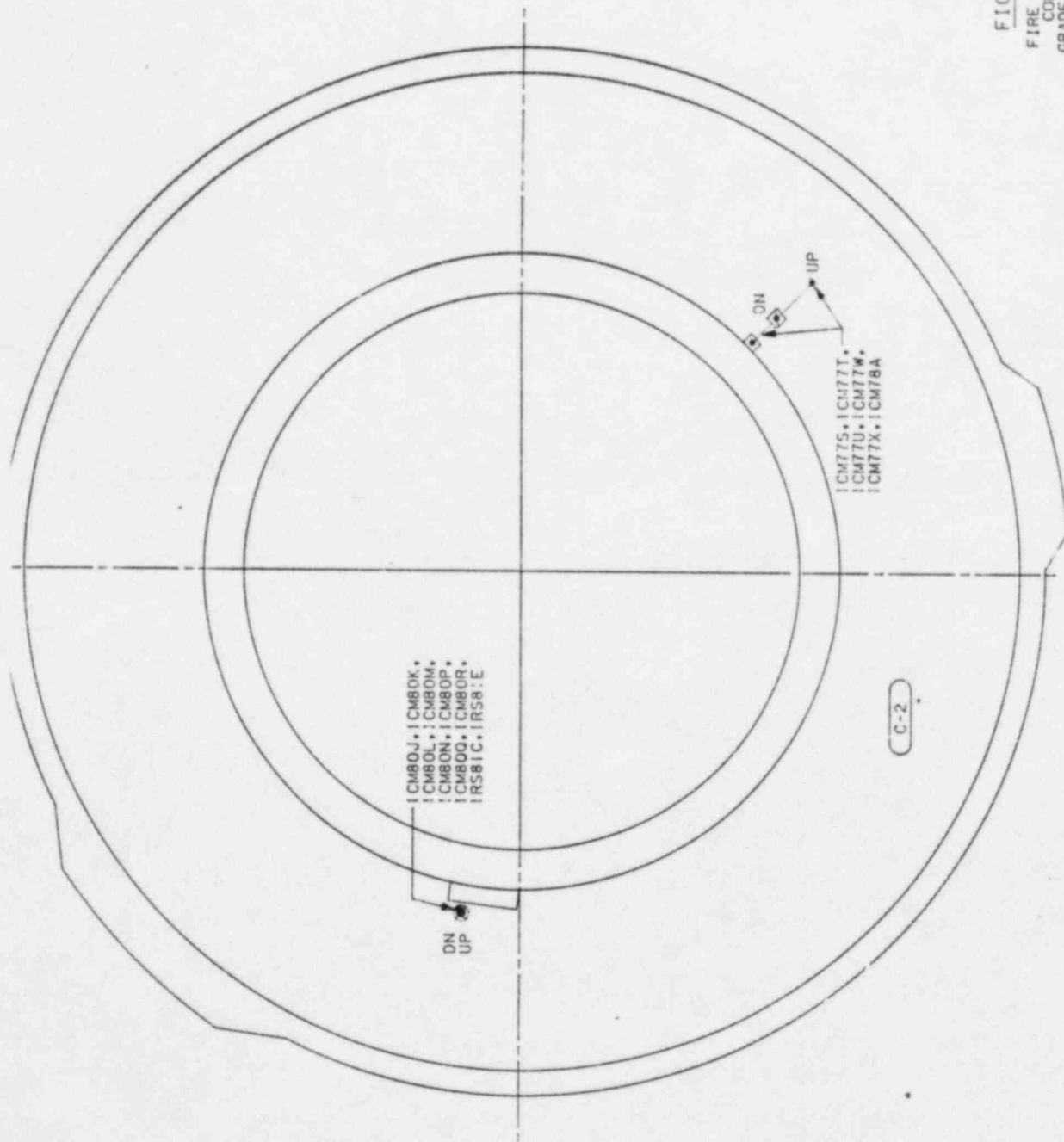


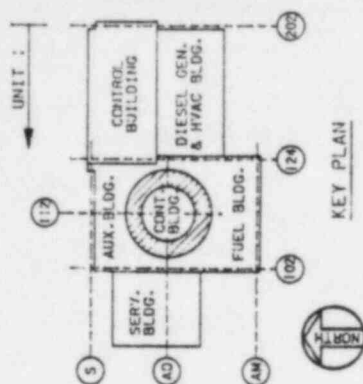
FIGURE 4.2.3.1.10-1  
FIRE PROTECTION DEVIATION  
CONTAINMENT BUILDING  
BASEMENT FLOOR PLAN  
EL. 707'-6" & 712'-0"  
FIRE AREA C-2



- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.3.1.10-2  
FIRE PROTECTION DEVIATION  
CONTAINMENT BUILDING  
GRADE FLOOR PLAN EL. 737'-0"  
FIRE AREA C-2



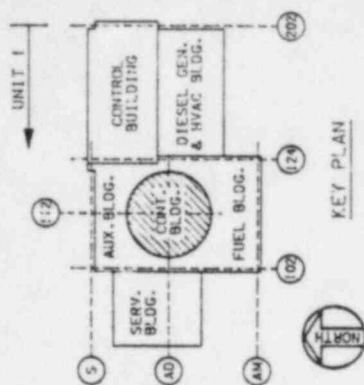


LEGENDS:

— DIV. 1 CONDUIT  
— DIV. 1 TRAY  
— DIV. 2 CONDUIT  
— DIV. 2 TRAY  
○ FIRE ZONE  
□ EQUIPMENT NO.

FIGURE 4.2.3.1.10-3  
FIRE PROTECTION DEVIATION  
CONTAINMENT BUILDING  
MEZZANINE FLOOR  
PLAN EL. 755'-0" & 762'-0"  
FIRE AREA C-2

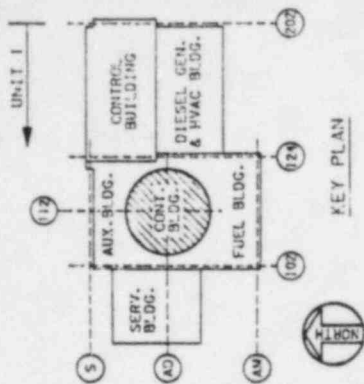
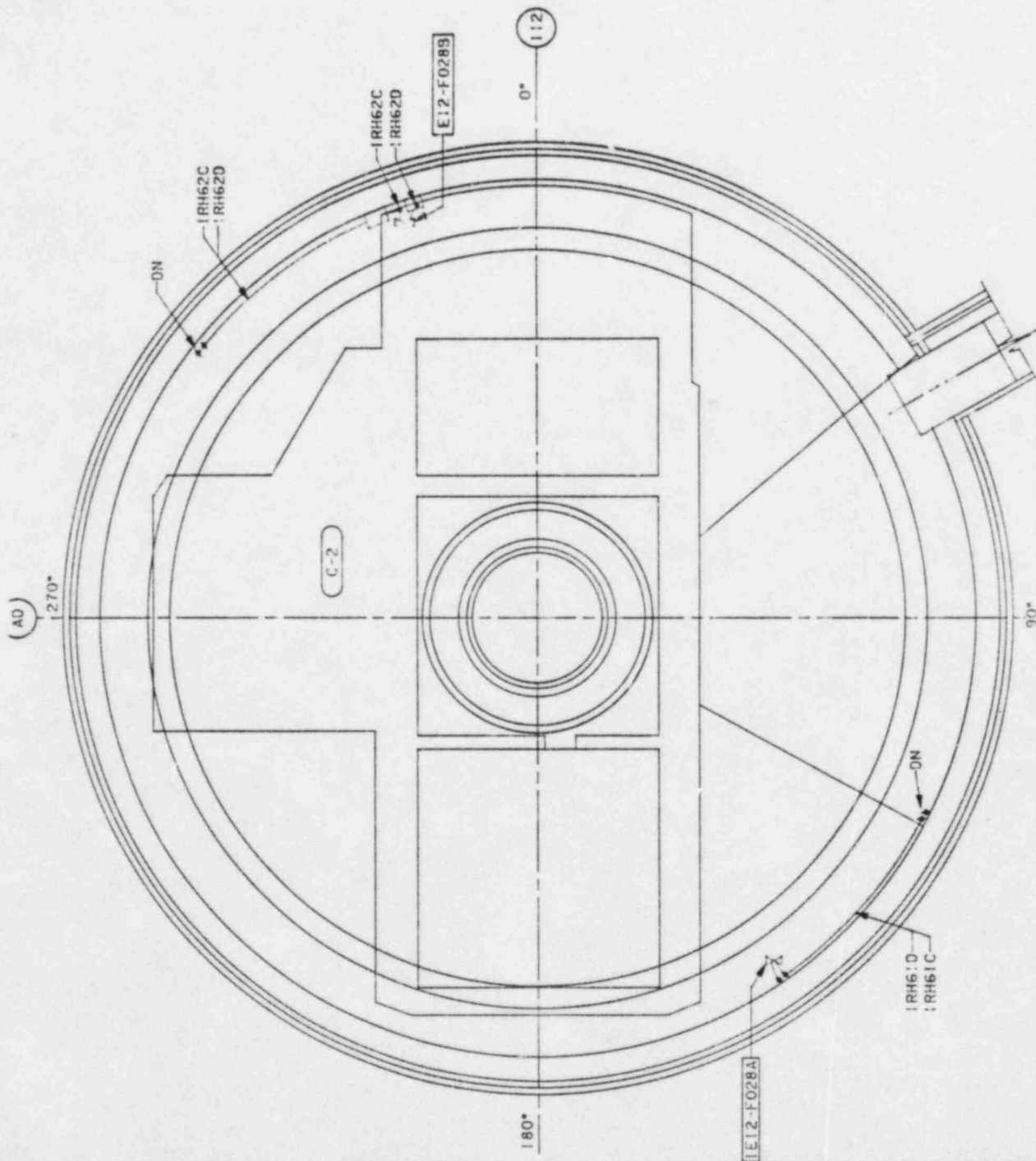




LEGENDS:

- DIV.1 CONDUIT  
DIV.1 TRAY  
DIV.2 CONDUIT  
DIV.2 TRAY  
FIRE ZONE  
EQUIPMENT NO.

FIGURE 4.2.3.1.10-5  
FIRE PROTECTION DEVIATION  
CONTAINMENT  
FLOOR PLAN EL-803-3"  
FIRE AREA C-2



- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.3.1.10-6  
FIRE PROTECTION DEVIATION  
CONTAINMENT REFUELING  
FLOOR EL. 828'-3"  
FIRE AREA C-2



#### 4.2.3.2 FIRE DETECTION BY WATER FLOW

##### Description of Deviation

An automatic fire detection system is not provided for Fire Areas D-1, D-2, and D-3, and Fire Zones D-4b, D-5b, and D-6b. All of these areas and zones contain safe shutdown cable and equipment.

##### Reference

10 CFR 50, Appendix R, Section III.F - Automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

##### Fire Areas Involved

- |                |  |
|----------------|--|
| Fire Area D-1  | - Elevations 702 feet 0 inch and 719 feet 0 inch (see Figures FP-8a, 8b, 9a, and 9b) |
| Fire Area D-2  | - Elevations 702 feet 0 inch and 719 feet 0 inch (see Figures FP-8a, 8b, 9a, and 9b) |
| Fire Area D-3  | - Elevations 702 feet 0 inch and 719 feet 0 inch (see Figures FP-8a, 8b, 9a, and 9b) |
| Fire Area D-4b | - Elevation 737 feet 0 inch (see Figures FP-10a and 10b)                             |
| Fire Zone D-5b | - Elevation 737 feet 0 inch (see Figures FP-10a and 10b)                             |
| Fire Zone D-6b | - Elevation 737 feet 0 inch (see Figures FP-10a and 10b)                             |

##### Description of Safe Shutdown Equipment and Cables

Fire Areas D-1, D-2, and D-3 consist of the diesel generator fuel oil storage tank for the Division 3, 1, and 2 diesel generators, respectively. Each of these rooms contains its respective electrical division and support equipment and is protected by an automatic wet pipe sprinkler system. Fire Zones D-4b, D-5b, and D-6b contain the fuel oil day tanks for the Divisions 3, 1, and 2 diesel generators, respectively. Each of these zones is protected by an automatic wet pipe sprinkler system.

##### Engineering Justification

An automatic fire detection system is not provided for Fire Areas D-1, D-2, and D-3, and Fire Zones D-4b, D-5b, and D-6b. Each of the automatic wet pipe sprinkler systems alarms locally and in the main control room upon water flow initiation. The walls, ceilings, and floors are 3-hour fire rated (with the exception of the walls around Fire Zones D-4b, D-5b, and D-6b, which are 1.9-hour fire rated. As discussed in the Safe

Shutdown Analysis, a fire in any area of these fire areas will not disable its adjacent fire area. Based upon the alarm functions of the suppression systems, the fire barriers, and the ability to assure safe shutdown with a fire in any one of these fire areas, a separate fire detection system is not needed in these areas.

**4.2.3.3 DIESEL AIR INTAKE STRUCTURES (D-7, D-8, D-9)****Description of Deviation**

Fire Areas D-7 and D-9 do not have a fire detection system. Fire Area D-8 does not have a complete fire detection system.

**Reference**

10 CFR 50, Appendix R, Section III.F references that automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components.

**Fire Area Involved**

- Fire Area D-7 - Elevation 762 feet 0 inch (see Figures FP-12a and 12b and Cable Tray Figure 10).
- Fire Area D-8 - Elevation 762 feet 0 inch (see Figures FP-12a and 12b and Cable Tray Figure 10).
- Fire Area D-9 - Elevation 762 feet 0 inch (see Figures FP-12a and 12b and Cable Tray Figure 10).

**Description of Safe Shutdown or Safety-Related Equipment and/or Cables**

<u>Fire Area</u>	<u>Safe Shutdown Equipment and/or Cables</u>	<u>Safety-Related Equipment and/or Cables</u>
D-7	Yes	Yes
D-8	Yes	Yes
D-9	Yes	Yes

Division 1 cables (in conduit) and Division 2 cables, IDG31A and IDG31B, are in Fire Area D-8 (see Figure 4.2.3.3-1).

**Engineering Justification**

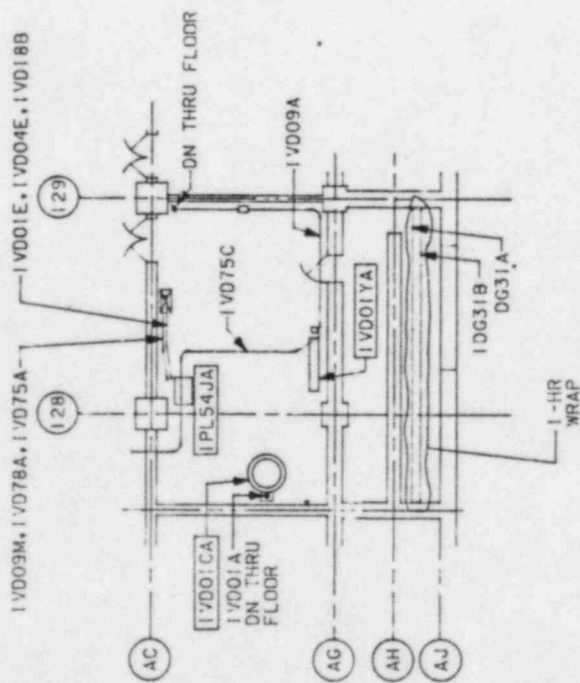
Fire Areas D-7, D-8, and D-9 are the Division 3, 1, and 2 diesel generator air intake structures, respectively.

Fire Areas D-7 and D-9 do not have a fire detection system. Both of these fire areas contain no cable trays. The only combustibles that are not in conduit are the electrical insulation within cabinets and HVAC duct insulation materials resulting in fire loading of 17,000 and 23,400 Btu/ft<sup>2</sup> for Fire Area D-7 and Fire Area D-9, respectively. The rapid air movement in these fire areas when the diesel generator room cooling fans are running severely limits the ability of a smoke detection system and increases the likelihood of false alarms. In the event of a fire in either Fire Area D-7 or D-9, safe shutdown can be

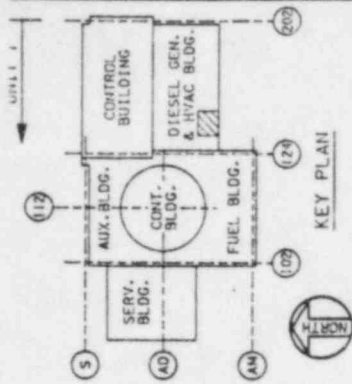
achieved by the use of Division 1/Method 1 safe shutdown systems. Therefore, based on these fire areas' low combustible fire loading, operational limitations of a fire detection system, and the ability to achieve safe shutdown, a fire detection system is not necessary in Fire Areas D-7 and D-9.

Fire Area D-8 does not have a complete fire detection system. The Division 2 diesel generator cables, 1DG31A and 1DG31B (see Figure 4.2.3.3-1), are in conduit and are protected by 1-hour fire rated material and local thermal fire detection as shown in Figure FP-12b. The fire loading in this fire area is approximately 19,500 Btu/ft<sup>2</sup>. The Division 2 cables are separated from the combustibles in the area by a missile wall and a reinforced concrete wall with two HVAC ventilation openings. Based on the partial fire detection provided, low combustible fire loading, and separation from combustibles, additional fire detection is not necessary in Fire Area D-8.

CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1VD05A	C92118	D-8	P1E	1TZ-VD001A
1DS31A	C92120	D-8	P2E	1DS01KB
1DG31B	C92120	D-8	P2E	1DG01KB
1VD01A	C92109	D-8	P1E	1VD01CA
1VD01A	C92109	D-8	P1E	1VD01CA
1VD09A	C92111	D-8	P1E	1TZ-VD001A, 1VD01YA
1VD09A	C92123	D-8	K1E	1HS-VD070, 1VD01YA, 1VD02YA
1VD78A	C92123	D-8	K1E	1TE-VD007
1VD01E	C92124	D-8	C1E	1KY-VD000, 1PDS-VD027, 1TIT-VD0
1VD04E	C92124	D-8	C1E	1PDS-VD030
1VD18B	C92124	D-8	C1E	1TIT-VD007, 1TY-VD0074, 1TY-VD0
1VD75C	C92144	D-8	K1E	1TIC-VD001, 1TZ-VD001A, 1VD01YA



D-8



- LEGEND:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.3.3-1  
FIRE PROTECTION DEVIATION  
DIESEL GENERATOR BLDG.  
MEZZANINE FLOOR PLAN EL. 162'-0"  
FIRE AREA D-8

9A3057A UNCLASSIFIED

#### 4.2.4.1 DRYWELL SUPPRESSION IN FIRE AREA C-1

##### Description of Deviation

An automatic suppression system is not provided in Fire Area C1. Cables associated with safe shutdown pass within 20 feet of their redundant counterparts.

A deviation concerning the partial fire detection system for this area is discussed in Subsection 4.2.3.1.

##### Reference

10 CFR 50, Appendix R, Sections III.G.2.d and e states that cables and equipment of redundant trains must be separated by a horizontal distance of more than 20 feet with no intervening combustibles or the applicant will install fire detectors and an automatic suppression system in the fire area.

##### Fire Area(s) Involved

Fire Area C-1 - Elevations 707 feet 0 inch through 828 feet 0 inch (see Figures FP-2a and 2b through FP-7a and 7b and Cable Tray Figures 2 through 6).

##### Description of Safe Shutdown Equipment and Cables

Cables and equipment required for safe shutdown are listed on Tables 4.2.4.1-1 through 4.2.4.1-3 and shown on Figures 4.2.4.1-1 through 4.2.4.1-3, respectively.

##### Engineering Justification

All cables, except those attached beneath the reactor, are in conduit. Separation of safe shutdown conduits is greater than 20 feet except at elevation 764 feet 0 inch, where they cross over each other and run parallel within 1 foot of each other. Each SRV is powered by both Division 1 and 2. A sufficient number of SRVs would be available assuming that all cabling and equipment were disabled within any 20-foot horizontal portion of the drywell. It should be noted that the SRVs also have extensive vertical separation from the only in situ fire hazard in this fire area, which is the lubricating oil contained within the two reactor recirculation pump motors.

Each reactor recirculation pump motor utilizes self-lubricated bearings with lubricating oil cooled by cooling coils installed within the reservoirs. A pressurized oil system is not utilized. This design minimizes piping connections to the oil reservoir. The heavy construction and the nonpressurized design of this lubricating system minimize susceptibility to leakage. Thus, a fire due to the spray of the recirculation pump lubricating oil is not credible. If a fire occurred at the recirculation pump motors, it would be detected by the ultraviolet fire detection systems.



The drywell is inaccessible during operation, and when opened, stringent administrative controls are implemented to monitor personnel and equipment ingress and egress. Therefore, an exposure fire from transient combustibles is not credible.

Based on the minimal combustibles in the area, detection for the reactor recirculation pumps, and spatial separation of safe shutdown cables in conduit, an adequate level of protection is provided to ensure safe shutdown. Therefore, an automatic suppression system in this fire area is not necessary.

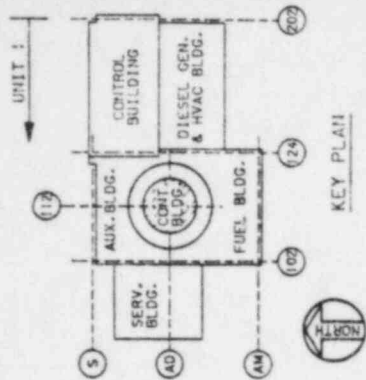
CABLE NO.	ROUTE PT.	ZONE	SEG CODE	ASSOC. EQUIP.
1R-17D	071359	D-1	D2E	1E12-D0029, 1E12-F009
1R-17D	071360	D-1	D2E	1E12-D0029, 1E12-F009
1R-17D	071365	D-1	D2E	1E12-D0029, 1E12-F009
1R-17D	072027	D-1	P2E	1E12-F009
1R-17D	072030	D-1	P2E	1E12-F009
1R-17D	072174	D-1	P2E	1E12-F009

CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
-----------	-----------	------	----------	---------------

1R-17C	C71039E	C-1	P2E	1E12-F009
1R-17C	C71039E	C-1	P2E	1E12-F009
1R102C	C71039E	C-1	P2E	1E51-F063
1R102C	C71039E	C-1	P2E	1E51-F063
1R115C	C71039E	C-1	P2E	1E51-F076
1R115C	C71039E	C-1	P2E	1E51-F076
1R102D	C71811	C-1	C2E	1E51-F063
1R115D	C71813	C-1	C2E	1E51-F076
1R102C	C71816	C-1	P2E	1E51-F063
1R115C	C71929	C-1	P2E	1E51-F076
1R102D	C72043	C-1	C2E	1E51-F063
1R115D	C72043	C-1	C2E	1E51-F076
1CM60J	C73868	C-1	K2E	1TE-CM002
1CM60K	C73868	C-1	K2E	1TE-CM004
1CM60L	C73868	C-1	K2E	1TE-CM006
1CM60M	C73868	C-1	K2E	1TE-CM008
1CM60N	C73868	C-1	K2E	1TE-CM010
1CM60P	C73868	C-1	K2E	1TE-CM012
1CM60Q	C73868	C-1	K2E	1TE-CM014
1CM60R	C73868	C-1	K2E	1TE-CM016
1RS61C	C73868	C-1	K2E	1TE-CM008
1RS61E	C73868	C-1	K2E	1TE-CM004

CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1NB37L	C71312	C-1	C1E	1B21-F041C
1NB35F	C71313	C-1	C1E	1B21-F051B
1NB37G	C71313	C-1	C1E	1B21-F047C
1NB37N	C71314	C-1	C1E	1B21-F047A
1NB37S	C71317	C-1	C1E	1B21-F04LB
1NB37-	C71320	C-1	C2E	1B21-F04LB
1NB37E	C71322	C-1	C1E	1B21-F041F
1NB37F	C71324	C-1	C2E	1B21-F041F
1NB37J	C71326	C-1	C1E	1B21-F041D
1NB35K	C71328	C-1	C1E	1B21-F051C
1NB37K	C71329	C-1	C2E	1B21-F041D
1NB35L	C71331	C-1	C2E	1B21-F051D
1NB37B	C71332	C-1	C1E	1B21-F041B
1NB37E	C71333	C-1	C1E	1B21-F041F
1NB35K	C71334	C-1	C1E	1B21-F051D
1NB37J	C71334	C-1	C1E	1B21-F041D
1NB37-	C71336	C-1	C2E	1B21-F041B
1NB37F	C71337	C-1	C2E	1B21-F041F
1NB35L	C71338	C-1	C2E	1B21-F051D
1NB37K	C71338	C-1	C2E	1B21-F041D
1R-17D	C71365	C-1	C2E	1E12-C002B, 1E12-F009
1R-17C	C72030	C-1	P2E	1E12-F009
1R-17C	C72039	C-1	P2E	1E12-F009
1NB35G	C72576	C-1	C2E	1B21-F051G
1NB35J	C72576	C-1	C2E	1B21-F051G
1NB37M	C72576	C-1	C2E	1B21-F041C
1NB37P	C72576	C-1	C2E	1B21-F047A
1NB37R	C72576	C-1	C2E	1B21-F047C
1NB35K	C72577	C-1	C1E	1B21-F051D
1NB37E	C72577	C-1	C1E	1B21-F041F
1NB37B	C72577	C-1	C1E	1B21-F041B
1NB37J	C72577	C-1	C1E	1B21-F041D
1NB35K	C71334	C-1	C1E	1B21-F051D
1NB37J	C71334	C-1	C1E	1B21-F041D
1NB37H	C71336	C-1	C2E	1B21-F041B
1NB37F	C71337	C-1	C2E	1B21-F041F
1NB35L	C71338	C-1	C2E	1B21-F051D
1NB37K	C71338	C-1	C2E	1B21-F041D
1R-17D	C71365	C-1	C2E	1E12-C002B, 1E12-F009
1R-17C	C72030	C-1	P2E	1E12-F009
1R-17C	C72039	C-1	P2E	1E12-F009
1NB35G	C72576	C-1	C2E	1B21-F051G
1NB35J	C72576	C-1	C2E	1B21-F051C
1NB37M	C72576	C-1	C2E	1B21-F-41C
1NB37P	C72576	C-1	C2E	1B21-F047A
1NB37R	C72576	C-1	C2E	1B21-F057C
1NB35K	C72577	C-1	C1E	1B21-F051D
1NB37E	C72577	C-1	C1E	1B21-F041F
1NB37B	C72577	C-1	C1E	1B21-F041B
1NB37J	C72577	C-1	C1E	1B21-F041D
1NB35E	C71035E	C-1	C2E	1B12-F051C, D, G
1NB35E	C71035E	C-1	C2E	1B12-F051C, D, G

1NB37D	C71035E	C-1	C2E	1B21-F041B,C,D,F:1B2
1NB37D	C71035E	C-1	C2E	1B21-F041B,C,D,F:1B2
1A102D	C71035E	C-1	C2E	1E51-F063
1A102D	C71035E	C-1	C2E	1E51-F063
1NB37M	C71298	C-1	C2E	1B21-F041C
1NB35F	C71301	C-1	C1E	1B21-F051G
1NB37R	C71302	C-1	C2E	1B21-F047C
1NB35G	C71303	C-1	C2E	1B21-F051G
1NB37N	C71306	C-1	C1E	1B21-F047A
1NB37P	C71308	C-1	C2E	1B21-F047A
1NB35G	C71309	C-1	C2E	1B21-F051G
1NB37R	C71309	C-1	C2E	1B21-F047C
1NB35G	C71310	C-1	C2E	1B21-F051G
1NB35J	C71310	C-1	C2E	1B21-F051C
1NB37M	C71310	C-1	C2E	1B21-F041C
1NB37P	C71311	C-1	C2E	1B21-F047A
1NB35-	C71312	C-1	C1E	1B21-F051C
1NB35G	C73960	C-1	C2E	1B21-F051G
1NB37Q	C73962	C-1	C1E	1B21-F047C
1NB35-	C7924	C-1	C1E	1B21-F051C
1NB37L	C7925	C-1	C1E	1B21-F041C
1NB35J	C7927	C-1	C2E	1B21-F051C



- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

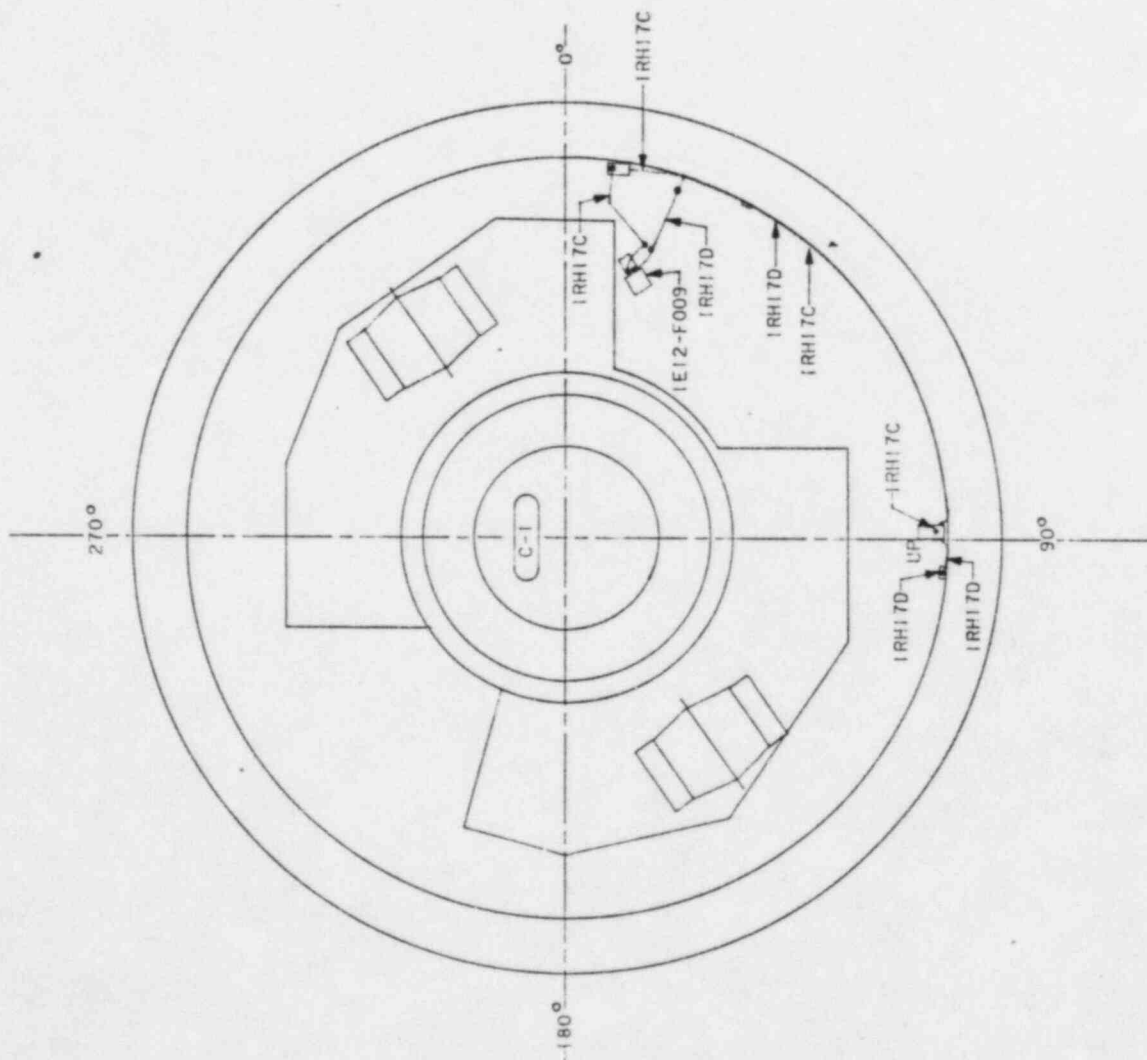
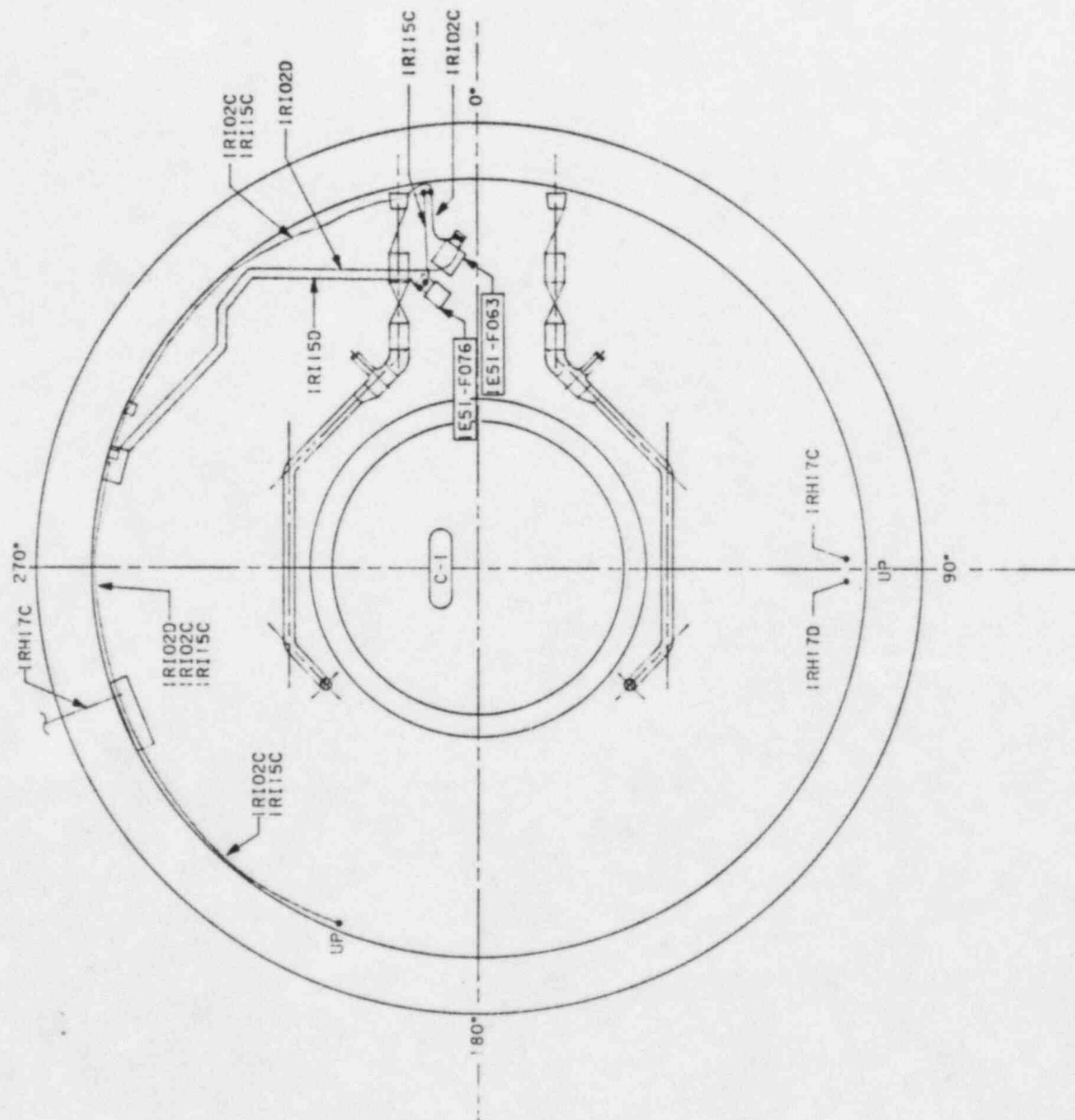


FIGURE 4.2.4.1-1  
FIRE PROTECTION DEVIATION  
CONTAINMENT BUILDING  
GRADE FLOOR PLAN EL. 737'-0"  
FIRE AREA C-1

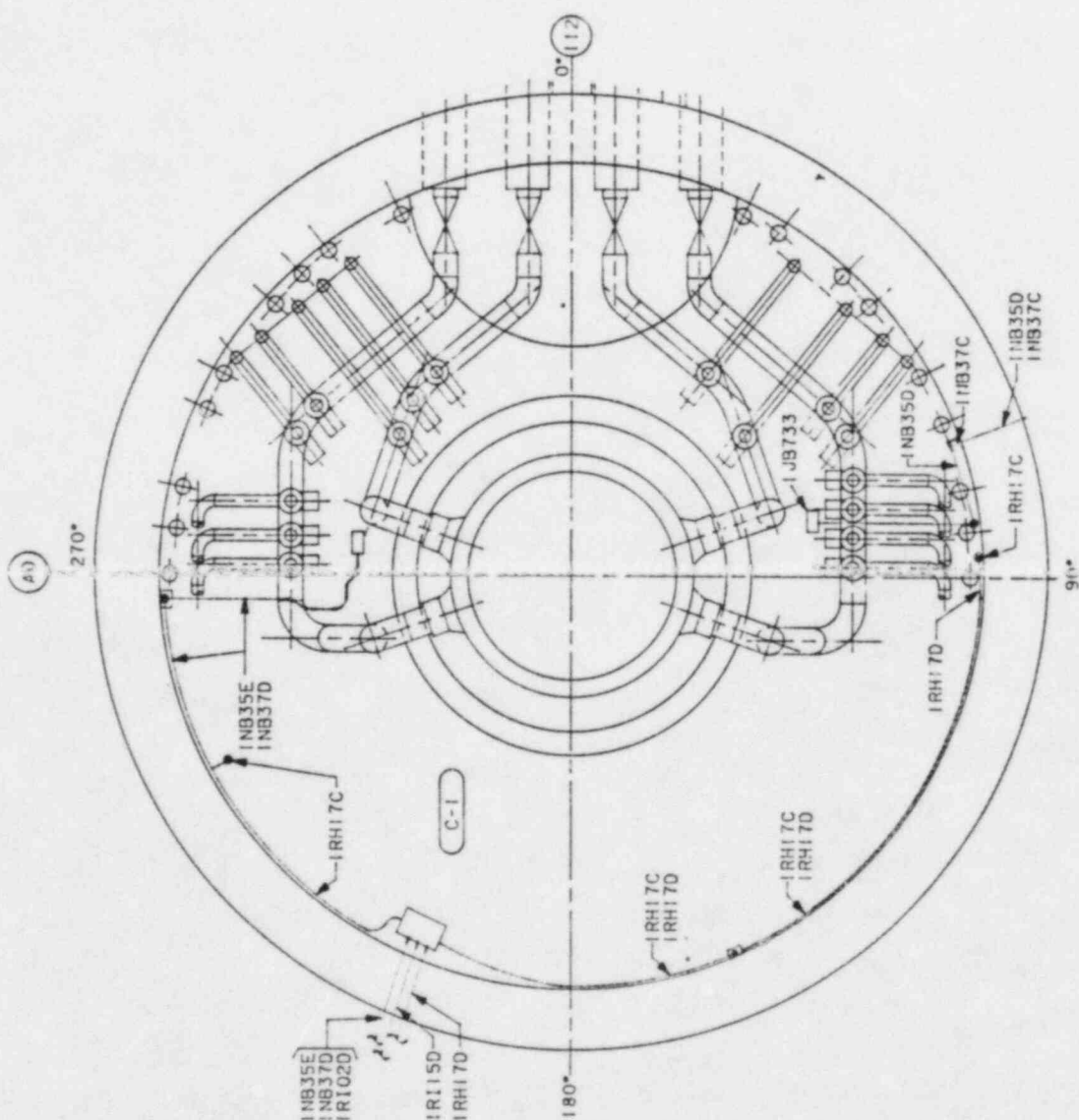
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☐ DIV. 1 CONDUIT  
☐ DIV. 1 TRAY  
☐ DIV. 2 CONDUIT  
☐ DIV. 2 TRAY  
☐ FIRE ZONE  
☐ EQUIPMENT NO.

FIGURE 4.2.4.1-2  
FIRE PROTECTION DEVIATION  
CONTAINMENT BUILDING  
MEZZANINE FLOOR  
PLAN EL. 755'-0" & 762'-0"  
FIRE AREA C-1





☐ DIV. 1 CONDUIT  
☐ DIV. 1 TRAY  
☐ DIV. 2 CONDUIT  
☐ DIV. 2 TRAY  
☐ FIRE ZONE  
☐ EQUIPMENT NO.

FIGURE 4.2.4.1-3  
FIRE PROTECTION DEVIATION  
CONTAINMENT BUILDING  
• PLAN EL. 778'-0" & 781'-0"  
FIRE AREA C-1

#### 4.2.4.2 CONTROL ROOM COMPLEX (CB-6)

##### Description of Deviation:

Fire Area CB-6 is not provided with a complete automatic fire suppression system.

##### Reference:

10 CFR 50 Appendix R, Section III.G.3: 3. Alternative or dedicated shutdown capability and its associated circuits independent of cables, systems or components in the area, room, or zone under consideration, shall be provided. . . . In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

##### Fire Area(s) Involved

Fire Area CB-6 - Elevation 800 feet 0 inch (see Figures FP-14a and 14b and Cable Tray Figure 12)

##### Description of Safe Shutdown Equipment and Cables

Fire Zone CB-6a is the main control room and four peripheral rooms. The main control room contains Division 1/Method 1 and Division 2/Method 2 cables and controls for safe shutdown equipment.

Fire Zone CB-6b Operation/Support Center and TMI Panel Room contains Division 1 and 2 safe shutdown instrument cables.

Fire Zone CB-6c is the technical support center and contains Division 1 and 2 safe shutdown cables for the control room ventilation system.

Fire Zone CB-6d contains an access corridor, locker room, kitchen, a sleeping area, etc. Division 1 and 2 safe shutdown cables are in this zone.

##### Engineering Justification

Fire Area CB-6 is provided with partial automatic fire suppression systems. This partial system protects the underfloor space of the main control room in Fire Zone CB-6a as part of the PGCC design. The remaining zones do not have any automatic fire suppression systems.

The remaining zones are provided with complete ionization detection coverage and are separated from one another by 2-hour rated walls and/or noncombustible partitions. Manual firefighting equipment is readily accessible, and response to a fire would be prompt, since the continuously manned main control room is adjacent to these zones. The safe shutdown analysis has demonstrated that in case of a fire anywhere within this fire area, safe shutdown can be achieved.

Based upon the fire detection coverage, manual fire suppression capabilities, and the ability to bring the plant to a safe shutdown condition, complete fire area suppression is not warranted for Fire Area CB-6.

#### 4.2.4.3 DIESEL AIR INTAKE STRUCTURE (D-8)

##### Description of Deviation

Fire Area D-8 is not protected by an automatic suppression system.

##### Reference

10 CFR 50, Appendix R, Section III.G.2.c references that cable and equipment and associated nonsafety circuits of one redundant train in a fire barrier having a 1-hour rating shall be enclosed. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

##### Fire Area Involved

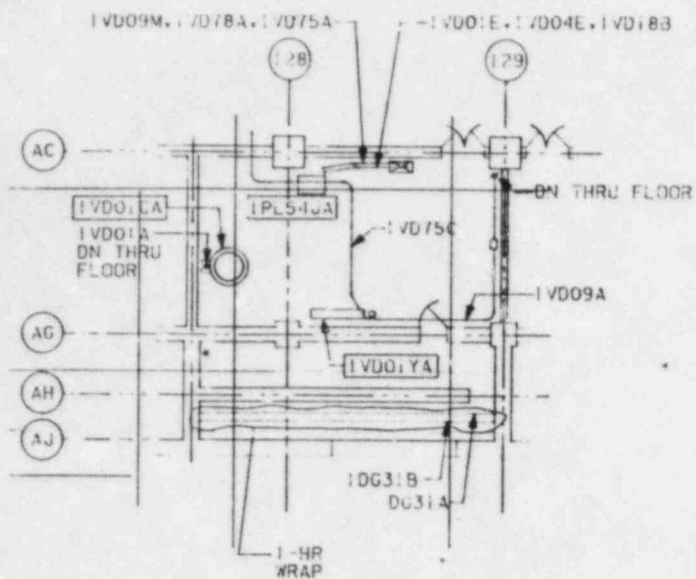
Fire Area D-8 - Elevation 762 feet 0 inch (see Figures FP-12a and 12b and Cable Tray Figure 10).

##### Description of Safe Shutdown Equipment and Cables

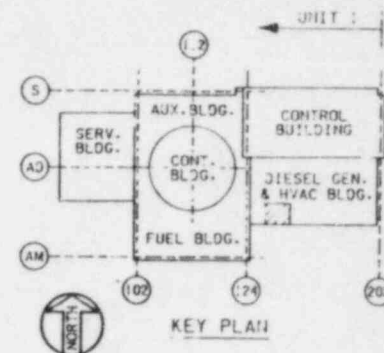
Fire Area D-8 consists of the Division 1 diesel generator air intake structure. Division 1 cables (in conduit) and Division 2 cables (in conduit), 1DG31A and 1DG31B, are in this fire area.

##### Engineering Justification

The Division 2 power feed cables, 1DG31A and 1DG31B (as shown on Figure 4.2.4.3-1), that run along the south wall of this fire area are separated from the Division 1 diesel generator ventilation system by a missile shield and a partial concrete wall. The Division 2 cables will be protected with a 1-hour fire rated material and local thermal detectors. The only combustibles in the area are electrical insulation in cabinets and HVAC duct insulation materials, resulting in fire loading of 19,500 Btu/ft<sup>2</sup>. In the event of a fire in this fire area, safe shutdown can be achieved by the use of Division 2/Method 2 systems. Based on the provision of a 1-hour fire rated barrier and a detection system, low fire loading, and the ability to achieve safe shutdown, an automatic suppression system is not necessary in Fire Area D-8.



D-8



LEGENDS:

- DIV. 1 CONDUIT
- ▬ DIV. 1 TRAY
- DIV. 2 CONDUIT
- ▬ DIV. 2 TRAY
- FIRE ZONE
- EQUIPMENT NO.

FIGURE 4.2.4.3-1  
FIRE PROTECTION DEVIATION  
DIESEL GENERATOR BLDG.  
MEZZANINE FLOOR PLAN EL. 762'-0"  
FIRE AREA D-8

SARGENT & Lundy

#### 4.2.4.4 PARTIAL SUPPRESSION IN FIRE AREA A-1

##### Description of Deviation

A complete automatic suppression system has not been provided in Fire Zone A-1b.

##### Reference

10 CFR 50, Appendix R, Section III.G.2.b references that cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards shall be separated. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

##### Fire Area Involved

Fire Zone A-1b - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3).

##### Description of Safe Shutdown Equipment and Cables

Fire Area A-1b contains Division 1 and 2 safe shutdown cables. Division 1 cables are located on the east side of the fire zone and Division 2 cables are located on the west side of the fire zone (see Cable Tray Figure 3).

##### Engineering Justification

A complete automatic suppression system has not been provided in Fire Zone A-1b. An automatic wet-pipe sprinkler system is installed between column/rows 114-124/S-T ensuring that a fire in one safe shutdown division will not propagate to the other. A complete ionization fire protection system is provided for this zone. In addition, the two divisions of cabling in this fire zone are separated by a horizontal distance in excess of 135 feet. Based on the partial automatic suppression system, the spatial separation between safe shutdown divisions, and the ionization system, additional automatic suppression systems are not necessary in Fire Zone A-1b.

#### 4.2.4.5 PARTIAL SUPPRESSION IN FIRE AREA CB-1

##### Description of Deviation

Fire Area CB-1 is not protected by complete automatic fire suppression. A deviation for not providing fire detection throughout this fire area is discussed in Subsection 4.2.3.1.

##### Reference

10 CFR 50, Appendix R, Sections III.G.2.b and III.G.3: b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or . . .

3. Alternative or dedicated shutdown capability and its associated circuits independent of cables, systems, or components in the area, room, or zone under consideration, shall be provided . . .

In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

##### Fire Area Involved

- |                 |   |
|-----------------|---|
| Fire Zone CB-1a | - Elevations 702 feet 0 inch, 712 feet 0 inch, 719 feet 0 inch, and 737 feet 0 inch (see Figures FP-8a, 8b, 9a, 9b, 10a, and 10b and Cable Tray Figures 7, 8, and 9). |
| Fire Zone CB-1b | - Elevations 702 feet 0 inch and 712 feet 0 inch (see Figures FP-8a and 9b and Cable Tray Figure 7).  |
| Fire Zone CB-1c | - Elevation 719 feet 0 inch (see Figures FP-9a and 9b and Cable Tray Figure 8).   |
| Fire Zone CB-1d | - Elevation 737 feet 0 inch (see Figures FP-10a and 10b and Cable Tray Figure 9).   |
| Fire Zone CB-1e | - Elevations 737 feet 0 inch and 751 feet 0 inch (see Figures FP-10a, 10b, 11a, and 11b and Cable Tray Figure 9).   |
| Fire Zone CB-1f | - Elevation 762 feet 0 inch (see Figures FP-12a and 12b and Cable Tray Figure 10).  |
| Fire Zone CB-1g | - Elevation 781 feet 0 inch (see Figures FP-13a and 13b and Cable Tray Figure 11).  |
| Fire Zone CB-1h | - Elevations 702 feet 0 inch through 825 feet 0 inch (see Figures FP-8a and 8b through 15a and 15b and Cable Tray Figures 7 through 13).                              |



Fire Zone CB-1i - Elevation 825 feet 0 inch (see Figures FP-15a and 15b and Cable Tray Figure 13).

#### Description of Safe Shutdown Equipment and Cables

Safe shutdown cables and equipment in the zones are listed in Tables 4.2.4.5-1 through 4.2.4.5-6 and are shown on Figures 4.2.4.5-1 through 4.2.4.5-6, respectively.

#### Engineering Justification

An automatic suppression system is not utilized throughout Fire Area CB-1. A combination of partial suppression systems, partial fire detection, and fire-rated barriers are used to provide adequate fire protection to satisfy the intent of Appendix R requirements. This deviation is discussed by elevation and zone.

#### Elevation 702 Feet 0 Inch - Fire Zone CB-1a

This zone was originally intended for the Unit 2 diesel-generators and fuel oil storage. It includes a general access corridor at elevation 711 feet 0 inch.

The walls of Fire Zone CB-1a are 12-inch minimum reinforced concrete. The west wall and the south corridor wall, common to Fire Areas D-1, D-2, and D-3, are 3-hour fire rated. The remaining walls are not fire rated. The ceiling, which is 12-inch minimum reinforced concrete, is 3-hour fire rated and is the floor of elevation 762 feet 0 inch. Manual hose stations and portable extinguishers are provided throughout this zone.

The only cable associated with safe shutdown belongs to the Division 2 fuel oil storage tank level indication. This cable is separated from its redundant counterpart, the Division 1 fuel oil storage tank level indication, by a 3-hour fire barrier. Based on the fire barrier, no suppression is necessary in this fire zone.

#### Elevation 702 Feet 0 Inch - Fire Zone CB-1b

The walls of Fire Zone CB-1b are at least 12-inch reinforced concrete or 11-5/8-inch solid concrete block. The north and west walls are 3-hour fire rated. The ceiling is at least 12-inch reinforced concrete and is not fire rated. Manual hose stations and portable extinguishers are provided throughout this zone. Fire Zone CB-1b has an approximately uniform fire loading of 44,000 Btu/ft<sup>2</sup>.

No safe shutdown cables or equipment are in this zone. Therefore, no automatic fire suppression system is necessary in this fire zone.

#### Elevation 719 Feet 0 Inch - Fire Zone CB-1c

This zone is a general access area and a heating, ventilation, and air-conditioning equipment area. Also, the standby gas treatment Systems A and B are located in the zone. The fire load in Fire Zone CB-1c is approximately uniform at 36,000 Btu/ft<sup>2</sup>.

The walls of CB-1c are 36-inch reinforced concrete, 15-5/8-inch solid concrete block, or 11-5/8-inch hollow concrete block. The north and west walls are 3-hour rated and the remaining walls are not fire rated. The ceiling is 20-inch reinforced concrete and is 3-hour fire rated from Columns/Rows AC-AE and 124-130. The remainder of the ceiling is unrated. There are four stairways in this zone: two are open and two are enclosed. Area fire detection and manual hose stations and extinguishers are provided in this zone.

A fire in Fire Zone CB-1c will affect only Division 2/Method 2 SSD cables and equipment (see Figure 4.2.4.5-1 and Table 4.2.4.5-1). A safe shutdown using Method 1 is assured. Therefore, no automatic suppression system is necessary.

#### Elevations 737 Feet 0 Inch and 751 Feet 0 Inch - Fire Zones CB-1d and CB-1e

Cables and equipment are shown on Figures 4.2.4.5-2 and 4.2.4.5-3. Tabulations of affected cables are listed in Tables 4.2.4.5-2 and 4.2.4.5-3.

The walls in Fire Zone CB-1d are 7-5/8-inch minimum solid or hollow concrete block or 24-inch minimum reinforced concrete.

The north and west walls have a 3-hour fire rating. The remaining internal walls and wall adjacent to Fire Zone CB-1e are not fire rated. The ceiling is 12-inch reinforced concrete at elevation 751 feet 0 inch and is not fire rated. Portable extinguishers, manual hose stations, and partial fire detection are provided (see Figure FP-10b).

Fire Zone CB-1e is a general access area at elevation 737 feet 0 inch and it includes a mezzanine above Fire Zone CB-1d.

The floor of the general access area of Fire Zone CB-1e is 8-inch minimum reinforced concrete and is not fire rated.

The floor of the mezzanine level, which is the roof of Fire Zone CB-1d, is 12-inch reinforced concrete and it is not fire rated.

The walls of Fire Zone CB-1e are 36-inch reinforced concrete, 15-5/8-inch solid concrete block, or 7-5/8-inch minimum hollow concrete block. The portion of the south wall adjacent to the diesel-generator rooms (Fire Zones D-4a, D-5a, and D-6a) and the north wall adjacent to the radwaste building above elevation 751 feet 0 inch and the west wall adjacent to the auxiliary building are 3-hour fire rated. The remaining walls are not fire rated. The ceiling of Fire Zone CB-1e is 8-inch minimum reinforced concrete with open pipe and equipment removal hatches. The ceiling is not fire rated.

A partial wet-pipe suppression system and portable fire extinguishers are provided for Fire Zone CB-1e as shown on Figures FP-10b and 11b. Complete fire detection is provided throughout Fire Zone CB-1e.

Automatic suppression is not necessary in Fire Zone CB-1d since only Division 2 safe shutdown cables are located in this zone (see Figure 4.5.4.5-2). These cables penetrate the ceiling of Fire Zone CB-1d and enter Fire Zone CB-1e, which also contains Division 1 safe shutdown cable. A partial suppression system is provided in Fire Zone CB-1e to

protect Division 1 safe shutdown cables (see Figure 4.5.4.5-3). A fire in Fire Zone CB-1d would not affect the Division 1 cables.

An exposure fire originating in Fire Zone CB-1c would affect only Division 2/Method 2 safe shutdown cables and equipment at elevation 719 feet 0 inch. The Division 1/Method 1 safe shutdown cables located in Fire Zone CB-1e two floors up are protected by a partial wet-pipe sprinkler system (see Figures FP-10b and 11b) which was installed to protect the pipe hatch at the ceiling of Fire Zone CB-1c (located at Column/Row 125/AC, elevation 737 feet 0 inch - see Figure FP-9b). This will cool any hot gases rising up near Division 1/Method 1 safe shutdown cables. This partial suppression system combined with the 14-foot horizontal separation of the Division 2 cable trays in Fire Zone CB-1c from the hatch and the lack of intervening combustibles, will assure safe shutdown by Method 1.

An automatic suppression system extends over the Division 1/Method 1 safe shutdown cables (see Figures FP-10b and 11b and Cable Tray Figure 9) in Fire Zone CB-1e.

One-hour barriers are provided for Division 2 cables and conduits within 20 feet of the nearest Division 1 cable, conduit, or equipment. Automatic detection is installed throughout Fire Zone CB-1e.

The fire load in Zone CB-1e is average at 70,000 Btu/ft<sup>2</sup>. Cables are concentrated at the west side of Fire Zone CB-1e. The fire load in Fire Zone CB-1d is 20,000 Btu/ft<sup>2</sup>. Higher cable tray concentrations are located in the riser sections by Row S (see Figure 4.5.4.5-2). These risers are sealed at elevations 737 feet 0 inch, 751 feet 0 inch, and 762 feet 0 inch by 3-hour fire rated seals. The only other hazards are the gases stored in the compressed gas storage room. The average fire loading in this small room is about 30,000 Btu/ft<sup>2</sup>. The Division 1 and 2 cables in proximity of this room are shown on Cable Tray Figure 9. Safe shutdown is assured due to the automatic wet-pipe sprinkler, fire wrap of safe shutdown cables, and spatial separation of the safe shutdown cables.

#### Elevation 762 Feet 0 Inch - Fire Zone CB-1f

The floor is 12-inch reinforced concrete with open areas for piping and equipment removal. The floor is not fire rated.

The zone walls are 24-inch minimum concrete and are 3-hour fire rated, except for the east wall, which is not fire rated. The ceiling is 12-inch minimum reinforced concrete and is 3-hour fire rated between Column Rows 124-130 and Column Lines S-AC. Manual hose stations and portable fire extinguishers are provided as shown on Figure FP-12b. Area fire detection is provided in this fire zone.

At elevation 762 feet 0 inch, Fire Zone CB-1f, all Division 2 safe shutdown cables are protected by a 3-hour fire rated material (see Figure 4.2.4.5-4). Automatic sprinkler protection is provided at the ceiling of elevation 737 feet 0 inch (Fire Zone CB-1e) around the HVAC shaft at Column Row 125-AC and the equipment hatch at Column Row 132-AA (see Figure FP-10b).

Based on providing water protection of hatches and sealing of cable risers penetrating at the floor, the concrete floor slab will prevent a fire from spreading from Fire Zone CB-1e to Fire Zone CB-1f. Automatic fire suppression is therefore not necessary.

#### Elevation 781 Feet 0 Inch - Fire Zone CB-1g

This zone is a general access for the cable spreading rooms. This space was originally intended for the Unit 2 cable spreading rooms. The fire loading in Fire Zone CB-1g is approximately uniform at 40,000 Btu/ft<sup>2</sup>.

The floor is 12-inch reinforced concrete and is not fire rated. The walls are 24-inch reinforced concrete or 7-5/8-inch hollow concrete block. The north and south walls are 3-hour fire rated, and the west wall and stair/elevator enclosure are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 23-inch reinforced concrete and is 3-hour fire rated. Portable fire extinguishers and manual hose stations are provided as shown on Figure FP-13b. Area fire detection is also provided throughout this fire zone.

Division 2 cables in conduit associated with safe shutdown are protected by a 3-hour fire-rated material in this fire zone. The fire zone below Fire Zone CB-1g (Fire Zone CB-1f) also has Division 2/Method 2 safe shutdown cables protected with a 3-hour fire rated material. The separation criteria of 10 CFR 50, Section III.G.2a are therefore met. No automatic fire suppression system is necessary.

#### Elevation 825 Feet 0 Inch - Fire Zone CB-1i

This zone contains the air handling equipment for the control room and auxiliary building.

The floor is 12-inch minimum concrete on steel decking and is 3-hour fire rated. The walls are 24-inch reinforced concrete, 11-5/8-inch hollow concrete block, or 7-5/8-inch hollow concrete block. The walls at the stair/elevator enclosures are 1.9-hour fire rated. The remaining walls are not fire rated. The ceiling is 24-inch concrete on steel decking and is not rated. The dividing wall at Column 130 between the missile wall and Row AC has a 3-hour fire rating. Portable fire extinguishers and manual hose stations are provided as shown on Figure FP-15b. Fire detection is provided between Columns 128 and 133.

Division 1 and 2 cables required for safe shutdown are located in this fire zone and are shown on Figures 4.2.4.5-5 and 4.2.4.5-6.

There is an open hatch on the east side of Fire Zone CB-1i, at Column/Row 135/AC, that communicates to Fire Zone CB-1f at elevation 762 feet 0 inch. This hatch is enclosed by 3-hour fire-rated construction through to the intermediate floor levels. A fire on the east side of Fire Zone CB-1f at elevation 762 feet 0 inch would not affect Division 2/Method 2 safe shutdown cables or equipment since the Method 2 safe shutdown cables in Fire Zone CB-1f are protected by a 3-hour rated material. No Division 2 cables exist in Fire Zone CB-1i on the east side of the Column 130 fire wall. Therefore, automatic suppression on the east side of Fire Zone CB-1i is not necessary.

On the west side of Fire Zone CB-1i, there is an open hatch at Column/Row 125/AC that communicates to Fire Zone CB-1f at elevation 762 feet 0 inch. The chase is enclosed

with 3-hour fire-rated construction at the two intermediate floor levels. A fire on the west side of Fire Zone CB-1f at elevation 762 feet 0 inch would affect only Division 1/ Method 1 safe shutdown cables. A wet-pipe suppression system will be installed around the hatch at the ceiling of Fire Zone CB-1f to cool hot gases and prevent damage to the redundant Division 2 cable in Fire Zone CB-1i. A partial fire detection system will be installed in the vicinity of the open hatch. An automatic suppression system in the west side of Fire Zone CB-1i is not necessary. If a fire occurred on the west side of Fire Zone CB-1i, safe shutdown is provided from the remote shutdown panel.

In conclusion, safe shutdown in Fire Area CB-1 is assured by a combination of passive fire barriers, detection, and partial automatic suppression systems. Therefore, complete automatic fire suppression is not necessary.



DABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1AP29B	1066D	CB-1c	P2E	1AP09EB
1AP34N	1066D	CB-1c	P2E	0VC13CB, 1AP12E
1AP34V	1066D	CB-1c	P2E	0VC13CB, 1AP12E
1AP34W	1066D	CB-1c	P2E	0VC13CB, 1AP12E
1AP36E	1066D	CB-1c	P2E	1AP61E
1D621J	1066D	CB-1c	P2E	1D601KB, 1D001PB
1AP02C	1066D	CB-1c	P2R	1C71-5001B
1VD02A	1066D	CB-1c	P2E	1VD01CB
1VD10A	1066D	CB-1c	P2E	1TZ-VD002A, 1VD01VB
1VD10B	1066D	CB-1c	P2E	1TZ-VD002B, 1VD02VB
1VD10C	1066D	CB-1c	P2E	1TZ-VD002C
1VD10D	1066D	CB-1c	P2E	1FZ-VD005, 1V12VE
1R119C	1066E	CB-1c	C2E	1E51-F004, 1E51-F025
1VD10J	1066E	CB-1c	C2E	1TZ-VD002C
1VD10K	1066E	CB-1c	C2E	1FZ-VD005, 1VD12VB
1V632H	1073E	CB-1c	C2E	1S073B
1AP37D	10927	CB-1c	P2E	0AP25E, 0AP57E
1AP37H	10927	CB-1c	P2E	0AP25E
1C07L	10928	CB-1c	C2E	1TE-C006, 1TE-C012 1TE-C014, 1TR-C018 1TY-C010
1C07L	10930	CB-1c	C2E	1TE-C006, 1TE-C012 1TE-C014, 1TR-C018 1TY-C010
1R119C	10930	CB-1c	C2E	1E51-F004, 1E51-F025
1VD10J	10930	CB-1c	C2E	1TZ-VD002C
1VD10K	10930	CB-1c	C2E	1FZ-VD005, 1VD12VB
1V632H	10930	CB-1c	C2E	1S073B
1AP29B	10931	CB-1c	P2E	1AP09EB
1AP34N	10931	CB-1c	P2E	0VC13CB, 1AP12E
1AP34V	10931	CB-1c	P2E	0VC13CB, 1AP12E
1AP34W	10931	CB-1c	P2E	0VC13CB, 1AP12E
1AP36E	10931	CB-1c	P2E	1AP61E
1AP37D	10931	CB-1c	P2E	0AP25E, 0AP57E
1AP37H	10931	CB-1c	P2E	0AP25E
1D621J	10931	CB-1c	P2E	1D601KB, 1D001PB
1AP02C	10931	CB-1c	P2R	1VD01CB
1VD02A	10931	CB-1c	P2E	1TZ-VD002A, 1VD01VB
1VD10A	10931	CB-1c	P2E	1TZ-VD002B, 1VD02VB
1VD10B	10931	CB-1c	P2E	1TZ-VD002C
1VD10C	10931	CB-1c	P2E	1FZ-VD005, 1VD12VB
1VD10D	10931	CB-1c	P2E	1LT-D0012
1D076B	C9104	CB-1c	K2E	1LT-D0012
1D076B	C9104	CB-1c	K2E	1LT-D0012
1D076B	C9710	CB-1c	K2E	1LT-D0012
1D076B	C9710	CB-1c	K2E	1LT-D0012

TABLE NO.	ROUTE RT.	ZONE	SEG CODE	ASSOC. EQUIP.
1D621*	10110A	CB-1e	P1E	1D601KA, 1D001PA*
1D601N	10110A	CB-1e	P1E	1D601KA, 1D001PA*
1D601P	10110A	CB-1e	P1E	1D601KA, 1D001PA*
1D609A	10110A	CB-1e	P1E	1D6065A
1D610A	10110A	CB-1e	P1E	1D6065A
1D001A	10110A	CB-1e	P1E	1D001PA
1SX25D	10110A	CB-1e	P1E	1SX073A
1SX30A	10110A	CB-1e	P1E	1SX063A
1VD01A	10110A	CB-1e	P1E	1VD01CA
1VD04A	10110A	CB-1e	P1E	1VD02CA
1VD09A	10110A	CB-1e	P1E	1TZ-VD001A
1VD09B	10110A	CB-1e	P1E	1TZ-VD001B, 1VD02YA
1VD75D	10110A	CB-1e	P1E	1FZ-VD004, 1VD12YA
1AP02A	10110B	CB-1e	C1E	1AP07EK, 1D601KA
1AP02*	10110B	CB-1e	C1E	1AP07EK, 1D601KA
1AP02J	10110B	CB-1e	C1E	1AP07EK, 1D601KA
1AP02K	10110B	CB-1e	C1E	1AP07EK, 1D601KA
1D601C	10110B	CB-1e	C1E	1D601KA
1D601D	10110B	CB-1e	C1E	1D601KA
1D601G	10110B	CB-1e	C1E	1D601KA, 1D001PA*
1D601J	10110B	CB-1e	C1E	1D601KA
1D601K	10110B	CB-1e	C1E	1D601KA
1D601L	10110B	CB-1e	C1E	1D601KA
1D601M	10110B	CB-1e	C1E	1D601KA, 1SX01PA
1D601B	10110B	CB-1e	C1E	1D601KA
1D604A	10110B	CB-1e	C1E	1D601KA
1D605A	10110B	CB-1e	C1E	1D601KA
1D609B	10110B	CB-1e	C1E	1D6065A
1D610B	10110B	CB-1e	C1E	1D6065A
1D611D	10110B	CB-1e	C1E	1D601KA
1D611E	10110B	CB-1e	C1E	1D601KA
1D611F	10110B	CB-1e	C1E	1D601KA
1D611A	10110B	CB-1e	C1E	1D601KA
1D611S	10110B	CB-1e	C1E	1D601KA
1D611T	10110B	CB-1e	C1E	1D601KA
1SX25E	10110B	CB-1e	C1E	1SX073A
1SX30B	10110B	CB-1e	C1E	1SX063A
1VD01E	10110B	CB-1e	C1E	1KY-VD000*
1VD04E	10110B	CB-1e	C1E	1PDS-VD003*
1VD09K	10110B	CB-1e	C1E	1FZ-VD004, 1VD12YA
1VD10B	10110B	CB-1e	C1E	1TIT-VD007*
1D077A	10110C	CB-1e	K1E	1D001PA, 1D001PA
1D077B	10110C	CB-1e	K1E	1LT-D0011
1D621J	10116D	CB-1e	P2E	1D601KB, 1D001PB
1D629A	10116D	CB-1e	P2E	1D6065B
1D630A	10116D	CB-1e	P2E	1D6065B
1D002A	10116D	CB-1e	P2E	1D001PB
1SX31A	10116D	CB-1e	P2E	1SX063B
1SX51D	10116D	CB-1e	P2E	1SX073B
1VD02A	10116D	CB-1e	P2E	1VD01CB
1VD05A	10116D	CB-1e	P2E	1VD02CB



1VD12A	10116D	CB-1e	P2E	17Z-VD002A, 1VD01YB
1VD12B	10116D	CB-1e	P2E	17Z-VD002B, 1VD02YB
1VD12C	10116D	CB-1e	P2E	17Z-VD002C
1VD12D	10116D	CB-1e	P2E	1FZ-VD005, 1VD12YB
1AP01A	10116E	CB-1e	C2E	1AP05EA, 1DG01KB
1AP01L	10116E	CB-1e	C2E	1AP05EA, 1DG01KB
1AP03L	10116E	CB-1e	C2E	1AP05ED, 1DG01KB
1AP05*	10116E	CB-1e	C2E	1AP05ED, 1DG01KB
1DG01A	10116E	CB-1e	C2E	1DG01KB
1DG01B	10116E	CB-1e	C2E	1DG01KB
1DG01C	10116E	CB-1e	C2E	1DG01KB
1DG01D	10116E	CB-1e	C2E	1DG01KB, 1D001PB
1DG01F	10116E	CB-1e	C2E	1DG01KB
1DG01K	10116E	CB-1e	C2E	1SX01PB
1DG01L	10116E	CB-1e	C2E	1DG01KB
1DG01*	10116E	CB-1e	C2E	1DG01KB, 1SX01PB
1DG04A	10116E	CB-1e	C2E	1DG01KB
1DG05A	10116E	CB-1e	C2E	1DG01KB
1DG05B	10116E	CB-1e	C2E	1DG05SB
1DG05B	10116E	CB-1e	C2E	1DG05SB
1DG01C	10116E	CB-1e	C2E	1DG01KB
1DG01D	10116E	CB-1e	C2E	1DG01KB
1DG01E	10116E	CB-1e	C2E	1DG01KB
1DG01F	10116E	CB-1e	C2E	1DG01KB
1DG01R	10116E	CB-1e	C2E	1DG01KB
1DG01B	10116E	CB-1e	C2E	1DG01KB
1DG01T	10116E	CB-1e	C2E	1DG01KB
1SX01B	10116E	CB-1e	C2E	1SX063B
1SX01E	10116E	CB-1e	C2E	1SX073B
1VD02E	10116E	CB-1e	C2E	1KY-VD001*
1VD05E	10116E	CB-1e	C2E	1PDS-VD031
1VD12C	10116E	CB-1e	C2E	17Z-VD002C
1VD12K	10116E	CB-1e	C2E	1FZ-VD005, 1VD12YB
1VD18D	10116E	CB-1e	C2E	17T-VD006*
1DG76A	10116F	CB-1e	K2E	1DG01KB
1DG76B	10116F	CB-1e	K2E	1DG01KB
1D078A	10116F	CB-1e	K2E	1D001PB
1D078B	10116F	CB-1e	K2E	1LT-D0012
1AP28B	10121A	CB-1e	P1E	1AP07EJ, 0AP05E
1AP34L	10121A	CB-1e	P1E	DVC13CA, 1AP11E
1AP34T	10121A	CB-1e	P1E	0AP05E, 1AP11E
1AP34X	10121A	CB-1e	P1E	DVC13CA, B, E
1AP36A	10121A	CB-1e	P1E	1AP50E
1DG01Y	10121A	CB-1e	P1E	1DG01KA, 1D001PA*
1DG01X	10121A	CB-1e	P1E	1DG01KA, 1D001PA*
1DG01P	10121A	CB-1e	P1E	1DG01KA, 1D001PA*
1AP01C	10121A	CB-1e	P1E	1C71-S001A
1VD01A	10121A	CB-1e	P1E	1VD01CA
1VD09A	10121A	CB-1e	P1E	17Z-VD001A, 1VD01YA
1VD09B	10121A	CB-1e	P1E	17Z-VD001B, 1VD02YA
1VD09C	10121A	CB-1e	P1E	17Z-VD001C, 1VD03YA
1VD09D	10121A	CB-1e	P1E	1FZ-VD004, 1VD12YA
1AP02X	10121B	CB-1e	C1E	1AP07EK, 1DG01KA
1AP02Y	10121B	CB-1e	C1E	1AP07EK, 1DG01KA

1AP22J	101218	CB-1e	C1E	1AP27E4, 1D601KA
1AP23A	101218	CB-1e	C1E	1AP27E4, 1D601KA
1D025B	101218	CB-1e	C1E	1SX012A, 1SX062A
1D601D	101218	CB-1e	C1E	1D601KA
1D601J	101218	CB-1e	C1E	1D601KA
1D601A	101218	CB-1e	C1E	1D601KA, 1SX012A
1D601S	101218	CB-1e	C1E	1D601KA
1D611D	101218	CB-1e	C1E	1D601KA
1D611B	101218	CB-1e	C1E	1D601KA
1D611F	101218	CB-1e	C1E	1D601KA
1D611K	101218	CB-1e	C1E	1D601KA
1D611A	101218	CB-1e	C1E	1D601KA
1D611S	101218	CB-1e	C1E	1D601KA
1D001-	101218	CB-1e	C1E	1D001PA
1E513F	101218	CB-1e	C1E	1E51-F068
1SX30E	101218	CB-1e	C1E	1SX063A
1VC21G	101218	CB-1e	C1E	0VC30YA, 33YA, 36YA
1VC48E	101218	CB-1e	C1E	0VC21YA, 24YA, 27YA
1VD01J	101218	CB-1e	C1E	1VD01CA
1VD04F	101218	CB-1e	C1E	1VD02CA
1VD09J	101218	CB-1e	C1E	1TZ-VD001C, 1VD03YA
1VD09H	101218	CB-1e	C1E	1FZ-VD004, 1VD12YA
1AP29B	1066D	CB-1e	P2E	1AP09EB
1AP34X	1066D	CB-1e	P2E	0VC13CB, 1AP12E
1AP34V	1066D	CB-1e	P2E	0VC13CB, 1AP12E
1AP34W	1066D	CB-1e	P2E	0VC13CB, 1AP12E
1AP35E	1066D	CB-1e	P2E	1AP61E
1D601J	1066D	CB-1e	P2E	1D601KB, 1D001FB
1AP02C	1066D	CB-1e	P2E	1D71-5001B
1VD02A	1066D	CB-1e	P2E	1VD01CB
1VD10A	1066D	CB-1e	P2E	1TZ-VD002A, 1VD01VB
1VD10B	1066D	CB-1e	P2E	1TZ-VD002B, 1VD02VB
1VD12C	1066D	CB-1e	P2E	1TZ-VD002C
1VD12D	1066D	CB-1e	P2E	1FZ-VD005, 1V12YB
1A719C	1066E	CB-1e	C2E	1E51-F004, 1E51-F025
1VD10J	1066E	CB-1e	C2E	1TZ-VD002C
1VD10K	1066E	CB-1e	C2E	1FZ-VD005, 1VD12YB
1V632H	1073E	CB-1e	C2E	1SX073B
1VC58A	10A199	CB-1e	P1E	0VC13CA
1SX25E	10A208	CB-1e	C1E	1SX073A
1SX25P	10A208	CB-1e	C1E	1SX076A
1SX25V	10A208	CB-1e	C1E	1SX073A
1SX25X	10A208	CB-1e	C1E	1SX076A
1SX50E	10A208	CB-1e	C1E	1SX107A
1SX50K	10A208	CB-1e	C1E	1SX107A
1SX53E	10A208	CB-1e	C1E	1SX107A
1SX53F	10A208	CB-1e	C1E	1SX073A, 1SX107A
1SX53G	10A208	CB-1e	C1E	1SX076A
1SX53P	10A208	CB-1e	C1E	1SX073A, 1SX076A
1VC07D	10A208	CB-1e	C1E	0VC08PA, 0VC13CA
1VC07F	10A208	CB-1e	C1E	0KY-VC362*
1AP27A	10A209	CB-1e	P1E	0PA54EA
1AP37E	10A209	CB-1e	P1E	0PA54EA

1SX25D	109209	CB-1e	P1E	1SX073A
1SX25N	109209	CB-1e	P1E	1SX076A
1SX50D	109209	CB-1e	P1E	1SX107A
1VD07A	109209	CB-1e	P1E	DVC06PA
1AP34L	109210	CB-1e	P1E	DAP05E, DVC13CA, 1AP11
1AP34T	109210	CB-1e	P1E	DAP05E, 1AP11E
1AP34X	109210	CB-1e	P1E	DAP05E, DVC13CA, 1AP11
1AP37A	109210	CB-1e	P1E	DAP54EA
1AP37B	109210	CB-1e	P1E	DAP24E, DAP56E
1VD01A	109210	CB-1e	P1E	0VDC3CA
1VD09A	109210	CB-1e	P1E	0VDC13CA
1AP28D	109211	CB-1e	D1E	DAP05E, 1AP07EJ
1AP59A	109211	CB-1e	D1E	DAP05E
1VD01B	109211	CB-1e	D1E	0VDC3CA*
1VD01C	109211	CB-1e	D1E	0VDC3CA
1VD09B	109211	CB-1e	D1E	0VDC13CA, 1SX019A
1VD09C	109211	CB-1e	D1E	0VDC13CA
1VD09F	109211	CB-1e	D1E	0VDC13CA
1AP37D	10927	CB-1e	P2E	DAP25E, DAP57E
1AP37F	10927	CB-1e	P2E	DAP25E
1C*07L	10928	CB-1e	D2E	1TE-CM006, 1TE-CM012*
1C*07L	10930	CB-1e	D2E	1TE-CM006, 1TE-CM012*
1R119C	10930	CB-1e	D2E	1E51-F004, 1E51-F025
1VD10J	10930	CB-1e	D2E	1TZ-VD002C
1VD10K	10930	CB-1e	D2E	1FZ-VD005, 1VD12YB
1V032F	10930	CB-1e	D2E	1SX073B
1AP29B	10931	CB-1e	P2E	1AP09EB
1AP34Y	10931	CB-1e	P2E	DVC13CB, 1AP12E
1AP34V	10931	CB-1e	P2E	DVC13CB, 1AP12E
1AP34W	10931	CB-1e	P2E	DVC13CB, 1AP12E
1AP36E	10931	CB-1e	P2E	1AP61E
1AP37D	10931	CB-1e	P2E	DAP25E, DAP57E
1AP37H	10931	CB-1e	P2E	DAP25E
1DG01J	10931	CB-1e	P2E	1DG01KB, 1D001PB
1AP02C	10931	CB-1e	P2E	1C71-5001B
1VD02F	10931	CB-1e	P2E	1VD01CB
1VD10A	10931	CB-1e	P2E	1TZ-VD002A, 1VD01YB
1VD10B	10931	CB-1e	P2E	1TZ-VD002B, 1VD02YB
1VD10C	10931	CB-1e	P2E	1TZ-VD002C
1VD10D	10931	CB-1e	P2E	1FZ-VD005, 1VD12YB
1AP36E	10958	CB-1e	P2E	1AP61E
1DG29A	10958	CB-1e	P2E	1DG06SB
1DG30A	10958	CB-1e	P2E	1DG06SB
1D002A	10958	CB-1e	P2E	1D001PB
1SX27A	10958	CB-1e	P2E	1SX019B
1SX31A	10958	CB-1e	P2E	1SX063B
1SX40A	10958	CB-1e	P2E	1SX017B
1VD05A	10958	CB-1e	P2E	1VD02CB
1DG21D	10959	CB-1e	D2E	1DG01KB, 1D001PB
1DG24A	10959	CB-1e	D2E	1DG01KB
1DG25A	10959	CB-1e	D2E	1DG01KB
1DG29B	10959	CB-1e	D2E	1DG06SB
1DG30B	10959	CB-1e	D2E	1DG06SB
1DG31K	10959	CB-1e	D2E	1DG01KB

1DQ22B	1Q759	CB-1e	C2E	1DQ01PB
1DQ22C	1Q759	CB-1e	C2E	1DQ01PB
1SX27B	1Q759	CB-1e	C2E	1SX019B
1SX31B	1Q759	CB-1e	C2E	1SX063B
1SX31C	1Q759	CB-1e	C2E	1SX063B
1SX40B	1Q759	CB-1e	C2E	1SX017B
1SX40C	1Q759	CB-1e	C2E	1SX017B
1VD05B	1Q759	CB-1e	C2E	1VD02CB
1VD05E	1Q759	CB-1e	C2E	1PDS-VD031
1AP29B	1Q760	CB-1e	P2E	1AP09EB
1AP34N	1Q760	CB-1e	P2E	OVC13CB, 1AP12E
1AP34V	1Q760	CB-1e	P2E	OVC13CB, 1AP12E
1AP34W	1Q760	CB-1e	P2E	OVC13CB, 1AP12E
1AP37D	1Q760	CB-1e	P2E	OAP25E, OAP57E
1AP22C	1Q760	CB-1e	P2E	1C71-S001B
1SX27A	1Q760	CB-1e	P2E	1SX019B
1SX40A	1Q760	CB-1e	P2E	1SX017B
1SX51D	1Q760	CB-1e	P2E	1SX073B
1VC25B	1Q760	CB-1e	P2E	OVC21YB
1VC25C	1Q760	CB-1e	P2E	OVC24YB
1VC25D	1Q760	CB-1e	P2E	OVC27YB
1VC25E	1Q760	CB-1e	P2E	OVC14YB
1VC26C	1Q760	CB-1e	P2E	OVC13YB
1VC26D	1Q760	CB-1e	P2E	OVC12YB
1VC27B	1Q760	CB-1e	P2E	OVC30YB
1VC27C	1Q760	CB-1e	P2E	OVC33YB
1VC27D	1Q760	CB-1e	P2E	OVC36YB
1VC28B	1Q760	CB-1e	P2E	OVC17YB
1VC28C	1Q760	CB-1e	P2E	OVC16YB
1VC28D	1Q760	CB-1e	P2E	OVC15YB
1VC28F	1Q760	CB-1e	P2E	OVC18YB
1VC56E	1Q760	CB-1e	P2E	OVC39YF
1AP29D	1Q761	CB-1e	C2E	1AP09EB
1TP04A	1Q761	CB-1e	C2E	1H13-P742B
1TP04B	1Q761	CB-1e	C2E	1DQ01PB, 1H13-P742B+
1VC45F	1Q761	CB-1e	C2E	OVC21YB, 24YB, 27YB
1VC46C	1Q761	CB-1e	C2E	1SX076B, 1SX107B
1VC46E	1Q761	CB-1e	C2E	OVC39YE
1VC46F	1Q761	CB-1e	C2E	OVC21YB, 24YB, 27YB
1VC46G	1Q761	CB-1e	C2E	OVC30YB, 33YB, 36YB
1VC50M	1Q761	CB-1e	C2E	OVC39YB
1VC56E	1Q761	CB-1e	C2E	OVC39YF
1VC56N	1Q761	CB-1e	C2E	OVC39YB
1VD19D	1Q761	CB-1e	C2E	1T1T-VDD08*
1VX28N	1Q761	CB-1e	C2E	1SX193B
1LV14D	1Q761	CB-1e	C2E	1H13-P742E, 1KY-VD081
1LV14E	1Q761	CB-1e	C2E	1H13-P742F, 1SX01PB
1LV14F	1Q761	CB-1e	C2E	1H13-P742F
1LV14G	1Q761	CB-1e	C2E	1H13-P732F
1LV14H	1Q761	CB-1e	C2E	1H13-P731F, 1H13-P732
1LV14J	1Q761	CB-1e	C2E	1H13-P702A
1LV14K	1Q761	CB-1e	C2E	1H13-P702A, 1LR-CM241
1LV14L	1Q761	CB-1e	C2E	1H13-P801
1LV14M	1Q761	CB-1e	C2E	1H13-P702A

1SX27E	1Q961	CB-1e	C2E	1SX219B
1SX42B	1Q961	CB-1e	C2E	1SX017B
1SX21E	1Q961	CB-1e	C2E	1SX073B
1SX21F	1Q961	CB-1e	C2E	1SX073B
1SX21D	1Q961	CB-1e	C2E	1SX076B
1SX52F	1Q961	CB-1e	C2E	1SX107B
1SX54D	1Q961	CB-1e	C2E	1SX073B, 1SX076B
1VC22C	1Q961	CB-1e	C2E	DVC03CB
1VC256	1Q961	CB-1e	C2E	DVC21YB, 24YB, 27YB
1VC250	1Q961	CB-1e	C2E	DVC21YB
1VC25P	1Q961	CB-1e	C2E	DVC24YB
1VC253	1Q961	CB-1e	C2E	DVC27YB
1VC26E	1Q961	CB-1e	C2E	DVC12YB, 13YB, 14YB
1VC27B	1Q961	CB-1e	C2E	DVC30YB, 33YB, 36YB
1VC27D	1Q961	CB-1e	C2E	DVC30YB
1VC27P	1Q961	CB-1e	C2E	DVC33YB
1VC27G	1Q961	CB-1e	C2E	DVC36YB
1VC27R	1Q961	CB-1e	C2E	DVC12YB, 13YB, 14YB*
1VC28E	1Q961	CB-1e	C2E	DVC15YB, 16YB, 17YB*
1VC45A	1Q961	CB-1e	C2E	DVC06PB
1VC45B	1Q961	CB-1e	C2E	DVC03CB, DVC12YB*
1VC91L	1Q962	CB-1e	K2E	DTE-VC13B, DVC17YB
1VC91Q	1Q962	CB-1e	K2E	DDDR-VC153
1VC95D	1Q962	CB-1e	K2E	DDDT-VC121A*
1VC95E	1Q962	CB-1e	K2F	DDDT-VC121B*
1VC95F	1Q962	CB-1e	K2L	DDDY-VC121
1AP36A	1Q963	CB-1e	P1E	1AP62E
1DG29A	1Q963	CB-1e	P1E	1DG065A
1DG10A	1Q963	CB-1e	P1E	1DG065A
1DQ01A	1Q963	CB-1e	P1E	1DQ01PA
1SX26A	1Q963	CB-1e	P1E	1SX019A
1SX32A	1Q963	CB-1e	P1E	1SX063A
1SX33A	1Q963	CB-1e	P1E	1SX017A
1VD24A	1Q963	CB-1e	P1E	1VD02CA
1DG01B	1Q964	CB-1e	C1E	1DG01KA, 1DQ01PA*
1DG04A	1Q964	CB-1e	C1E	1DG01KA
1DG05A	1Q964	CB-1e	C1E	1DG01KA
1DG09B	1Q964	CB-1e	C1E	1DG065A
1DG10B	1Q964	CB-1e	C1E	1DG065A
1DG11K	1Q964	CB-1e	C1E	1DG01KA
1DQ01C	1Q964	CB-1e	C1E	1DQ01PA
1DQ01H	1Q964	CB-1e	C1E	1DQ01PA
1SX26B	1Q964	CB-1e	C1E	1SX019A
1SX30B	1Q964	CB-1e	C1E	1SX063A
1SX30E	1Q964	CB-1e	C1E	1SX063A
1SX39B	1Q964	CB-1e	C1E	1SX017A
1SX39C	1Q964	CB-1e	C1E	1SX017A
1VD01J	1Q964	CB-1e	C1E	1VD01CA
1VD04E	1Q964	CB-1e	C1E	1PDS-VD03Q
1VD04F	1Q964	CB-1e	C1E	1VD02CA
1DQ05B	1Q966	CB-1e	C1E	1SX012A, 1SX062A
1DG01C	1Q966	CB-1e	C1E	1DG01KA
1DG014	1Q966	CB-1e	C1E	1DG01KA
1DG11T	1Q966	CB-1e	C1E	1DG01KA

1D001C	1Q966	CB-1e	C1E	1D001PA
1R113F	1Q966	CB-1e	C1E	1E51-F266
1SX25E	1Q966	CB-1e	C1E	1SX273A
1SX26B	1Q966	CB-1e	C1E	1SX219A
1SX29B	1Q966	CB-1e	C1E	1SX217A
1SX39C	1Q966	CB-1e	C1E	1SX217A
1VC20E	1Q966	CB-1e	C1E	2VC14YA
1VC21D	1Q966	CB-1e	C1E	2VC32YA
1VC21P	1Q966	CB-1e	C1E	2VC33YA
1VC21Q	1Q966	CB-1e	C1E	2VC36YA
1VC21R	1Q966	CB-1e	C1E	2VC14YA*
1VC22E	1Q966	CB-1e	C1E	2VC15YA*
1VC48N	1Q966	CB-1e	C1E	2VC21YA
1VC48D	1Q966	CB-1e	C1E	2VC24YA
1VC48P	1Q966	CB-1e	C1E	2VC27YA
1VC49M	1Q966	CB-1e	C1E	2VC39YA
1VC55E	1Q966	CB-1e	C1E	2VC39YA
1VC55N	1Q966	CB-1e	C1E	2VC39YA
1VC55D	1Q966	CB-1e	C1E	2VC39YA
1VC55P	1Q966	CB-1e	C1E	2VC39YA
1VD01E	1Q966	CB-1e	C1E	1KY-VD000*
1VD09J	1Q966	CB-1e	C1E	1TZ-VD001C, 1VD03YA
1VD16B	1Q966	CB-1e	C1E	1TIT-VD007*
1D077A	1Q967	CB-1e	K1E	1D001PA, 1D001PA
1D077B	1Q967	CB-1e	K1E	1LT-D0011*
1A937E	1Q968	CB-1e	P1E	2AP24E
1VC20B	1Q968	CB-1e	P1E	2VC14YA
1VC20C	1Q968	CB-1e	P1E	2VC13YA
1VC20D	1Q968	CB-1e	P1E	2VC12YA
1VC21B	1Q968	CB-1e	P1E	2VC32YA
1VC21C	1Q968	CB-1e	P1E	2VC33YA
1VC21D	1Q968	CB-1e	P1E	2VC36YA
1VC22B	1Q968	CB-1e	P1E	2VC17YA
1VC22C	1Q968	CB-1e	P1E	2VC16YA
1VC22D	1Q968	CB-1e	P1E	2VC15YA
1VC22F	1Q968	CB-1e	P1E	2VC18YA
1VC48B	1Q968	CB-1e	P1E	2VC21YA
1VC48C	1Q968	CB-1e	P1E	2VC24YA
1VC48D	1Q968	CB-1e	P1E	2VC27YA
1VC55B	1Q968	CB-1e	P1E	2FZ-VD003G, 2VC39YA
1VC20E	1Q968	CB-1e	P1E	2VC14YA
1VC21G	1Q969	CB-1e	C1E	2VC32YA, 33YA, 36YA
1VC21H	1Q969	CB-1e	C1E	2VC32YA
1VC21P	1Q969	CB-1e	C1E	2VC33YA
1VC21Q	1Q969	CB-1e	C1E	2VC36YA
1VC21R	1Q969	CB-1e	C1E	2VC14YA*
1VC22E	1Q969	CB-1e	C1E	2VC15YA*
1VC48E	1Q969	CB-1e	C1E	2VC21YA, 24YA, 27YA
1VC48N	1Q969	CB-1e	C1E	2VC21YA
1VC48D	1Q969	CB-1e	C1E	2VC24YA
1VC48P	1Q969	CB-1e	C1E	2VC27YA
1VC49M	1Q969	CB-1e	C1E	2VC39YA
1VC55E	1Q969	CB-1e	C1E	2VC39YA
1VC55N	1Q969	CB-1e	C1E	2VC39YA



1VC55C	10R69	CB-1e	C1E	0VC39YA
1VC55P	10R69	CB-1e	C1E	0VC39YA
1AP37-	10R72	CB-1e	P2E	0AP25E
1VC25B	10R72	CB-1e	P2E	0VC21YB
1VC25C	10R72	CB-1e	P2E	0VC24YB
1VC25D	10R72	CB-1e	P2E	0VC27YB
1VC26B	10R72	CB-1e	P2E	0VC14YB
1VC26C	10R72	CB-1e	P2E	0VC13YB
1VC26D	10R72	CB-1e	P2E	0VC12YB
1VC27B	10R72	CB-1e	P2E	0VC30YB
1VC27C	10R72	CB-1e	P2E	0VC33YB
1VC27D	10R72	CB-1e	P2E	0VC36YB
1VC28B	10R72	CB-1e	P2E	0VC17YB
1VC28C	10R72	CB-1e	P2E	0VC16YB
1VC28D	10R72	CB-1e	P2E	0VC15YB
1VC26F	10R72	CB-1e	P2E	0VC18YB
1VC56B	10R72	CB-1e	P2E	0VC39YB
1VC25G	10R73	CB-1e	C2E	0VC21YB, 24YB, 27YB
1VC25H	10R73	CB-1e	C2E	0VC21YB
1VC25P	10R73	CB-1e	C2E	0VC24YB
1VC25Q	10R73	CB-1e	C2E	0VC27YB
1VC26E	10R73	CB-1e	C2E	0VC12YB, 13YB, 14YB
1VC27G	10R73	CB-1e	C2E	0VC30YB, 33YB, 36YB
1VC27H	10R73	CB-1e	C2E	0VC30YB
1VC27P	10R73	CB-1e	C2E	0VC33YB
1VC27Q	10R73	CB-1e	C2E	0VC36YB
1VC27R	10R73	CB-1e	C2E	0VC12YB*
1VC28E	10R73	CB-1e	C2E	0VC15YB*
1VC50*	10R73	CB-1e	C2E	0VC39YB
1VC56E	10R73	CB-1e	C2E	0VC39YB
1VC56N	10R73	CB-1e	C2E	0VC39YB
1VC91A	10R75	CB-1e	K2E	0TE-VC136, 0VC15YB
1VC91B	10R75	CB-1e	K2E	0TTC-VC133, 0VC15YB
1VC91C	10R75	CB-1e	K2E	0TE-VC133, 0VC15YB
1VC91D	10R75	CB-1e	K2E	0TIC-VC133, 0VC12YB
1VC91E	10R75	CB-1e	K2E	0TE-VC134, 0VC13YB
1VC91F	10R75	CB-1e	K2E	0VC13YB
1VC91G	10R75	CB-1e	K2E	0TE-VC135, 0VC14YB
1VC91H	10R75	CB-1e	K2E	0TIC-VC135, 0VC14YB
1VC91J	10R75	CB-1e	K2E	0TE-VC137, 0VC16YB
1VC91K	10R75	CB-1e	K2E	0TTC-VC137, 0VC16YB
1VC91L	10R75	CB-1e	K2E	0TE-VC138, 0VC17YB
1VC91M	10R75	CB-1e	K2E	0VC17YB
1VC91N	10R75	CB-1e	K2E	0TE-VC139, 0VC18YB
1VC91P	10R75	CB-1e	K2E	0TIC-VC139, 0VC18YB
1VC91Q	10R75	CB-1e	K2E	0PDR-VC153
1VC95D	10R75	CB-1e	K2E	0PDT-VC121A*
1VC95E	10R75	CB-1e	K2E	0PDT-VC121B*
1VC95F	10R75	CB-1e	K2E	0PDY-VC121
1D078B	C9104	CB-1e	K2E	1LT-DD012
1D078B	C9104	CB-1e	K2E	1LT-DD012
1D078B	C9710	CB-1e	K2E	1LT-DD012
1D078B	C9710	CB-1e	K2E	1LT-DD012



CABLE NO.	ROUTE RT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1AP21K	10199E	CB-1F	C2E	1AP095A, 1DG01KB
1AP21L	10199E	CB-1F	C2E	1AP095A, 1DG01KB
1AP23L	10199E	CB-1F	C2E	1AP095C, 1DG01KB
1AP23M	10199E	CB-1F	C2E	1AP095C, 1DG01KB
1AP29Q	10199E	CB-1F	C2E	1AP095B
1CM07L	10199E	CB-1F	C2E	1TE-CM006, 1TE-C.012, 1TE-CM014
1DG21A	10199E	CB-1F	C2E	1DG01KB
1DG21B	10199E	CB-1F	C2E	1DG01KB
1DG21C	10199E	CB-1F	C2E	1DG01KB
1DG21F	10199E	CB-1F	C2E	1DG01KB
1DG21K	10199E	CB-1F	C2E	1SX01PB
1DG21M	10199E	CB-1F	C2E	1DG01KB, 1SX01PB
1DG31C	10199E	CB-1F	C2E	1DG01KB
1DG31D	10199E	CB-1F	C2E	1DG01KB
1DG31E	10199E	CB-1F	C2E	1DG01KB
1DG31F	10199E	CB-1F	C2E	1DG01KB
1DG31K	10199E	CB-1F	C2E	1DG01KB
1DG31R	10199E	CB-1F	C2E	1DG01KB
1DG31S	10199E	CB-1F	C2E	1DG01KB
1DG31T	10199E	CB-1F	C2E	1DG01KB
1D002B	10199E	CB-1F	C2E	1D001PB
1D002C	10199E	CB-1F	C2E	1D001PB
1H04A	10199E	CB-1F	C2E	1H13-P742B
1H04B	10199E	CB-1F	C2E	
1LV14D	10199E	CB-1F	C2E	1H13-P742E1KY-VD001, 1SX01PB
1LV14E	10199E	CB-1F	C2E	1H13-P742F, 1SX01PB
1LV14F	10199E	CB-1F	C2E	1H13-P742F
1LV14G	10199E	CB-1F	C2E	1H13-P732F
1LV14H	10199E	CB-1F	C2E	1H13-P731F, 1H13-P732F
1LV14J	10199E	CB-1F	C2E	1H13-P702A
1LV14K	10199E	CB-1F	C2E	1H13-P702A, 1LR-CM241
1LV14L	10199E	CB-1F	C2E	1H13-P801
1LV14M	10199E	CB-1F	C2E	1H13-P702A
1R119C	10199E	CB-1F	C2E	1E51-F004, 1E51-F025
1SX31C	10199E	CB-1F	C2E	1SX063B
1SX40C	10199E	CB-1F	C2E	1SX017B
1SX51F	10199E	CB-1F	C2E	1SX073B
1SX51Q	10199E	CB-1F	C2E	1SX076B
1SX52F	10199E	CB-1F	C2E	1SX107B
1SX54P	10199E	CB-1F	C2E	1SX073B, 1SX076B
1VC02C	10199E	CB-1F	C2E	0VC03CB
1VC45A	10199E	CB-1F	C2E	0CV00PB, 0VC03CB, 0VC12YB,
1VC45B	10199E	CB-1F	C2E	0KY-VC103
1VC45F	10199E	CB-1F	C2E	1SX076B, 1SX107B
1VC46C	10199E	CB-1F	C2E	0VC39YB
1VC46E	10199E	CB-1F	C2E	0VC21YB, 0VC24YB, 0VC27YB
1VC46F	10199E	CB-1F	C2E	0VC30YB, 0VC33YB, 0VC36YB
1VC46G	10199E	CB-1F	C2E	1KY-VC001, 1PDS-VD026, 1T1T-VD0
1VD02E	10199E	CB-1F	C2E	1VD02CB
1VD05B	10199E	CB-1F	C2E	1SX073B
1V532H	10199E	CB-1F	C2E	1SX193B
1VX20N	10199E	CB-1F	C2E	1D001PB

1D076A	10:99F	CB-1F	K2E	1LT-D0012
1D076B	10:99F	CB-1F	K2E	0PDR-VC153
1VC91G	10:99F	CB-1F	K2E	0PDY-VC121
1VC95F	10:99F	CB-1F	K2E	0PDY-VC121
1D076A	10R120	CB-1F	K2E	1D001PB
1D076B	10R120	CB-1F	K2E	1LT-D0012
1VC91G	10R120	CB-1F	K2E	0PDR-VC153
1VC95F	10R120	CB-1F	K2E	0PDY-VC121
1AP28Q	10R120	CB-1F	C1E	0AP05E, 1AP276EJ
1TP03A	10R120	CB-1F	C1E	1H13-P741B
1TP03B	10R120	CB-1F	C1E	1D00APA, 1H13-P741A, 1LT-D0011
1LV13D	10R120	CB-1F	C1E	1H13-P741A, APT-SX02B
1LV13E	10R120	CB-1F	C1E	1H13-P741A
1LV13F	10R120	CB-1F	C1E	1H13-P730E
1LV13G	10R120	CB-1F	C1E	1H13-P730E
1LV13H	10R120	CB-1F	C1E	1H13-P701F
1LV13J	10R120	CB-1F	C1E	1H13-P731F
1LV13K	10R120	CB-1F	C1E	1H13-P741B, 1KY-VD000, 1SX073A,
1LV12L	10R120	CB-1F	C1E	1H13-P701F
1SX23A	10R120	CB-1F	C1E	1B21-N807, 1B21-N810, 1B21-N814
1SX25E	10R120	CB-1F	C1E	1SX073A
1SX25V	10R120	CB-1F	C1E	1SX073A
1SX25X	10R120	CB-1F	C1E	1SX076A
1SX26B	10R120	CB-1F	C1E	1SX019A
1SX39B	10R120	CB-1F	C1E	1SX17A
1SX50K	10R120	CB-1F	C1E	1SX107A
1SX53P	10R120	CB-1F	C1E	1SX073A, 1SX076A
1VC01C	10R120	CB-1F	C1E	0VC03CA
1VC09J	10R120	CB-1F	C1E	0VC13CA, 1SX019A
1VC20E	10R120	CB-1F	C1E	0VC14YA
1VC21G	10R120	CB-1F	C1E	0VC30YA, 0VC33YA, 0VC36YA
1VC21D	10R120	CB-1F	C1E	0VC32YA
1VC21P	10R120	CB-1F	C1E	0VC33YA
1VC21Q	10R120	CB-1F	C1E	0VC36YA
1VC21R	10R120	CB-1F	C1E	0VC14YA, 0VC15YA, 0VC16YA,
1VC22E	10R120	CB-1F	C1E	0VC15YA, 0VC16YA, 0VC17YA,
1VC42A	10R120	CB-1F	C1E	0HS-VD007, 0VC00PA
1VC42B	10R120	CB-1F	C1E	0VC03CA, 0VC21YA, 0VC24YA*
1VC42C	10R120	CB-1F	C1E	0VC39YA
1VC42D	10R120	CB-1F	C1E	0HS-VD003B, 0VC21YA*
1VC42F	10R120	CB-1F	C1E	0HS-VD003A, 0ZL-VD003AA
1VC43A	10R120	CB-1F	C1E	1SX076A, 1SX107A
1VC43E	10R120	CB-1F	C1E	0VC30YA, 0VC33YA, 0VC36YA
1VC46E	10R120	CB-1F	C1E	0VC21YA, 0VC24YA, 0VC27YA
1VC48N	10R120	CB-1F	C1E	0VC21YA
1VC48D	10R120	CB-1F	C1E	0VC24YA
1VC48P	10R120	CB-1F	C1E	0VC27YA
1VC49M	10R120	CB-1F	C1E	0VC39YA
1VC55E	10R120	CB-1F	C1E	0VC39YA
1VC55N	10R120	CB-1F	C1E	0VC39YA
1VC55C	10R120	CB-1F	C1E	0VC39YA
1VC55P	10R120	CB-1F	C1E	0VC39YA
1VD18B	10R120	CB-1F	C1E	1TY-VD007, 1TY-VD007A*
1VC810	10R121	CB-1F	K1E	0TE-VC036, 0VC15YA

1VC81B	10R121	CB-1F	K1E	0TTC-VC036, 0VC15YA
1VC81D	10R121	CB-1F	K1E	0TE-VC033
1VC81F	10R121	CB-1F	K1E	0TE-VC034
1VC81H	10R121	CB-1F	K1E	0TE-VC035
1VC82A	10R121	CB-1F	K1E	0TE-VC037, 0VC16YA
1VC82E	10R121	CB-1F	K1E	0TE-VC039, 0VC18YA
1VC82G	10R121	CB-1F	K1E	0PDR-VC053, 0TTC-VC037*
1VC95A	10R121	CB-1F	K1E	0PDT-VC021A
1VC95B	10R121	CB-1F	K1E	0PDT-VC021B
1VC95C	10R121	CB-1F	K1E	0PDY-VC021
1AP08G	10R124	CB-1F	C1E	0AP05E, 1AP07EJ
1DC05B	10R124	CB-1F	C1E	1SX012A, 1SX062A
1DG01C	10R124	CB-1F	C1E	1DG01KA
1DG01K	10R124	CB-1F	C1E	1DG01KA
1DG11T	10R124	CB-1F	C1E	1DG01KA
1DG01C	10R124	CB-1F	C1E	1DG01PA
1H03A	10R124	CB-1F	C1E	1H13-P741B
1H03B	10R124	CB-1F	C1E	1D001PA, 1H13-P741A*
1LV13D	10R124	CB-1F	C1E	1H13-P741A, 1PT-SX02B
1LV13E	10R124	CB-1F	C1E	1H13-P741A
1LV13F	10R124	CB-1F	C1E	1H13-P730E
1LV13G	10R124	CB-1F	C1E	1H13-P730E
1LV13H	10R124	CB-1F	C1E	1H13-P701F
1LV13J	10R124	CB-1F	C1E	1H13-P731F
1LV13K	10R124	CB-1F	C1E	1H13-P741B, 1KY-VD080*
1LV13L	10R124	CB-1F	C1E	1H13-P701F
1R113F	10R124	CB-1F	C1E	1E51-F068
1SX25V	10R124	CB-1F	C1E	1SX073A
1SX25X	10R124	CB-1F	C1E	1SX076A
1SX39C	10R124	CB-1F	C1E	1SX017A
1SX52K	10R124	CB-1F	C1E	1SX107A
1SX53P	10R124	CB-1F	C1E	1SX073A, 1SX076A
1VC01C	10R124	CB-1F	C1E	0VC03CA
1VC09J	10R124	CB-1F	C1E	0VC13CA, 1SX019A
1VC21G	10R124	CB-1F	C1E	0VC30YA, 0VC33YA, 0VC36YA
1VC42A	10R124	CB-1F	C1E	0HS-VC007, 0VC06PA
1VC42B	10R124	CB-1F	C1E	0VC03CA, 0VC21YA, 0VC24YA*
1VC42C	10R124	CB-1F	C1E	0VC39YA
1VC42D	10R124	CB-1F	C1E	0HS-VC003B, 0VC21YA*
1VC42F	10R124	CB-1F	C1E	0HS-VC003A, 0ZL-VC003AA
1VC43A	10R124	CB-1F	C1E	1SX076A, 1SX107A
1VC43E	10R124	CB-1F	C1E	0VC30YA, 0VC33YA, 0VC36YA
1VC48E	10R124	CB-1F	C1E	0VC21YA, 0VC24YA, 0VC27YA
1VD01E	10R124	CB-1F	C1E	1KY-VD080, 1PDS-VD027*
1D077A	10R125	CB-1F	K1E	1D001PA, 1D001PA
1D077B	10R125	CB-1F	K1E	1LT-D0011
1NB66C	10R125	CB-1F	K1E	1B21-N001A
1RP75C	10R125	CB-1F	K1E	1B21-N078A
1VC81B	10R125	CB-1F	K1E	0TTC-VC036, 0VC15YA
1VC82G	10R125	CB-1F	K1E	0PDR-VC053, 0TTC-VC037*
1VC95C	10R125	CB-1F	K1E	0PDY-VC021
1D078A	10R50	CB-1F	K2E	1D001PB
1D078B	10R50	CB-1F	K2E	1LT-D0012
1VC91Q	10R50	CB-1F	K2E	0PDR-VC153

1VC95F	10950	CB-1F	K2E	QPDY-VC121
1AP29B	10960	CB-1F	P2E	1AP29EB
1AP34N	10960	CB-1F	P2E	QVC13CB, 1AP12E
1AP34V	10960	CB-1F	P2E	QVC13CB, 1AP12E
1AP34W	10960	CB-1F	P2E	QVC13CB, 1AP12E
1AP37D	10960	CB-1F	P2E	QAP25E, QAP57E
1AP28C	10950	CB-1F	P2E	1C71-S001B
1SX27A	10960	CB-1F	P2E	1SX219B
1SX40A	10960	CB-1F	P2E	1SX217B
1SX51D	10960	CB-1F	P2E	1SX273B
1VC25B	10960	CB-1F	P2E	QVC21YB
1VC25C	10960	CB-1F	P2E	QVC24YB
1VC25D	10960	CB-1F	P2E	QVC27YB
1VC26B	10960	CB-1F	P2E	QVC14YB
1VC26C	10960	CB-1F	P2E	QVC13YB
1VC26D	10960	CB-1F	P2E	QVC12YB
1VC27B	10960	CB-1F	P2E	QVC30YB
1VC27C	10960	CB-1F	P2E	QVC33YB
1VC27D	10960	CB-1F	P2E	QVC36YB
1VC28B	10960	CB-1F	P2E	QVC17YB
1VC28C	10960	CB-1F	P2E	QVC16YB
1VC28D	10960	CB-1F	P2E	QVC15YB
1VC28F	10960	CB-1F	P2E	QVC18YB
1VC56B	10960	CB-1F	P2E	QVC39YB
1AP29G	10961	CB-1F	C2E	1AP29EB
1P24A	10961	CB-1F	C2E	1H13-P742B
1P24B	10961	CB-1F	C2E	1DQ1PB, 1H13-P742B*
1LV14D	10961	CB-1F	C2E	1H13-P742E, 1KY-VD2B1*
1LV14E	10961	CB-1F	C2E	1H13-P742F, 1SX21PB
1LV14F	10961	CB-1F	C2E	1H13-P742F
1LV14B	10961	CB-1F	C2E	1H13-P732F
1LV14H	10961	CB-1F	C2E	1H13-P731F, 1H13-P732F
1LV14J	10961	CB-1F	C2E	1H13-P732A
1LV14K	10961	CB-1F	C2E	1H13-P702A, 1LR-C*241
1LV14L	10961	CB-1F	C2E	1H13-P621
1LV14Y	10961	CB-1F	C2E	1H13-P702A
1SX27B	10961	CB-1F	C2E	1SX219B
1SX40B	10961	CB-1F	C2E	1SX217B
1SX51E	10961	CB-1F	C2E	1SX273B
1SX51F	10961	CB-1F	C2E	1SX273B
1SX51G	10961	CB-1F	C2E	1SX276B
1SX52F	10961	CB-1F	C2E	1SX107B
1SX54D	10961	CB-1F	C2E	1SX273B, 1SX276B
1VC22C	10961	CB-1F	C2E	QVC23CB
1VC25G	10961	CB-1F	C2E	QVC21YB, QVC24YB, QVC27YB
1VC25H	10961	CB-1F	C2E	QVC21YB
1VC25P	10961	CB-1F	C2E	QVC24YB
1VC25Q	10961	CB-1F	C2E	QVC27YB
1VC26E	10961	CB-1F	C2E	QVC12YB, QVC13YB, QVC14YB
1VC27G	10961	CB-1F	C2E	QVC30YB, QVC33YB, QVC36YB
1VC27Q	10961	CB-1F	C2E	QVC30YB
1VC27P	10961	CB-1F	C2E	QVC33YB
1VC27Q	10961	CB-1F	C2E	QVC36YB
1VC27R	10961	CB-1F	C2E	QVC12YB, QVC13YB*

TABLE 4.2.4.5-4

1VC26E	10R61	CB-1F	C2E	0VC15YB, 0VC16YB, 0VC17YB*
1VC45A	10R61	CB-1F	C2E	0VC08PB
1VC45B	10R61	CB-1F	C2E	0VC03YB, 0VC12YB, 0VC13YB*
1VC45F	10R61	CB-1F	C2E	0VC21YB, 0VC24YB, 0VC27YB
1VC46C	10R61	CB-1F	C2E	1SX076B, 1SX107B
1VC46E	10R61	CB-1F	C2E	0VC39YB
1VC46F	10R61	CB-1F	C2E	0VC21YB, 0VC24YB, 0VC27YB
1VC46G	10R61	CB-1F	C2E	0VC30YB, 0VC33YB, 0VC36YB
1VC50M	10R61	CB-1F	C2E	0VC39YB
1VC56E	10R61	CB-1F	C2E	0VC39YB
1VC56N	10R61	CB-1F	C2E	0VC39YB
1VD18D	10R61	CB-1F	C2E	1TIT-VD008, 1TY-VD008A*
1VX28N	10R61	CB-1F	C2E	1SX193B
1VC91L	10R62	CB-1F	K2E	0TE-VC13B, 0VC17YB
1VC91Q	10R62	CB-1F	K2E	0PDR-VC153
1VC95D	10R62	CB-1F	K2E	0PDT-VC121A, 0PDY-VC121
1VC95E	10R62	CB-1F	K2E	0PDT-VC121B, 0PDY-VC121
1VC95F	10R62	CB-1F	K2E	0PDY-VC121
NR66C	10R97	CB-1F	K1E	1B21-N281A
1R75C	10R97	CB-1F	K1E	1B21-N278A
				1TR-C*018, 1TY0C*010
				1SX073B, 1SX076B, 1SX107B
				0VC13YB, 0VC14YB, 0VC15YB,
				0VC16YB, 0VC17YB, 0VC18YB
				1SX01PA, 1TE-C*007
				1SX076A, 1SX107A
				0VC17YA, 0VC18YA, 0VC21YA,
				0VC24YA, 0VC27YA, 0VC30YA,
				0VC33YA, 0VCF36YA
				0VC18YA

CABLE NO.	ROUTE FT.	ZONE	SEQ CODE	ASSOC. EQUIP.
1NB65C	003222	CB-1g		1B21-N081B
1R479C	003222	CB-1g		1E12-N015C
1RP76C	003222	CB-1g		1B21-N078B
1AP34I	1C03001	CB-1g		DAP05E
1AP28U	1C03002	CB-1g		DAP05E
1AP28T	002999	CB-1g		DAP05E
1AP22C	00730	CB-3a,e,f		1C71-S001B
		CB-4		
		CB-5a,c		
1AP22H	00741	CB-3a,e,f		1C71-S001B
		CB-4		
		CB-5a,c		
1AP21C	00734	CB-3a,e,f		1C71-S001A
		CB-4		
		CB-5a,c		
1AP21H	00735	CB-3a,e,f		1C71-S001A
		CB-4		
		CB-5a,c		

CABLE NO.	ROUTE PT.	ZONE	SEG CODE	ASSOC. EQUIP.
1AP26E	10R65	CB-11	P1E	0AP05E, 1AP07E1
1AP34L	10R65	CB-11	P1E	0AP05E, 0VC13CA*
1AP34T	10R65	CB-11	P1E	0AP05E, 1AP11E
1AP34X	10R65	CB-11	P1E	0AP05E, 0VC13CA*
1AP37B	10R65	CB-11	P1E	0AP24E, 0AP56E
1AP01C	10R65	CB-11	P1R	1C71-5001A
1AP01H	10R65	CB-11	P1E	1C71-5001A
1SX25D	10R65	CB-11	P1E	1SX073A
1SX26A	10R65	CB-11	P1E	1SX019A
1SX39A	10R65	CB-11	P1E	1SX017A
1VC20B	10R65	CB-11	P1E	0VC14YA
1VC20C	10R65	CB-11	P1E	0VC13YA
1VC20D	10R65	CB-11	P1E	0VC12YA
1VC21B	10R65	CB-11	P1E	0VC30YA
1VC21C	10R65	CB-11	P1E	0VC33YA
1VC21D	10R65	CB-11	P1E	0VC36YA
1VC22B	10R65	CB-11	P1E	0VC17YA
1VC22C	10R65	CB-11	P1E	0VC16YA
1VC22D	10R65	CB-11	P1E	0VC15YA
1VC22F	10R65	CB-11	P1E	0VC18YA
1VC46B	10R65	CB-11	P1E	0VC21YA
1VC46C	10R65	CB-11	P1E	0VC24YA
1VC46D	10R65	CB-11	P1E	0VC27YA
1VC55B	10R65	CB-11	P1E	0FZ-VC0036*
1VC55D	001011	CB-11	C1E	0VC39YA
1VC52H	001024	CB-11	C1E	0VC39YA
1VC52H	001026	CB-11	C1E	0VC39YA
1VC51P	001038	CB-11	C2E	0VC39YB
1VC51P	001039	CB-11	C2E	0VC39YB
1VC01A	001061	CB-11	P1E	0VC03CA
1AP26E	001127	CB-11	P1E	0AP05E, 1AP07E1
1AP29B	001143	CB-11	P2E	1AP09EB
1VC81A	001213	CB-11	K1E	0TE-VC036, 0VC15YA
1VC81B	001213	CB-11	K1E	0TTC-VC036, 0VC15YA
1VC81D	001213	CB-11	K1E	0TE-VC033
1VC81F	001213	CB-11	K1E	0TE-VC034
1VC81H	001213	CB-11	K1E	0TE-1C035
1VC82A	001213	CB-11	K1E	0TE-VC037, 0VC16YA
1VC82C	001213	CB-11	K1E	0TE-VC038, 0VC17YA
1VC82E	001213	CB-11	K1E	0TE-VC039, 0VC18YA
1VC82G	001213	CB-11	K1E	0PDR-VC053*
1VC95A	001213	CB-11	K1E	0PDT-VC021A
1VC95B	001213	CB-11	K1E	0PDT-VC021B
1VC95C	001213	CB-11	K1E	0PDY-VC021
1AP59A	001237	CB-11	C1E	0AP05E
1SX26A	001243	CB-11	P1E	1SX019A
1VC56A	001245	CB-11	P1E	0VC13CA
1VC09C	001246	CB-11	C1E	0VC13CA
1VC09D	001246	CB-11	C1E	0VC13CA
1VC09G	001246	CB-11	C1E	0VC13CA, 1SX019A
1VC09H	001246	CB-11	C1E	0VC13CA
1VC09J	001246	CB-11	C1E	0VC13CA, 1SX019A



1VD09K	Q01246	CB-11	C1E	0VC13CA
1VC56B	Q01246	CB-11	C1E	0VC13CA
1SX39B	Q01254	CB-11	C1E	1SX017A
1SX39A	Q01255	CB-11	P1E	1SX017A
1VD07A	Q01256	CB-11	P1E	0VC08PA
1VD26A	Q01275	CB-11	P2E	0VC06PB
1VC10C	Q01278	CB-11	C2E	0VC13CB
1VC10D	Q01278	CB-11	C2E	0VC13CB
1VC10H	Q01278	CB-11	C2E	0VC13CB
1VC10K	Q01278	CB-11	C2E	0VC13CB
1VC59B	Q01278	CB-11	C2E	0VC13CB
1SX40A	Q01282	CB-11	P2E	1SX017B
1SX40B	Q01283	CB-11	C2E	1SX017B
1SX50D	Q01292	CB-11	P1E	1SX107A
1SX50E	Q01293	CB-11	C1E	1SX107A
1SX52E	Q01316	CB-11	C2E	1SX107B
1SX52D	Q01317	CB-11	P2E	1SX107B
1SX52D	Q01348	CB-11	P2E	1SX107B
1SX52E	Q01349	CB-11	C2E	1SX107B
1VC09E	Q01395	CB-11	C1E	0F1S-VC006*
1SX27A	Q01415	CB-11	P2E	1SX019B
1VC96B	Q01416	CB-11	K2E	1SX019A
1VC81A	Q01440	CB-11	K1E	0TE-VC036, 0VC15YA
1VC81B	Q01440	CB-11	K1E	0TTC-VC036, 0VC15YA
1VC81D	Q01440	CB-11	K1E	0TE-VC033
1VC81F	Q01440	CB-11	K1E	0TE-VC034
1VC81H	Q01440	CB-11	K1E	0TE-VC035
1VC82A	Q01440	CB-11	K1E	0TE-VC037, 0VC16YA
1VC82C	Q01442	CB-11	K1E	0TE-VC038, 0VC17YA
1VC82E	Q01442	CB-11	K1E	0TE-VC039, 0VC18YA
1VC82B	Q01442	CB-11	K1E	0PDR-VC053*
1VC95A	Q01442	CB-11	K1E	0PDT-VC021A
1VC95B	Q01442	CB-11	K1E	0PDT-VC021B
1VC95C	Q01442	CB-11	K1E	0PDY-VC021
1VC81A	Q01441	CB-11	K1E	0TE-VC036, 0VC15YA
1VC81B	Q01441	CB-11	K1E	0TTC-VC036, 0VC15YA
1VC81D	Q01441	CB-11	K1E	0TE-VC033
1VC81F	Q01441	CB-11	K1E	0TE-VC034
1VC81H	Q01441	CB-11	K1E	0TE-VC035
1VC82A	Q01441	CB-11	K1E	0TE-VC037, 0VC16YA
1VC82C	Q01441	CB-11	K1E	0TE-VC038, 0VC17YA
1VC82E	Q01441	CB-11	K1E	0TE-VC039, 0VC18YA
1VC82B	Q01441	CB-11	K1E	0PDR-VC053*
1VC92A	Q01441	CB-11	K1E	0PDT-VC021A
1VC95B	Q01441	CB-11	K1E	0PDT-VC021B
1VC95C	Q01441	CB-11	K1E	0PDY-VC021
1VC61C	Q01445	CB-11	C1E	1SX017A
1AP60A	Q01451	CB-11	C2E	0AP06E
1VC08C	Q01469	CB-11	C2E	0TC-VC119A
1VC08E	Q01469	CB-11	C2E	0TS-VC119B
1VC07C	Q01470	CB-11	C1E	0VC13CA
1VC07E	Q01470	CB-11	C1E	0VC13CA
1VC91B	Q01477	CB-11	K2E	0TTC-VC136, 0VC15YB
1VC91D	Q01477	CB-11	K2E	0TTC-VC133, 0VC12YB

1VC91F	D01477	CB-11	K2E	0VC13YB
1VC91H	D01477	CB-11	K2E	0T1D-VC135, 0VC14YB
1VC91H	D01477	CB-11	K2E	0TTC-VC137, 0VC16YB
1VC91M	D01477	CB-11	K2E	0VC17YB
1VC91P	D01477	CB-11	K2E	0T1D-VC139, 0VC16YB
1VC61B	D01479	CB-11	D2E	1SX107B
1VC61C	D01656	CB-11	D1E	1SX107A
1VC09F	D02350	CB-11	D1E	0VC13CA
1VC96A	D02352	CB-11	K1E	1SX019A
1VC61H	D02361	CB-11	D2E	1SX076B
1VC61H	D02362	CB-11	D2E	1SX076B
1VC61D	D02369	CB-11	D1E	1SX076A
1VC51R	D02380	CB-11	D1E	0VC39YA
1VC52R	D02381	CB-11	D2E	0VC39YB
1VC07C	D02793	CB-11	D1E	0VC13CA
1VC09G	D02810	CB-11	D1E	0VC13CA, 1SX019A
1VC55P	D02814	CB-11	D1E	0VC39YA
1VC52B	D03150	CB-11	D1E	0VC39YA
1VC51G	D03151	CB-11	D2E	0VC39YB
1VC51P	D03151	CB-11	D2E	0VC39YB
1VC81B	D03153	CB-11	K1E	0TTC-VC036, 0VC15YA
1VC82G	D03153	CB-11	K1E	0PDR-VC053*
1VC95A	D03153	CB-11	K1E	0PDT-VC021A
1VC95B	D03153	CB-11	K1E	0PDT-VC021B
1VC95C	D03153	CB-11	K1E	0PDY-VC021
1VC81A	D03154	CB-11	K1E	0TE-VC036, 0VC15YA
1VC81D	D03154	CB-11	K1E	0TE-VC033
1VC81F	D03154	CB-11	K1E	0TE-VC034
1VC81H	D03154	CB-11	K1E	0TE-VC035
1VC82A	D03154	CB-11	K1E	0TE-VC037, 0VC16YA
1VC82E	D03154	CB-11	K1E	0TE-VC039, 0VC16YA
1VC01B	10644B	CB-11	D1E	0VC03CA, 0VC08PA*
1VC07C	10644B	CB-11	D1E	0VC13CA
1VC07D	10644B	CB-11	D1E	0VC08PA, 0VC13CA
1VC07E	10644B	CB-11	D1E	0VC13CA
1VC07F	10644B	CB-11	D1E	0KY-VC360, 0VC08PA*
1VC09B	10644B	CB-11	D1E	0VC13CA, 1SX019A
1VC09D	10644B	CB-11	D1E	0VC13CA
1VC09E	10644B	CB-11	D1E	0F1S-VC000*
1VC09F	10644B	CB-11	D1E	0VC13CA
1VC09H	10644B	CB-11	D1E	0VC13CA
1VC20E	10644B	CB-11	D1E	0VC14YA
1VC21E	10644B	CB-11	D1E	0KY-VC003, 0VC30YA*
1VC21G	10644B	CB-11	D1E	0VC30YA, 33YA, 36YA
1VC22E	10644B	CB-11	D1E	0VC15YA*
1VC42A	10644B	CB-11	D1E	0HS-VC007, 0VC08PA
1VC42B	10644B	CB-11	D1E	0VC03CA, 0VC21YA*
1VC42C	10644B	CB-11	D1E	0VC39YA
1VC42D	10644B	CB-11	D1E	0HS-VC003B, 0VC21YA*
1VC42F	10644B	CB-11	D1E	0HS-VC003A*
1VC43A	10644B	CB-11	D1E	1SX076A, 1SX107A
1VC42E	10644B	CB-11	D1E	0VC30YA, 33YA, 36YA
1VC44A	10644B	CB-11	D1E	0PDT-VC021A*
1VC40E	10644B	CB-11	D1E	0VC21YA, 24YA, 27YA

1VC48F	10644B	CB-11	C1E	0VC39YA
1VC51R	10644B	CB-11	C1E	0VC39YA
1VC52B	10644B	CB-11	C1E	0VC39YA
1VC55E	10644B	CB-11	C1E	0VC39YA
1VC57P	10644B	CB-11	C1E	0PDT-VC021A
1VC57Q	10644B	CB-11	C1E	0PDT-VC021B
1VC61C	10644B	CB-11	C1E	1SX107A
1VC61D	10644B	CB-11	C1E	1SX107A
1LV14D	10R61	CB-11	C2E	1-13-P742E*
1LV14E	10R61	CB-11	C2E	1-13-P742F, 1SX101PB
1LV14F	10R61	CB-11	C2E	1-13-P742F
1LV14G	10R61	CB-11	C2E	1-13-P732F
1LV14H	10R61	CB-11	C2E	1-13-P731F, 1-13-P732
1LV14J	10R61	CB-11	C2E	1-13-P702A
1LV14K	10R61	CB-11	C2E	1-13-P702A, 1-13-C*241
1LV14L	10R61	CB-11	C2E	1-13-P801
1LV14M	10R61	CB-11	C2E	1-13-P702A
1SX127E	10R61	CB-11	C2E	1SX1019B
1SX40B	10R61	CB-11	C2E	1SX1017B
1SX51E	10R61	CB-11	C2E	1SX1073B
1SX51F	10R61	CB-11	C2E	1SX1073B
1SX51G	10R61	CB-11	C2E	1SX1076B
1SX52F	10R61	CB-11	C2E	1SX107E
1SX54P	10R61	CB-11	C2E	1SX1073B, 1SX1076B
1VC02C	10R61	CB-11	C2E	0VC03CB
1VC25B	10R61	CB-11	C2E	0VC21YB, 24YB, 27YB
1VC25D	10R61	CB-11	C2E	0VC21YB
1VC25P	10R61	CB-11	C2E	0VC24YB
1VC25Q	10R61	CB-11	C2E	0VC27YB
1VC26E	10R61	CB-11	C2E	0VC12YB, 13YB, 14YB
1VC27B	10R61	CB-11	C2E	0VC30YB, 33YB, 36YB
1VC27D	10R61	CB-11	C2E	0VC30YB
1VC27P	10R61	CB-11	C2E	0VC33YB
1VC27Q	10R61	CB-11	C2E	0VC36YB
1VC27R	10R61	CB-11	C2E	0VC12YB*
VC28E	10R61	CB-11	C2E	0VC15YB*
1VC45A	10R61	CB-11	C2E	0VC08PB
1VC45B	10R61	CB-11	C2E	0VC03CB*
1AP29B	10R60	CB-11	P2E	1AP09EB
1AP34N	10R60	CB-11	P2E	0VC13CB, 1AP12E
1AP34V	10R60	CB-11	P2E	0VC13CB, 1AP12E
1AP34W	10R60	CB-11	P2E	000VC13CB, 1AP12E
1AP37D	10R60	CB-11	P2E	0AP25E, 0AP57E
1AP02C	10R60	CB-11	P2R	1C71-S001B
1SX127A	10R60	CB-11	P2E	1SX1019B
1SX40A	10R60	CB-11	P2E	1SX1017B
1SX51D	10R60	CB-11	P2E	1SX1073B
1VC25B	10R60	CB-11	P2E	0VC21YB
1VC25C	10R60	CB-11	P2E	0VC24YB
1VC25D	10R60	CB-11	P2E	0VC27YB
1VC26B	10R60	CB-11	P2E	0VC14YB
1VC26C	10R60	CB-11	P2E	0VC13YB
1VC26D	10R60	CB-11	P2E	0VC12YB
1VC27B	10R60	CB-11	P2E	0VC30YB

1VC27C	10R60	CB-11	P2E	0VC33YB
1VC27D	10R60	CB-11	P2E	0VC36YB
1VC28E	10R60	CB-11	P2E	0VC17YB
1VC28C	10R60	CB-11	P2E	0VC16YB
1VC28D	10R60	CB-11	P2E	0VC15YB
1VC28F	10R60	CB-11	P2E	0VC18YB
1VC56B	10R60	CB-11	P2E	0VC39YB
1AP29D	10R61	CB-11	C2E	1AP29EB
1IP24A	10R61	CB-11	C2E	1-13-P742B
1IP24B	10R61	CB-11	C2E	1D0019B, 1-13-P742B*
1VC45F	10R61	CB-11	C2E	0VC21YB, 24YB, 27YB
1VC46C	10R61	CB-11	C2E	1SX075B, 1SX107B
1VC46E	10R61	CB-11	C2E	0VC39YB
1VC46F	10R61	CB-11	C2E	0VC21YB, 24YB, 27YB
1VC46G	10R61	CB-11	C2E	0VC30YB, 33YB, 36YB
1VC50M	10R61	CB-11	C2E	0VC39YB
1VC56E	10R61	CB-11	C2E	0VC39YB
1VC56N	10R61	CB-11	C2E	0VC39YB
1VD18D	10R61	CB-11	C2E	1T1T-VD000B*
1VX28N	10R61	CB-11	C2E	1SX193B
1VC91L	10R62	CB-11	K2E	0TE-VC13B, 0VC17YB
1VC91D	10R62	CB-11	K2E	0PDR-VC153
1VC95D	10R62	CB-11	K2E	0PDT-VC121A*
1VC95E	10R62	CB-11	K2E	0PDT-VC121B*
1VC95F	10R62	CB-11	K2E	0PDY-VC121
1AP28D	10R120	CB-11	C1E	0AP28E, 1AP27E*
1IP23A	10R120	CB-11	C1E	1-13-P741B
1IP23B	10R120	CB-11	C1E	1D0019A*
1LV13D	10R120	CB-11	C1E	1-13-P741A, 1FT-5X02B
1LV13E	10R120	CB-11	C1E	1-13-P741A
1LV13F	10R120	CB-11	C1E	1-13-P730E
1LV13G	10R120	CB-11	C1E	1-13-P730E
1LV13H	10R120	CB-11	C1E	1-13-P701F
1LV13J	10R120	CB-11	C1E	1-13-P731F
1LV13K	10R120	CB-11	C1E	1-13-P741B*
1LV13L	10R120	CB-11	C1E	1-13-P701F
1MS23A	10R120	CB-11	C1E	1B21-NB07*
1SX25E	10R120	CB-11	C1E	1SX073A
1SX25V	10R120	CB-11	C1E	1SX073A
1SX25X	10R120	CB-11	C1E	1SX076A
1SX26B	10R120	CB-11	C1E	1SX019A
1SX39B	10R120	CB-11	C1E	1SX017A
1SX50K	10R120	CB-11	C1E	1SX107A
1SX53P	10R120	CB-11	C1E	1SX073A, 1SX076A
1VC01C	10R120	CB-11	C1E	0VC13CA
1VC09J	10R120	CB-11	C1E	0VC13CA, 1SX019A
1VC20E	10R120	CB-11	C1E	0VC14YA
1VC21B	10R120	CB-11	C1E	0VC30YA, 33YA, 36YA
1VC21D	10R120	CB-11	C1E	0VC30YA
1VC21P	10R120	CB-11	C1E	0VC33YA
1VC21Q	10R120	CB-11	C1E	0VC36YA
1VC21R	10R120	CB-11	C1E	0VC14YA*
1VC22E	10R120	CB-11	C1E	0VC15YA*
1VC42A	10R120	CB-11	C1E	0-9-VC007, 0VC002A

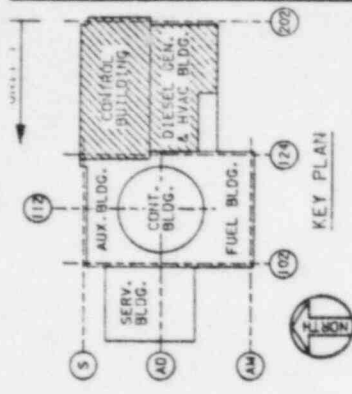
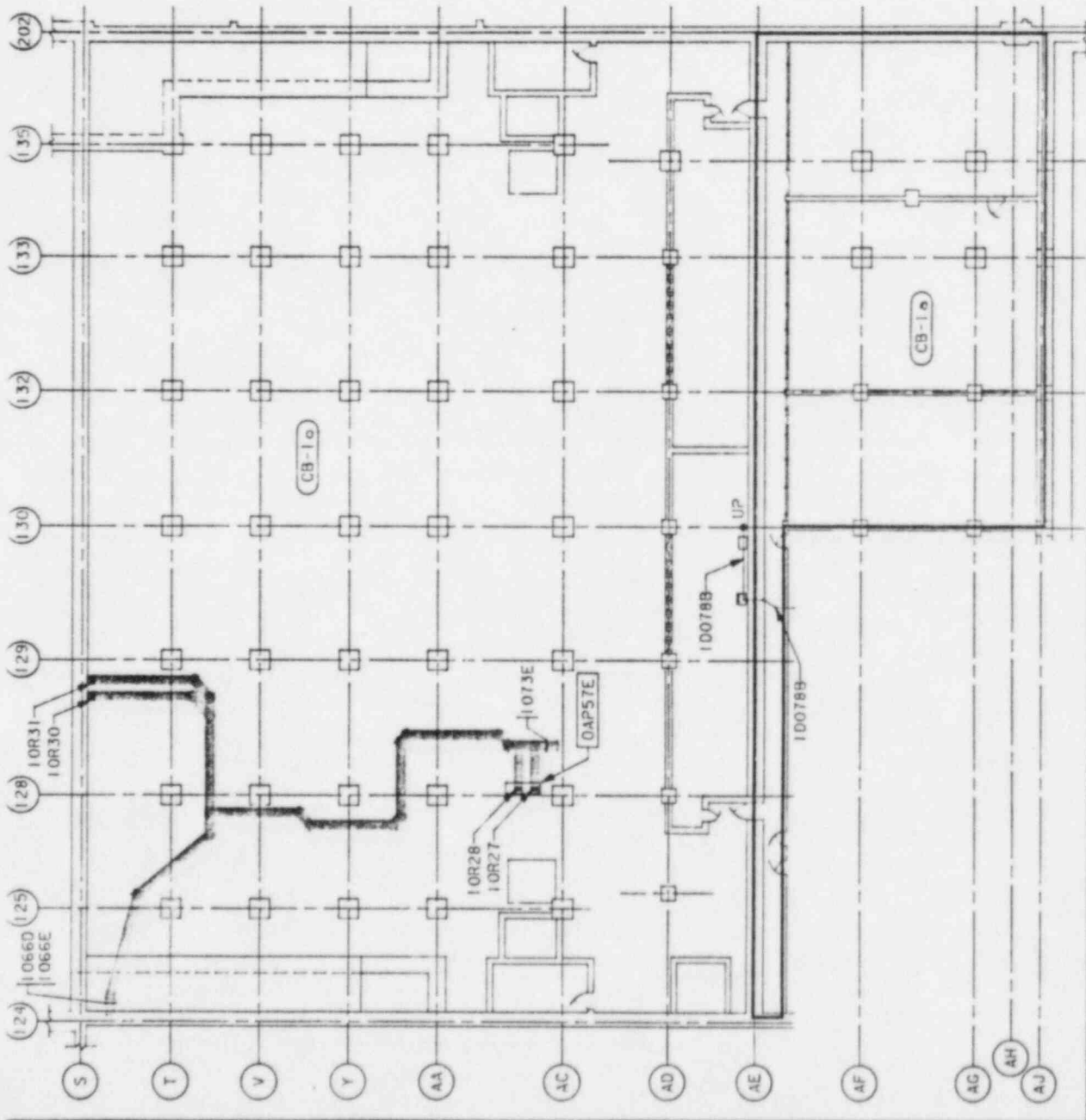
1VC42B	10R120	CB-11	D1E	0VC030A*
1VC42C	10R120	CB-11	D1E	0VC039A
1VC42D	10R120	CB-11	D1E	0-5-VC003B*
1VC42F	10R120	CB-11	D1E	0-5-VC003A*
1VC43A	10R120	CB-11	D1E	1SX076A, 1SX107A
1VC43E	10R120	CB-11	D1E	0VC00YA, 33YA, 36YA
1VC48E	10R120	CB-11	D1E	0VC01YA, 24YA, 27YA
1VC48N	10R120	CB-11	D1E	0VC01YA
1VC48D	10R120	CB-11	D1E	0VC04YA
1VC48P	10R120	CB-11	D1E	0VC07YA
1VC49M	10R120	CB-11	D1E	0VC039A
1VC55E	10R120	CB-11	D1E	0VC039A
1VC55N	10R120	CB-11	D1E	0VC039A
1VC55D	10R120	CB-11	D1E	0VC039A
1VC55P	10R120	CB-11	D1E	0VC039A
1VD18B	10R120	CB-11	D1E	1T1T-VD007*
1VC81A	10R121	CB-11	K1E	0TE-VC036, 0VC15YA
1VC81B	10R121	CB-11	K1E	0TTC-VC036, 0VC15YA
1VC81D	10R121	CB-11	K1E	0TE-VC033
1VC81F	10R121	CB-11	K1E	0TE-VC034
1VC81H	10R121	CB-11	K1E	0TE-VC035
1VC82A	10R121	CB-11	K1E	0TE-VC037, 0VC16YA
1VC82E	10R121	CB-11	K1E	0TE-VC039, 0VC18YA
1VC82B	10R121	CB-11	K1E	0PDR-VD053*
1VC95A	10R121	CB-11	K1E	0PDT-VC021A
1VC95B	10R121	CB-11	K1E	0PDT-VC021B
1VC95C	10R121	CB-11	K1E	0PDY-VC021
1SX51E	10R168	CB-11	D2E	1SX073B
1SX51F	10R168	CB-11	D2E	1SX073B
1SX51P	10R168	CB-11	D2E	1SX076B
1SX51Q	10R168	CB-11	D2E	1SX076B
1SX52E	10R168	CB-11	D2E	1SX107B
1SX52F	10R168	CB-11	D2E	1SX107B
1SX54E	10R168	CB-11	D2E	1SX013B, 1SX107B
1SX54F	10R168	CB-11	D2E	1SX076B
1SX54M	10R168	CB-11	D2E	1SX107B
1SX54P	10R168	CB-11	D2E	1SX073B, 1SX076B
1VC08D	10R168	CB-11	D2E	0VC08PB, 0VC13CB
1VC08E	10R168	CB-11	D2E	0TS-VC119B
1VX28N	10R168	CB-11	D2E	1SX193B
1AP37C	10R189	CB-11	P2E	0AP55EA
1AP37E	10R189	CB-11	P2E	0AP55EB
1SX51D	10R189	CB-11	P2E	1SX073B
1SX51N	10R189	CB-11	P2E	1SX076B
1SX52D	10R189	CB-11	P2E	1SX107B
1VC08A	10R189	CB-11	P2E	0VC08PB
1AP29G	10R190	CB-11	D2E	1AP09EB
1AP60A	10R190	CB-11	D2E	0AP06E
1VC02B	10R190	CB-11	D2E	0VC03CB*
1VC02C	10R190	CB-11	D2E	0VC03CB
1VC10E	10R190	CB-11	D2E	0VC13CB, 1SX019B
1VC10C	10R190	CB-11	D2E	0VC13CB
1VC10H	10R190	CB-11	D2E	0VC13CB
1AP34N	10R191	CB-11	P2E	0VC13CB, 1AP12E

1AP34V	10R191	CB-11	P2E	0VC13CB, 1AP12E
1AP34W	10R191	CB-11	P2E	0VC13CB, 1AP12E
1AP37C	10R191	CB-11	P2E	0AP55EA
1AP37D	10R191	CB-11	P2E	0AP25E, 0AP57E
1VC22A	10R191	CB-11	P2E	0VC03CB
1VC13A	10R191	CB-11	C2E	0VC13CB
1IP04A	10R196	CB-11	C2E	1H13-P742B
1IP04B	10R196	CB-11	C2E	1D0010B*
1LV14D	10R196	CB-11	C2E	1H13-P742E*
1LV14E	10R196	CB-11	C2E	1H13-P742F, 1SX210F
1LV14F	10R196	CB-11	C2E	1H13-P742F
1LV14G	10R196	CB-11	C2E	1H13-P732F
1LV14H	10R196	CB-11	C2E	1H13-P731F, 1H13-P732
1LV14J	10R196	CB-11	C2E	1H13-P702A
1LV14K	10R196	CB-11	C2E	1H13-P702A, 1LR-C*241
1LV14L	10R196	CB-11	C2E	1H13-P001
1LV14M	10R196	CB-11	C2E	1H13-P702A
1SX54E	10R196	CB-11	C2E	1SX073B, 1SX107B
1SX54F	10R196	CB-11	C2E	1SX076B
1SX54*	10R196	CB-11	C2E	1SX107B
1VC10J	10R196	CB-11	C2E	0VC13CB, 1SX019B
1VC27R	10R196	CB-11	C2E	0VC12VB*
1VC47A	10R196	CB-11	C2E	0PDY-VC121*
1VC50M	10R196	CB-11	C2E	0VC39VB
1VC59B	10R196	CB-11	C2E	0VC13CB
1VD18D	10R196	CB-11	C2E	1TIT-VD008*
1AP37F	10R197	CB-11	P2E	0AP55EB
1AP02H	10R197	CB-11	P2R	1C71-S001B
1VC59A	10R197	CB-11	P2E	0VC13CB
1IP03A	10R198	CB-11	C1E	1H13-P741B
1IP03B	10R198	CB-11	C1E	1D0010A*
1LV13D	10R198	CB-11	C1E	1H13-P741A, 1PT-SX02B
1LV13E	10R198	CB-11	C1E	1H13-P741A
1LV13F	10R198	CB-11	C1E	1H13-P730E
1LV13G	10R198	CB-11	C1E	1H13-P730E
1LV13H	10R198	CB-11	C1E	1H13-P701F
1LV13J	10R198	CB-11	C1E	1H13-P731F
1LV13K	10R198	CB-11	C1E	1H13-P741B*
1LV13L	10R198	CB-11	C1E	1H13-P701F
1M523A	10R198	CB-11	C1E	1B21-N007*
1SX53E	10R198	CB-11	C1E	1SX107A
1SX53F	10R198	CB-11	C1E	1SX073A, 1SX107A
1SX53G	10R198	CB-11	C1E	1SX076A
1VC21R	10R198	CB-11	C1E	0VC14YA*
1VC44A	10R198	CB-11	C1E	0PDT-VC021A, B*
1VC49M	10R198	CB-11	C1E	0VC39YA
1VC58B	10R198	CB-11	C1E	0VC13CA
1VD18B	10R198	CB-11	C1E	1TIT-VD007*
1AP27E	10R199	CB-11	P1E	0AP54EA
1AP01H	10R199	CB-11	P1R	1C71-S001A
1VC58A	10R199	CB-11	P1E	0VC13CA
1SX25E	10R200	CB-11	C1E	1SX073A
1SX25F	10R200	CB-11	C1E	1SX076A
1SX25V	10R200	CB-11	C1E	1SX073A



1SX25X	10R208	CB-11	C1E	1SX076A
1SX50E	10R208	CB-11	C1E	1SX107A
1SX504	10R208	CB-11	C1E	1SX107A
1SX53E	10R208	CB-11	C1E	1SX107A
1SX53F	10R208	CB-11	C1E	1SX073A, 1SX107A
1SX53G	10R208	CB-11	C1E	1SX076A
1SX53P	10R208	CB-11	C1E	1SX073A, 1SX076A
1VC07D	10R208	CB-11	C1E	0VC08PA, 0VC13CA
1VC07F	10R208	CB-11	C1E	04Y-VC360*
1AP37A	10R209	CB-11	P1E	0AP54EA
1AP37E	10R209	CB-11	P1E	0AP54EA
1SX25D	10R209	CB-11	P1E	1SX073A
1SX25N	10R209	CB-11	P1E	1SX076A
1SX50D	10R209	CB-11	P1E	1SX107A
1VC07A	10R209	CB-11	P1E	0VC08PA
1AP34L	10R210	CB-11	P1E	0AP05E*
1AP34T	10R210	CB-11	P1E	0AP05E, 1AP11E
1AP34X	10R210	CB-11	P1E	0AP05E*
1AP37A	10R210	CB-11	P1E	0AP54EA
1AP37E	10R210	CB-11	P1E	0AP24E, 0AP56E
1VC01A	10R210	CB-11	P1E	0VC03CA
1VC09A	10R210	CB-11	P1E	0VC13CA
1AP08Q	10R211	CB-11	C1E	0AP05E, 1AP07EJ
1AP59A	10R211	CB-11	C1E	0AP05E
1VC01B	10R211	CB-11	C1E	0VC03CA*
1VC01C	10R211	CB-11	C1E	0VC03CA
1VC09B	10R211	CB-11	C1E	0VC13CA, 1SX019A
1VC09C	10R211	CB-11	C1E	0VC13CA
1VC09H	10R211	CB-11	C1E	0VC13CA
1VC91A	10R75	CB-11	K2E	0TE-VC136, 0VC15YB
1VC91B	10R75	CB-11	K2E	0TTC-VC136, 0VC15YB
1VC91C	10R75	CB-11	K2E	0TE-VC133, 0VC12YB
1VC91D	10R75	CB-11	K2E	0TIC-VC133, 0VC12YB
1VC91E	10R75	CB-11	K2E	0TE-VC134, 0VC13YB
1VC91F	10R75	CB-11	K2E	0VC13YB
1VC91G	10R75	CB-11	K2E	0TE-VC135, 0VC14YB
1VC91H	10R75	CB-11	K2E	0TIC-VC135, 0VC14YB
1VC91J	10R75	CB-11	K2E	0TE-VC137, 0VC16YB
1VC91K	10R75	CB-11	K2E	0TTC-VC137, 0VC16YB
1VC91L	10R75	CB-11	K2E	0TE-VC138, 0VC17YB
1VC91M	10R75	CB-11	K2E	0VC17YB
1VC91N	10R75	CB-11	K2E	0TE-VC139, 0VC18YB
1VC91P	10R75	CB-11	K2E	0TIC-VC139, 0VC18YB
1VC91Q	10R75	CB-11	K2E	0PDR-VC153
1VC95D	10R75	CB-11	K2E	0PDT-VC121A*
1VC95E	10R75	CB-11	K2E	0PDT-VC121B*
1VC95F	10R75	CB-11	K2E	0PDY-VC121

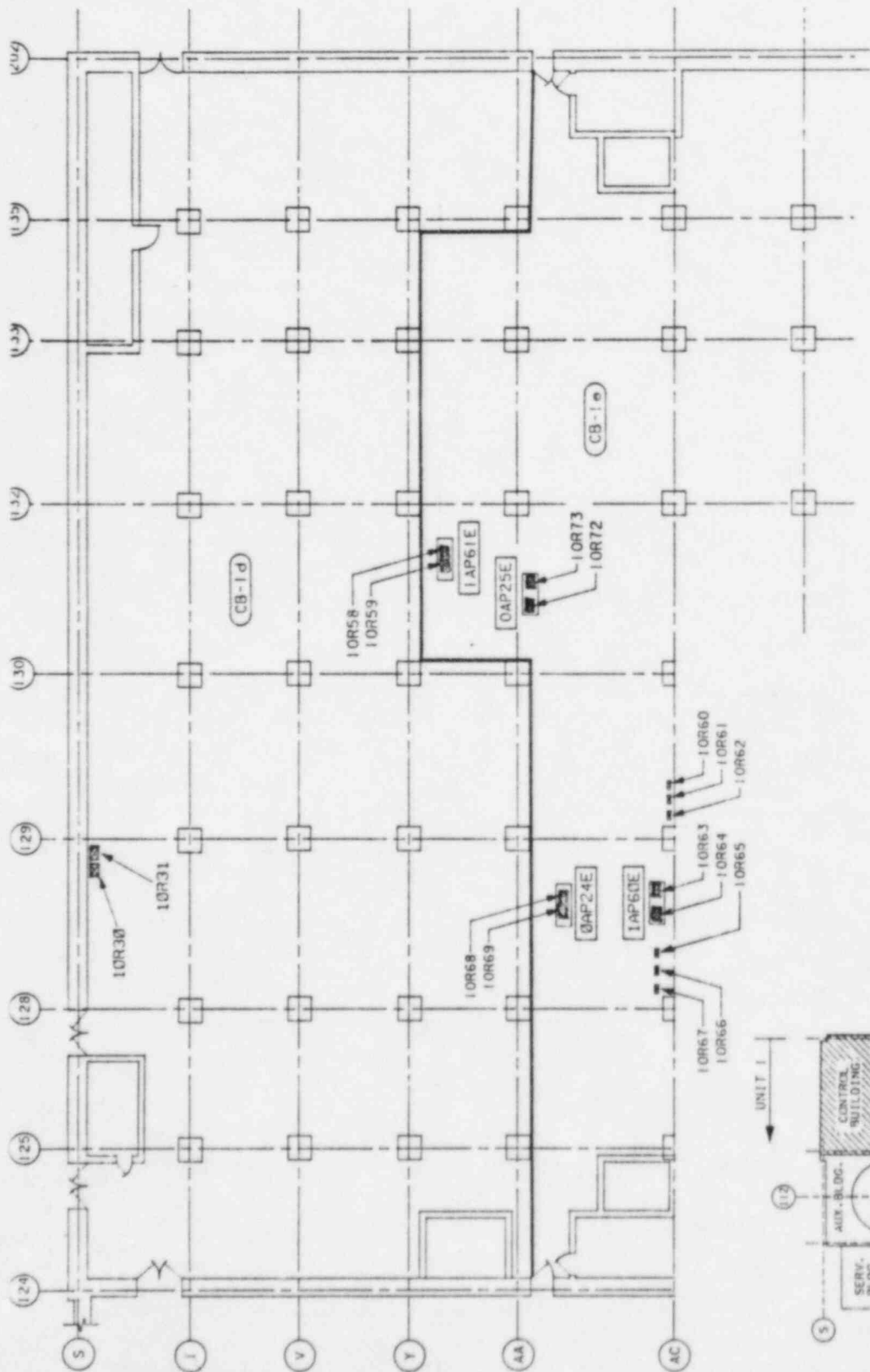




- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.4.5-1  
FIRE PROTECTION DEVIATION  
CONTROL & DIESEL GEN. BLDG.  
FLOOR PLAN EL. 719'-0"  
FIRE AREA CB-1

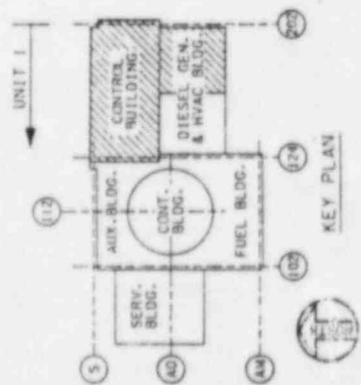




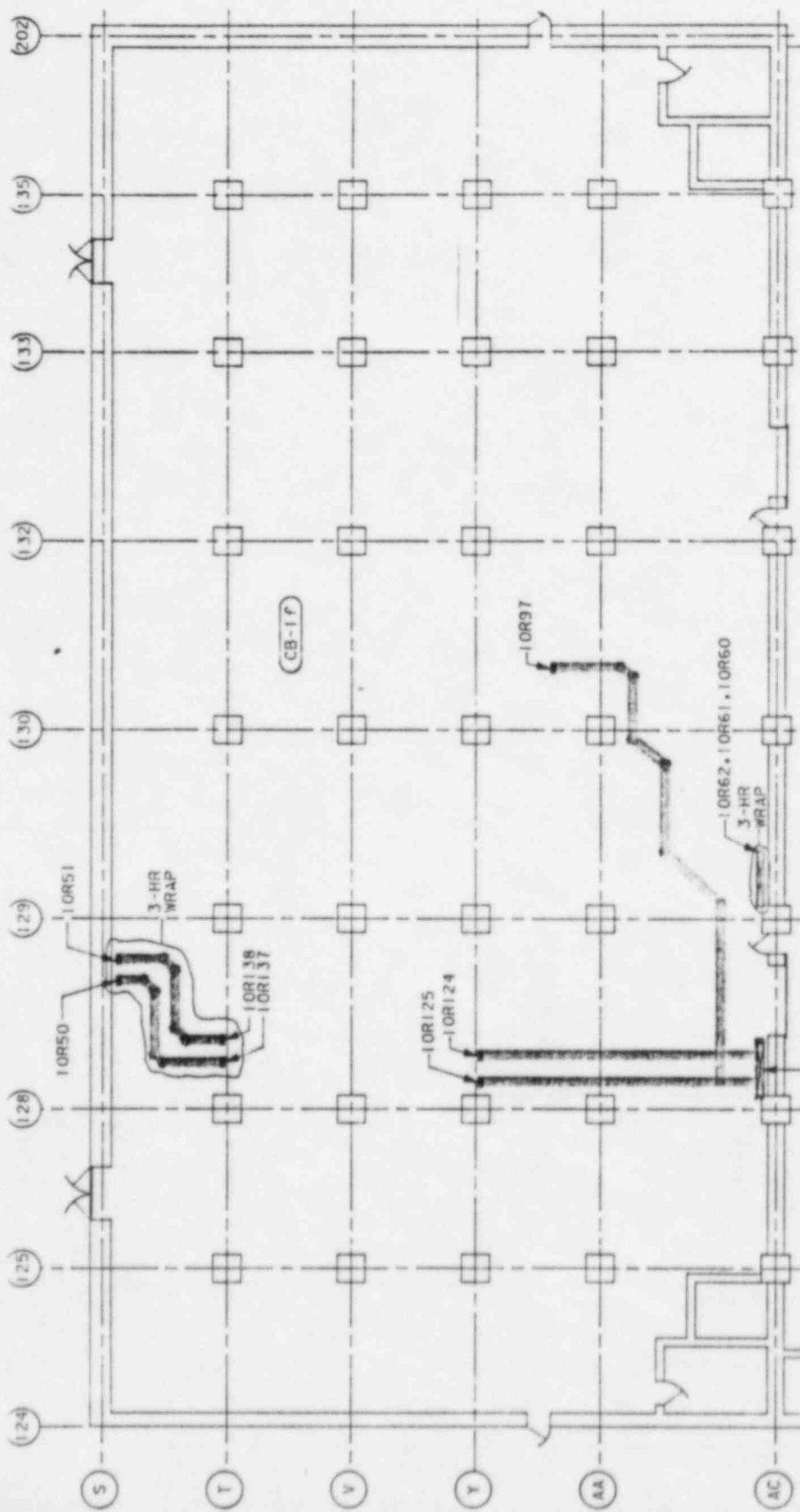
- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.4.5-2  
FIRE PROTECTION DEVIATION  
CONTROL & DIESEL GENERATOR BLDG.  
GRADE FLOOR PLAN EL. 737' 0"

SAFETY & SECURITY







- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

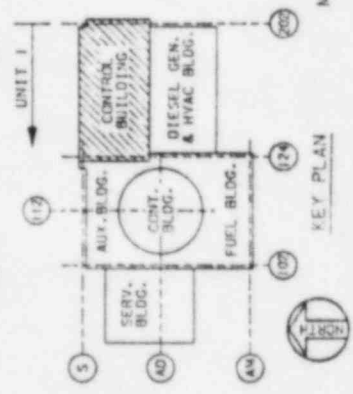


FIGURE 4.2.4.5-4  
FIRE PROTECTION DEVIATION  
CONTROL BUILDING  
MEZZANINE FLOOR PLAN EL. 762'-0"  
FIRE AREA CB-1

SAFETY & SECURITY

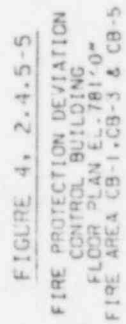
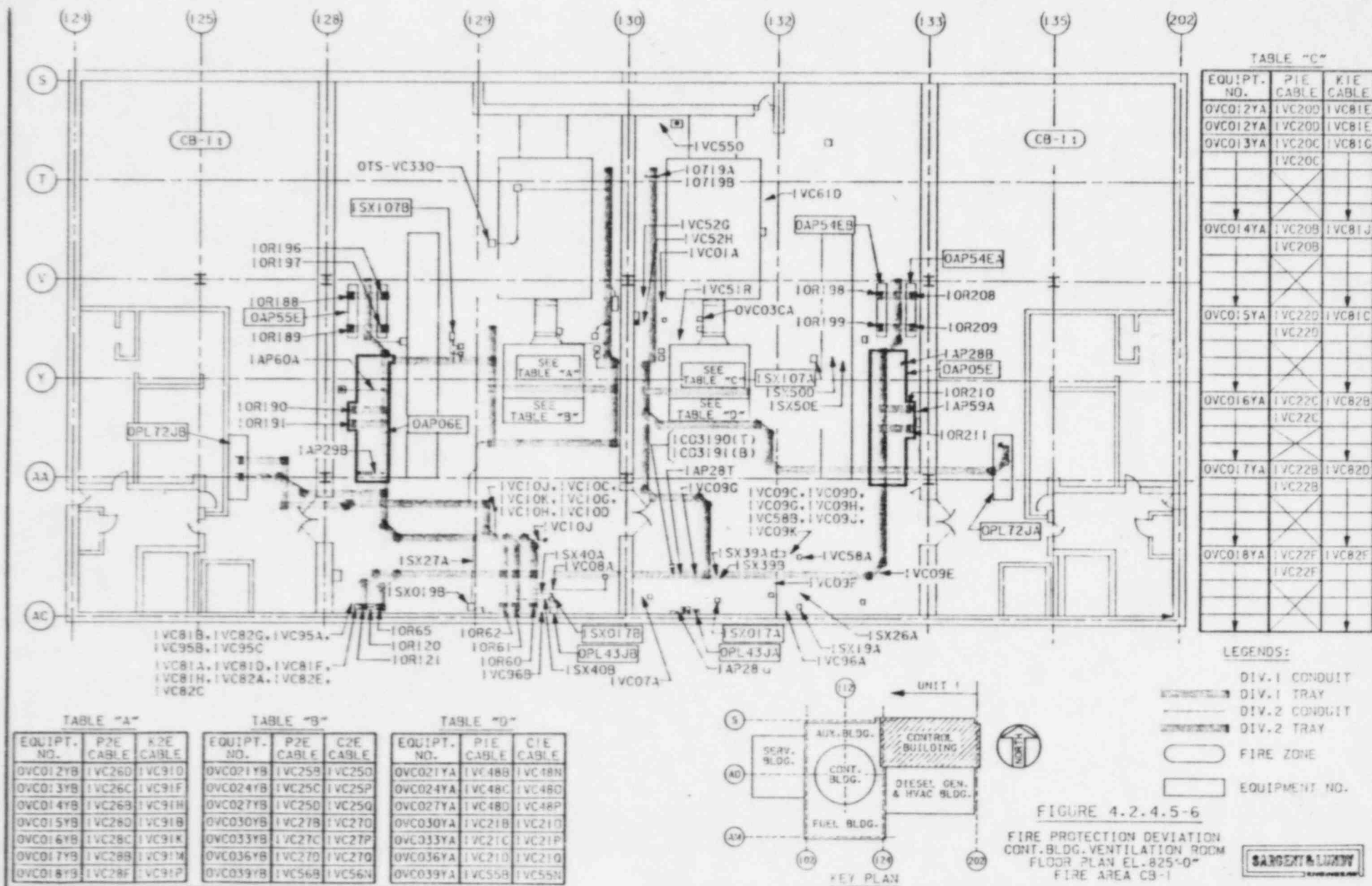


FIGURE 4. 2.4.5-5

FIRE PROTECTION DEVIATION  
CONTROL BUILDING  
FLOOR PLAN EL. 781.0"  
FIRE AREA CB-1, CB-3 & CB-5





#### 4.2.4.6 PARTIAL SUPPRESSION IN FIRE AREA CB-5

##### Description of Deviation

A complete fire suppression system is not installed throughout Fire Area CB-5.

##### Reference

10 CFR 50, Appendix R, Section III.G.3.b references that alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems, or components in the area, room, or zone under consideration shall be provided . . . where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

##### Fire Area Involved

Fire Zone CB-5a - Elevation 781 feet 0 inch (see Figures FP-13a and 13b and Cable Tray Figure 11).

Fire Zone CB-5b - Elevation 781 feet 0 inch (see Figures FP-13a and 13b and Cable Tray Figure 11).

Fire Zone CB-5c - Elevation 781 feet 0 inch (see Figures FP-13a and 13b and Cable Tray Figure 11).

##### Description of Safe Shutdown Equipment and Cables

Fire Zone CB-5a contains the Division 3 4.16-kV switchgear unit, 480-volt transformer, battery charger for the Division 3 battery, motor control centers, and associated supporting equipment. This equipment is not required for safe shutdown except for a fire in Fire Zone A-3f (see Subsection 3.1.3). Fire Zone CB-5a also contains Division 1 and 2 NSPS safe shutdown cables (in conduit) 1RP01C, 1RP02C, 1RP01H, 1RP02H (see Figure 4.2.4.6-1).

Fire Zone CB-5b contains the Division 3 batteries and battery room exhaust fan. This equipment is not required for safe shutdown except for a fire in Fire Zone A-3f (see Subsection 3.1.3).

Fire Zone CB-5c contains Division 1 and 2 safe shutdown cable risers.

##### Engineering Justification

In Fire Zone CB-5a, the Division 1 NSPS safe shutdown cables (in conduit) are protected by a 3-hour fire rated material. In the event of a fire in this fire zone, Method 1/Division 1 equipment from the main control room can be used to safely shut down the plant. The protection provided for the Division 1 cables satisfies separation criteria. Therefore, a fixed fire suppression system is not necessary in Fire Zone CB-5a.



In the event of a fire in Fire Zone CB-5b, the plant can be safely shut down by either Division 1/Method 1 or Division 2/Method 2 systems. Therefore, a fixed fire suppression system is not necessary in Fire Zone CB-5b.

In the event of fire in Fire Zone CB-5c, the plant can be safely shut down from the remote shutdown panel with Division 1/Method 1 systems. An ionization detection system and an automatic wet-pipe sprinkler system will be installed in this zone. In conclusion, safe shutdown in Fire Area CB-1 is assured by a combination of passive fire barriers, detection, and partial automatic suppression systems. Therefore, complete automatic fire suppression is not necessary.

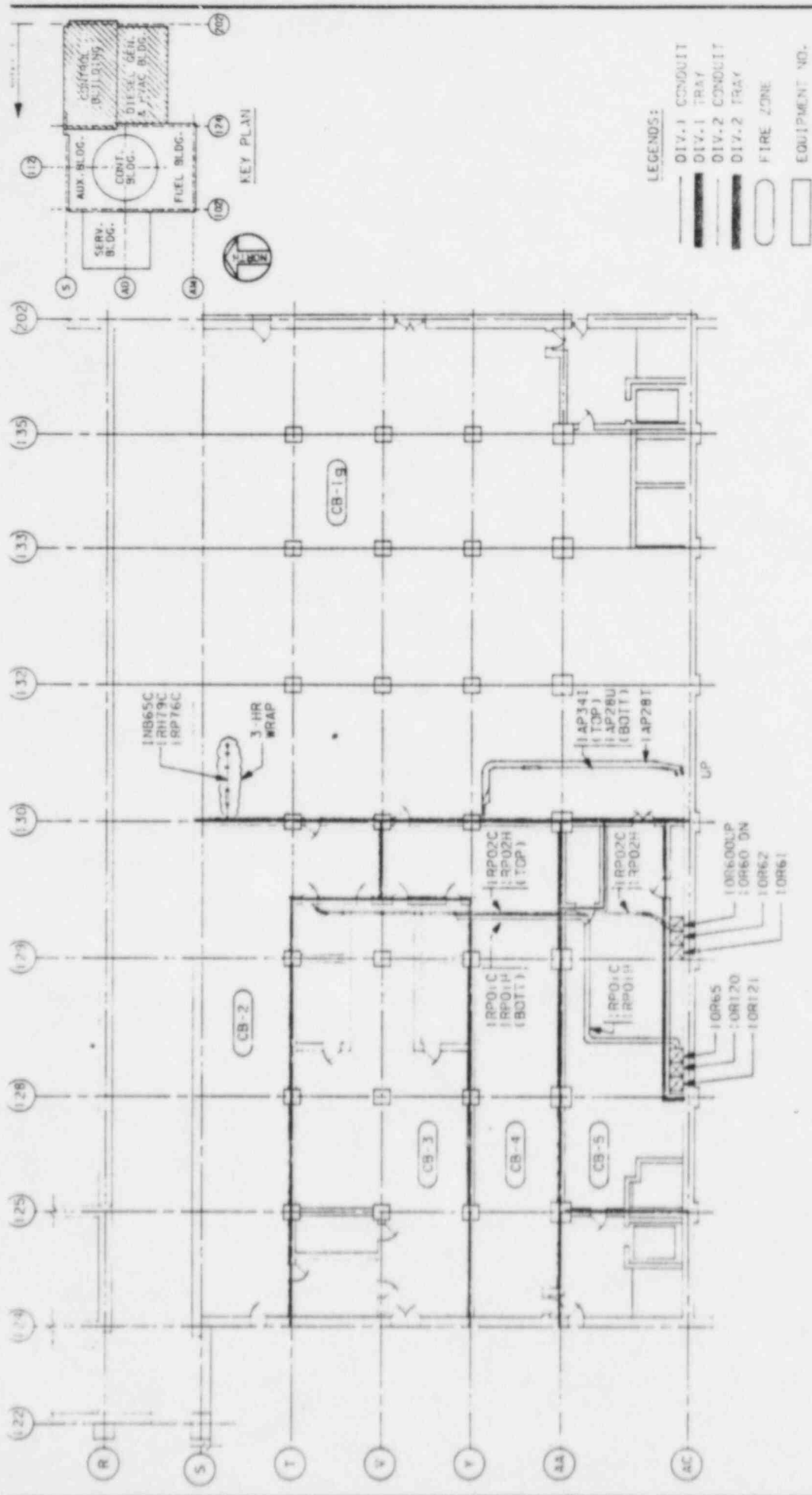


FIGURE 4.2.4.6-5  
FIRE PROTECTION DEVIATION  
CONTROL BUILDING  
FLOOR PLAN EL.781'-0"  
FIRE AREA CB-1, CB-3 & CB-5

#### 4.2.4.7 SUPPRESSION SYSTEMS IN FIRE AREA F-1

##### Description of Deviation

Division 1 and Division 2 safe shutdown cables and equipment are routed through or located in Fire Area F-1. An automatic suppression system has not been provided in this fire area. Deviations for not providing full area detection are provided in Subsection 4.2.3.1.

##### Reference

10 CFR 50 Appendix R, Section III.G.2.b. To ensure redundant trains will be free of fire damage, there will be: b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

##### Fire Area(s) Involved

- Fire Zone F-1a - Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2)
- Fire Zone F-1b - Elevation 712 feet 0 inch (see Figures FP-2a and 2b and Cable Tray Figure 2)
- Fire Zone F-1m - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3)
- Fire Zone F-1n - Elevation 737 feet 0 inch (see Figures FP-3a and 3b and Cable Tray Figure 3)
- Fire Zone F-1p - Elevations 751 feet 0 inch and 781 feet 0 inch (see Figures FP-4a, 4b, 5a, and 5b and Cable Tray Figures 4 and 5)

##### Description of Safe Shutdown Equipment and Cables

Cables and equipment required for safe shutdown are listed on Tables 4.2.4.7-1 through 4.2.4.7-4. Figures 4.2.4.7-1 through 4.2.4.7-4 show the routing of divisional safe shutdown cables in this fire area.

##### Engineering Justification

Although Division 1 and 2 safe shutdown cables and equipment are located in Fire Area F-1, an automatic suppression system has not been provided. The routing of the safe shutdown cables within this fire area has eliminated the need for an automatic suppression system.

In Fire Zone F-1a, the Division 1 safe shutdown cables (in conduit) in the southeast corner of the zone are separated from the Division 2 cable trays by a horizontal distance in excess of 75 feet.

Solid bottom BOP cable trays are routed between the Division 1 and 2 cables such that these trays are horizontally separated from the Division 1 and 2 cables by distances in excess of 15 feet and 6 feet, respectively. An exposure fire in the vicinity of the Division 1 conduits would have to ignite the BOP cables located a horizontal distance of approximately 15 feet away, propagate at least 75 feet along the BOP cable trays, and then ignite the Division 2 cables located at a horizontal distance of 6 feet. Such a scenario is highly unlikely due to the ignition resistance of the cables (IEEE 383 qualified) in the BOP trays in conjunction with the low heat release and flame spread rates for these cables.

Fire Zone F-1b, contains only one cable and instrument required for safe shutdown. As shown on Figure 4.2.4.7-1, the spatial separation of this cable and instrument from its redundant counterpart located in Fire Zone F-1a is sufficient to ensure a safe shutdown.

In Fire Zone F-1m, Division 1 cable trays along the east wall are separated from Division 2 cable risers along the west wall by a distance in excess of 140 feet with no intervening combustibles. The water suppression system provided for the railroad bay (see Figure FP-3b) provides additional protection between the Division 1 and 2 cables. Division 1 cables (in conduit) along the south wall are routed in Fire Zones F-1m and F-1n within 20 feet of Division 2 cables (in conduit) (see Figure 4.2.4.7-2) and in excess of 60 feet from the Division 2 cable risers. The function of the cables in conduit is discussed in Table 4.2.4.7-5. Based on the cable functions, spatial separation, the railroad bay suppression system, and the absence of intervening combustibles, safe shutdown is assured.

For Fire Zone F-1p, the deviation concerning full area suppression for safe shutdown cables (see Figure 4.2.4.7-4) in this zone has been previously approved by the NRC. Refer to Clinton SSER 3, page 3, Fire Zone F.3.1 for details.

In conclusion, based upon combinations of spatial separation, cable functions, lack of intervening combustibles, and provision of a partial suppression system, a complete automatic suppression system is not necessary for Fire Area F-1.

Table 4.2.4.7-5Fire Area F-1 Associated Equipment

<u>Fire Area</u>	<u>Cable Number</u>	<u>Beginning Equipment No.</u>	<u>Ending Equipment No.</u>	<u>Seg. Code</u>	<u>Associated Equipment No.</u>	<u>Justification*</u>
F-1	IAP40A	IAP11E	IAP29E	PIE	IAP29E	D2
	IAP40B	IAP11E	IAP29E	PIE	IAP29E	
	IAP41A	IAP12E	IAP30E	P2E	IAP30E	D1
	ICC04B	IAP73E	ICC075A	C1E	ISX012A ISX062A	A2
	ICC05B	IAP73E	ICC076A	C1E	ISX012A ISX062A	
	ICC06B	IAP76E	ICC075B	C2E	ISX012B ISX062B	
	ICC07B	IAP76E	ICC076B	C2E	ISX012B ISX062B	
	ICM76A	IHI3-P742B	ILT - CM031	K2E	ILT-CM031	D1

\*NOTES

- D1 Closest Division 1 cable > 50 feet from Division 2.
- D2 Closest Division 2 cable 45 feet vertical (IDG31A&B) and intervening floor at elevation 755 feet 0 inch. Closest redundant cable > 50 feet.
- D3 Previously approved deviation, Clinton SSER 3, p. 3, Fire Zone F.3.1.
- A1 Analyzed. Valve in normal position, hot short or ground will not change associated equipment position.
- A2 Analyzed. Interlock cable associated with associated equipment will not move valve from normal shutdown position.

Table 4.2.4.7-5 (Cont.)

<u>Fire Area</u>	<u>Cable Number</u>	<u>Beginning Equipment No.</u>	<u>Ending Equipment No.</u>	<u>Seg. Code</u>	<u>Associated Equipment No.</u>	<u>Justification</u>
F-1	IDG11A	IAP07EC	IDG01KA	PIE	IDG01KA	D3
	IDG11B	IAP07EC	IDG01KA	PIE	IDG01KA	
	IDG31A	IAP09EH	IDG01JB	P2E	IDG01KB	
	IDG31B	IAP09EH	IDG01JB	P2E	IDG01KB	
	IRI81A	IE51-N035 A	IH13-P706E	K1E	IE51-N035A	D2
	IRI81B	IE51-N035 E	IH13-P706E	K1E	IE51-N035E	
	IRS77A	IC61-N503	IC61-P001E	K1E	IC61-N503	A
	IRS77C	IC61-N505	IC61-P001E	K1E	IC61-N505	
	ISX01A	IAP07ED	ISX01PA	PIE	ISX01PB	D2
	ISX01F	IAP07ED	IAP29E	C1E	ISX014A	
	ISX01K	IAP07ED	ISX01PA	C1E	ISX01PA	
	ISX02A	IAP09EG	ISX01PB	P2E	ISX01PB	D1
	ISX02F	IAP09EG	IAP30E	C2E	ISX014B	
	ISX02J	IAP09EG	ISX01PB	C2E	ISX01PB	
	ISX04C	IAP29E	IH13-P741E	C1E	IPDS-SX022	D2
	ISX04D	IAP29E	IC61-P001E	C1E	IPDS-SX022	
	ISX10A	IAP73E	ISX012A	PIE	ISX012A	A
	ISX10B	IAP73E	ISX012A	C1E	ISX012A	
	ISX11A	IAP73E	ISX062A	PIE	ISX062A	
	ISX11B	IAP73E	ISX062A	C1E	ISX062A	
	ISX12A	IAP76E	ISX012B	P2E	ISX012B	

Table 4.2.4.7-5 (Cont.)

<u>Fire Area</u>	<u>Cable Number</u>	<u>Beginning Equipment No.</u>	<u>Ending Equipment No.</u>	<u>Seg. Code</u>	<u>Associated Equipment No.</u>	<u>Justification</u>
F-1	ISX12B	IAP76E	ISX012B	C2E	ISX012B	
	ISX13A	IAP76E	ISX062B	P2E	ISX062B	
	ISX13B	IAP76E	ISX062B	C2E	ISX062B	
	ISX14K	IAP29E	IC61-P001E	C1E	ISX003A	
	ISX14L	IAP29E	IC61-P001E	C1E	ISX004A	
	ISX14M	IAP29E	IC61-P001E	C1E	ISX008A	D2
	ISX15C	IAP30E	IH13-P702B	C2E	ISX003B	D1
	ISX15C	IAP30E	IH13-P702B	C2E	ISX003B	
	ISX15F	IAP30E	IH13-P702B	C2E	ISX004B	
	ISX15J	IAP30E	IH13-P702B	C2E	ISX008B	D1
	ISX17D	IAP29E	IC61-P001E	C1E	ISX014A	D2
	ISX18C	IAP30E	IH13-P702B	C2E	ISX014B	D1
	ISX33D	IAP29E	IC61-P001E	C1E	ISX011A	D2
	ISX34C	IAP30E	IH13-P702B	C2E	ISX011B	D1
	ISX37A	IAP73E	ISX016A	P1E	ISX016A	
	ISX37B	IAP73E	ISX016A	C1E	ISX016A	A
	ISX38A	IAP76E	ISX016B	P2E	ISX016B	
	ISX38B	IAP76E	ISX016B	C2E	ISX016B	A



Table 4.2.4.7-5 (Cont.)

<u>Fire Area</u>	<u>Cable Number</u>	<u>Beginning Equipment No.</u>	<u>Ending Equipment No.</u>	<u>Seg. Code</u>	<u>Associated Equipment No.</u>	<u>Justification</u>
F-1	ISX54D	IAP94E	IAP30E	C2E	ISX008B	D1
	ISX75A	IPT - SX028	IH13-P741E	K1E	IPT-SX028 ISX01PA	D2
	ISX75B	IPT - SX030	IH13-P742F	K2E	IPT-SX030 ISX01PB	D1
	IVH07E	IPL53JA	IH13-P711A	C1E	IVH01CA	
	IVH07F	IAP29E	IC61-P001E	C1E	ITY-VH001 IVH01CA	
	IVH07H	IAP29E	IC61-P001E	C1E	IVH01CA	D2
	IVH08B	IAP30E	IH13-P742E	C2E	IVH01CB	
	IVH08E	IPL53JB	IH13-P742E	C2E	IVH01CB	D1

CABLE NO.	ROUTE PT.	ZONE	SEG CODE	ASSOC. EQUIP.
1CM76A	C81145	F-1b	K2E	1LT-CM031
1CM76A	C81146	F-1b	K2E	1LT-CM031
1AP41A	182A	F-1a	P2E	1AP32E
1SX02A	182A	F-1a	P2E	1SX01PB
1SX12A	182A	F-1a	P2E	1SX012B
1SX13A	182A	F-1a	P2E	1SX062B
1SX36A	182A	F-1a	P2E	1SX016B
1CC06B	182B	F-1a	C2E	1SX012B, 1SX062B
1CC07B	182B	F-1a	C2E	1SX012B
1SX02F	182B	F-1a	C2E	1SX014B
1SX02J	182B	F-1a	C2E	1SX01PB
1SX12B	182B	F-1a	C2E	1SX012B
1SX13B	182B	F-1a	C2E	1SX062B
1SX15C	182B	F-1a	C2E	1SX003B
1SX15F	182B	F-1a	C2E	1SX004B
1SX15J	182B	F-1a	C2E	1SX008B
1SX16C	182B	F-1a	C2E	1SX014B
1SX34C	182B	F-1a	C2E	1SX011B
1SX36B	182B	F-1a	C2E	1SX16B
1SX54D	182B	F-1a	C2E	1SX006B
1VH06B	182B	F-1a	C2E	1VH01CB
1VH08E	182B	F-1a	C2E	1VH01CB
1SX75B	182C	F-1a	K2E	1PT-SX030, 1SX01PB
1AP41A	186A	F-1a	P2E	1AP32E
1SX02A	186A	F-1a	P2E	1SX01PB
1SX02F	186B	F-1a	C2E	1SX014B
1SX02J	186B	F-1a	C2E	1SX01PB
1SX15C	186B	F-1a	C2E	1SX003B
1SX15F	186B	F-1a	C2E	1SX004B
1SX15J	186B	F-1a	C2E	1SX008B
1SX16C	186B	F-1a	C2E	1SX014B
1SX34C	186B	F-1a	C2E	1SX011B
1SX54D	186B	F-1a	C2E	1SX006B
1VH06B	186B	F-1a	C2E	1VH01CB
1VH08E	186B	F-1a	C2E	1VH01CB
1SX75B	186C	F-1a	K2E	1PT-SX030, 1SX01PB
1SX13A	189A	F-1a	P2E	1SX062B
1CC06B	189B	F-1a	C2E	1SX012B, 1SX062B
1CC07B	189B	F-1a	C2E	1SX012B
1SX13B	189B	F-1a	C2E	1SX062B
1AP40A	18R26	F-1a	P1E	1AP29E
1AP40B	18R26	F-1a	P1E	1AP29E
1SX01A	18R26	F-1a	P1E	1SX01PA
1SX01F	18R27	F-1a	C1E	1SX014A
1SX01K	18R27	F-1a	C1E	1SX01PA
1SX04C	18R27	F-1a	C1E	1PCS-SX022
1SX04D	18R27	F-1a	C1E	1POS-SX022
1SX14K	18R27	F-1a	C1E	1SX0032
1SX14L	18R27	F-1a	C1E	1SX004A
1SX14M	18R27	F-1a	C1E	1SX006A
1SX17D	18R27	F-1a	C1E	1SX014A
1SX33D	18R27	F-1a	C1E	1SX011A

1V407E	18927	F-1a	C1E	1V4010A
1V407F	18927	F-1a	C1E	1TY-V4001, 1V4010A
1V4074	18927	F-1a	C1E	1V4010A
1RS77A	1C8105	F-1a	K1E	1C81-K503
1SX75A	1C8105	F-1a	K1E	1P7-SX02B, 1SX010A
1SX10A	1C81272	F-1a	P1E	1SX012A
1SX37A	1C81272	F-1a	P1E	1SX016A
1SX13A	1C8305	F-1a	P2E	1SX062B
1CC06B	1C8307	F-1a	C2E	1SX012B, 1SX062B
1CC07B	1C8307	F-1a	C2E	1SX012B
1SX13B	1C8307	F-1a	C2E	1SX062B
1SX36B	1C855	F-1a	C2E	1SX016B
1SX38A	1C856	F-1a	P2E	1SX016B
1SX12B	1C857	F-1a	C2E	1SX012B
1SX12A	1C858	F-1a	P2E	1SX012B

CABLE NO.	ROUTE PT.	ZONE	SEQ CODE	ASSOC. EQUIP.
10004B	0682	F-1m	C1E	1SX012A, 1SX062A
10005B	0684	F-1m	C1E	1SX012A, 1SX062A
1S577A	106125	F-1m	K1E	1061-N503
1SX75A	106125	F-1m	K1E	1PT-SX02B, 1SX010A
10004B	08123	F-1m	C1E	1SX012A, 1SX062A
10005B	08123	F-1m	C1E	1SX012A, 1SX062A
10M75A	081146	F-1m	K2E	1LT-DM031
1SX10A	081268	F-1m	P1E	1SX012A
1SX37A	081268	F-1m	P1E	1SX016A
1SX10A	081272	F-1m	P1E	1SX012A
1SX37A	081272	F-1m	P1E	1SX016A
1R181A	081380	F-1m	K1E	1ES1-N035A
1R181B	081382	F-1m	K1E	1ES1-N035E
1R577C	081383	F-1m	K1E	1061-N505
1SX10B	08152	F-1m	C1E	1SX012A
1SX11B	08152	F-1m	C1E	1SX062A
1SX37B	08152	F-1m	C1E	1SX016A
10M75A	081561	F-1m	K2E	1LT-DM031
10004B	081613	F-1m	C1E	1SX012A, 1SX062A
10005B	081613	F-1m	C1E	1SX012A, 1SX062A
10004B	08281	F-1m	C1E	1SX012A, 1SX062A
10005B	08281	F-1m	C1E	1SX012A, 1SX062A
1SX13B	0853	F-1m	C2E	1SX062B
1SX13A	0854	F-1m	P2E	1SX062B
10006B	0874	F-1m	C2E	1SX012B, 1SX062B
10007B	0876	F-1m	C2E	1SX012B
10004B	0887	F-1m	C1E	1SX012A, 1SX062A
10005B	0887	F-1m	C1E	1SX012A, 1SX062A
1SX10E	0892	F-1m	C1E	1SX012A
1SX10A	0893	F-1m	P1E	1SX012A
1SX37B	0894	F-1m	C1E	1SX016A
1SX37A	0895	F-1m	P1E	1SX016A
1SX10B	0897	F-1m	C1E	1SX012A
1SX11B	0897	F-1m	C1E	1SX062A
1SX37B	0897	F-1m	C1E	1SX016A
1A040A	1842A	F-1m	P1E	1A029E
1A040B	1842A	F-1m	P1E	1A029E
1SX01A	1842A	F-1m	P1E	1SX010A
1SX10A	1842A	F-1m	P1E	1SX012A
1SX11A	1842A	F-1m	P1E	1SX062A
1SX37A	1842A	F-1m	P1E	1SX016A
10004B	1842B	F-1m	C1E	1SX012A, 1SX062A
10005B	1842B	F-1m	C1E	1SX012A, 1SX062A
1SX01F	1842B	F-1m	C1E	1SX014A
1SX01K	1842B	F-1m	C1E	1SX010A
1SX04C	1842B	F-1m	C1E	1PDS-SX022
1SX04D	1842B	F-1m	C1E	1PDS-SX022
1SX10B	1842B	F-1m	C1E	1SX012A
1SX11B	1842B	F-1m	C1E	1SX062A
1SX14K	1842B	F-1m	C1E	1SX003A
1SX14L	1842B	F-1m	C1E	1SX004A
1SX14M	1842B	F-1m	C1E	1SX008A

1SX17D	1842B	F-1m	C1E	1SX014A
1SX33D	1842B	F-1m	C1E	1SX011A
1SX37B	1842B	F-1m	C1E	1SX016A
1VH07E	1842B	F-1m	C1E	1VH01CA
1VH07F	1842B	F-1m	C1E	1TY-VH001, 1VH01CA
1VH07H	1842B	F-1m	C1E	1VH01CA
1R181A	1842C	F-1m	K1E	1E51-N035A
1R181B	1842C	F-1m	K1E	1E51-N035E
1RS77A	1842C	F-1m	K1E	1C61-N503
1RS77C	1842C	F-1m	K1E	1C61-N505
1SX75A	1842C	F-1m	K1E	1PT-SX02B, 1SX01PA
1AP40A	1847A	F-1m	P1E	1AP29E
1AP40B	1847A	F-1m	P1E	1AP29E
1SX01A	1847A	F-1m	P1E	1SX01PA
1SX10A	1847A	F-1m	P1E	1SX012A
1SX11A	1847A	F-1m	P1E	1SX062A
1SX37A	1847A	F-1m	P1E	1SX016A
1SX01F	1847B	F-1m	C1E	1SX014A
1SX01K	1847B	F-1m	C1E	1SX010A
1SX04C	1847B	F-1m	C1E	1PDS-SX022
1SX04D	1847B	F-1m	C1E	1PDS-SX022
1SX14K	1847B	F-1m	C1E	1SX003A
1SX14L	1847B	F-1m	C1E	1SX004A
1SX14M	1847B	F-1m	C1E	1SX008A
1SX17D	1847B	F-1m	C1E	1SX014A
1SX33D	1847B	F-1m	C1E	1SX011A
1VH07E	1847B	F-1m	C1E	1VH01CA
1VH07F	1847B	F-1m	C1E	1TY-VH001, 1VH01CA
1VH07H	1847B	F-1m	C1E	1VH01CA
1RS77A	1847C	F-1m	K1E	1C61-N503
1SX75A	1847C	F-1m	K1E	1PT-SX02B, 1SX01PA
1AP40A	1854A	F-1m	P1E	1AP29E
1AP40B	1854A	F-1m	P1E	1AP29E
1SX01A	1854A	F-1m	P1E	1SX01PA
1SX10A	1854A	F-1m	P1E	1SX012A
1SX37A	1854A	F-1m	P1E	1SX016A
1SX01F	1854B	F-1m	C1E	1SX014A
1SX01K	1854B	F-1m	C1E	1SX010A
1SX04C	1854B	F-1m	C1E	1PDS-SX022
1SX04D	1854B	F-1m	C1E	1PDS-SX022
1SX14K	1854B	F-1m	C1E	1SX003A
1SX14L	1854B	F-1m	C1E	1SX004A
1SX14M	1854B	F-1m	C1E	1SX008A
1SX17D	1854B	F-1m	C1E	1SX014A
1SX33D	1854B	F-1m	C1E	1SX011A
1VH07E	1854B	F-1m	C1E	1VH01CA
1VH07F	1854B	F-1m	C1E	1TY-VH001, 1VH01CA
1VH07H	1854B	F-1m	C1E	1VH01CA

CABLE NO.	ROUTE RT.	ZONE	SEQ CODE	ASSOC. EQUIP.
10611A	08527	F-1b	P1E	10601KA
10611B	08528	F-1b	P1E	10601KA
10631A	08554	F-1b	P2E	10601KB
10631B	08555	F-1b	P2E	10601KB
10631A	08556	F-1b	P2E	10601KB
10631B	08557	F-1b	P2E	10601KB
10631A	08558	F-1b	P2E	10601KB
10631B	08559	F-1b	P2E	10601KB

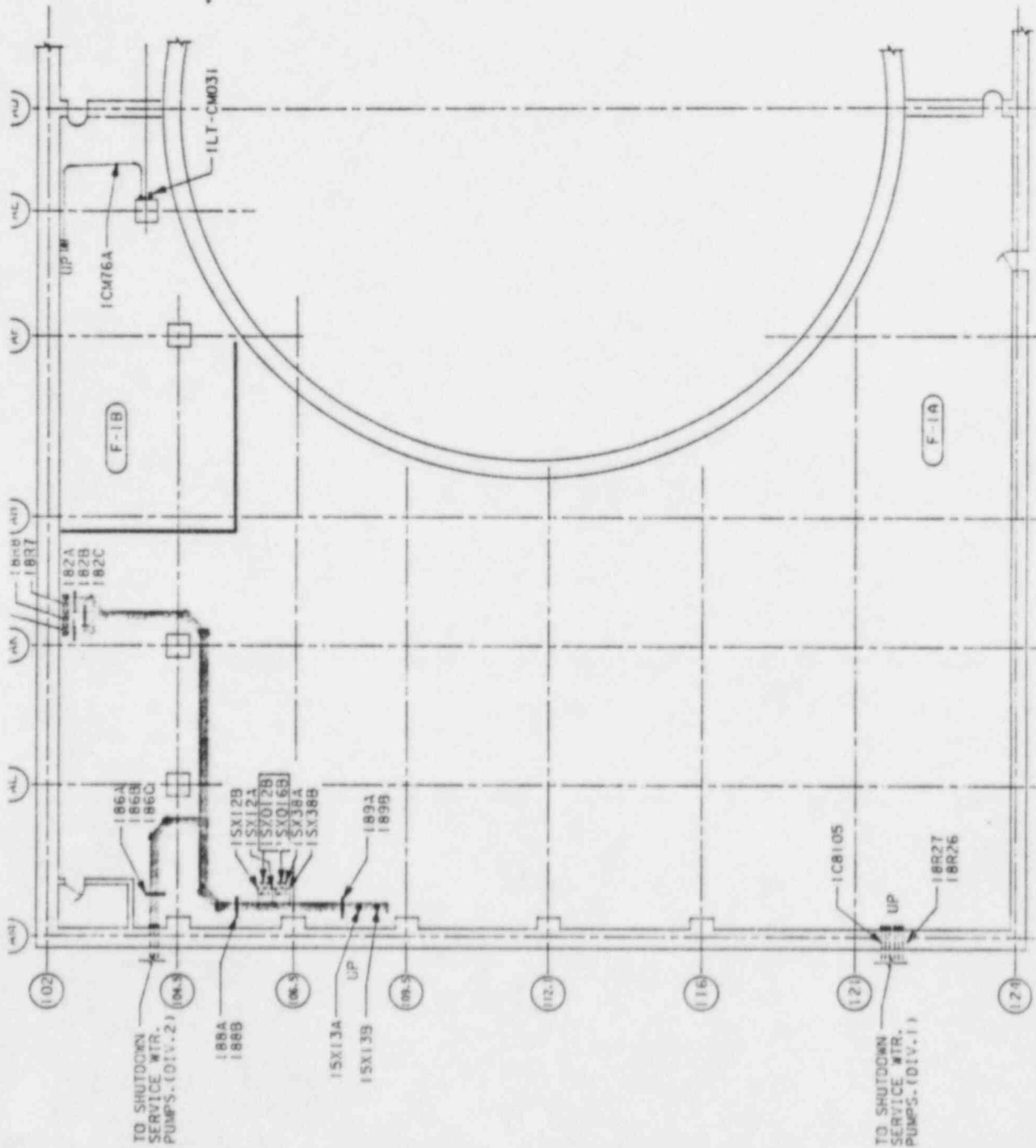
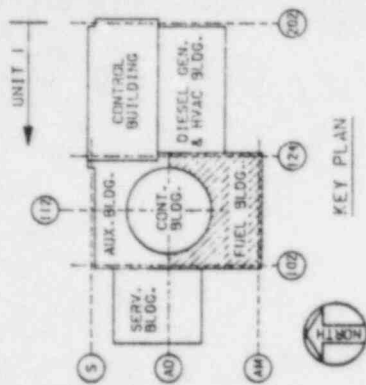


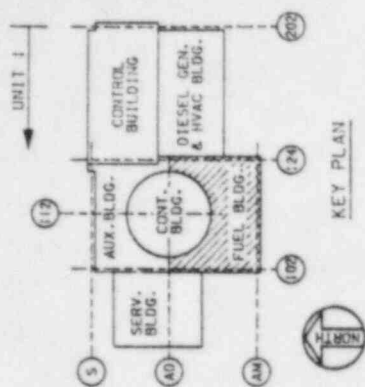
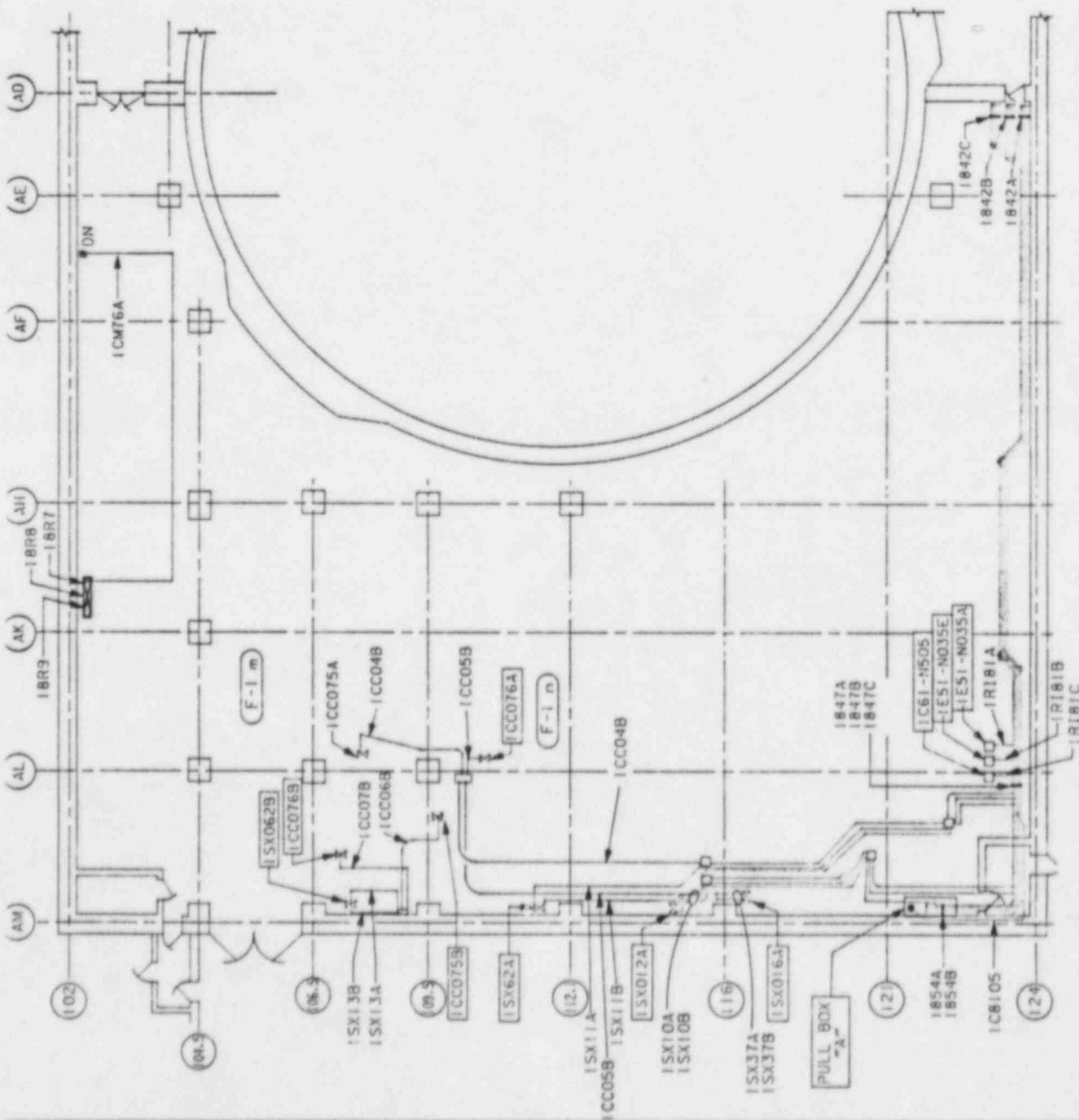
FIGURE 4.2.4.7-1  
FIRE PROTECTION DEVIATION  
FUEL BUILDING  
BASEMENT FLOOR PLAN  
EL. 707'-6" & 712'-0"  
FIRE AREA F-1

- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.



8-30-57-1-10000

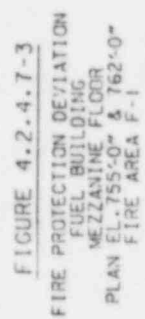


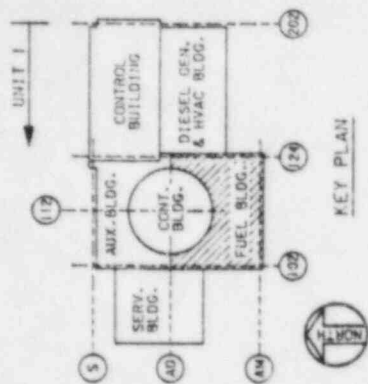
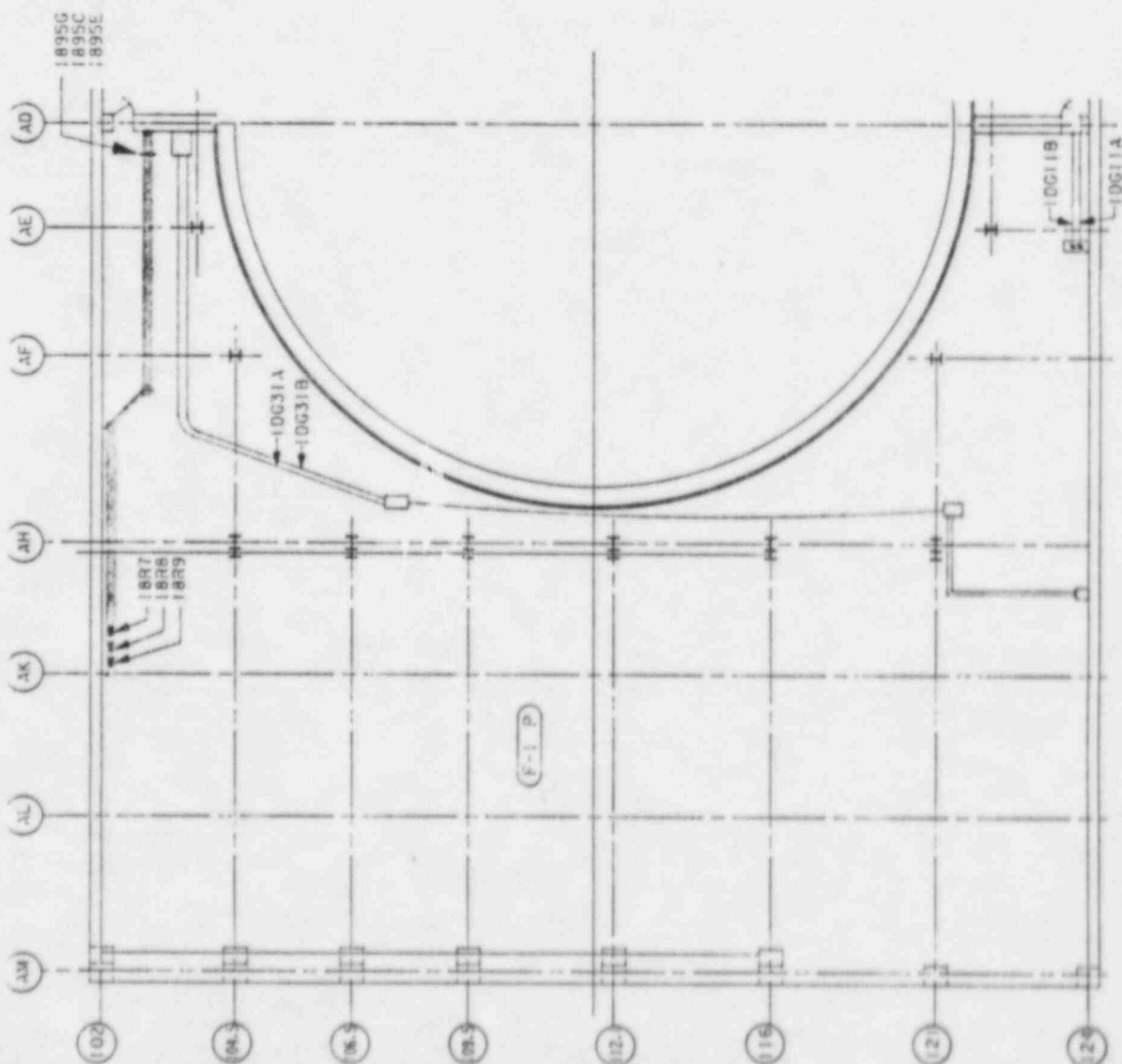


- LEGEND:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.4.7-2  
FIRE PROTECTION DEVIATION  
FUEL BUILDING  
GRADE FLOOR PLAN EL. 737'-0"  
FIRE AREA F-1

SAFETY & SECURITY





- LEGENDS:
- DIV. 1 CONDUIT
  - DIV. 1 TRAY
  - DIV. 2 CONDUIT
  - DIV. 2 TRAY
  - FIRE ZONE
  - EQUIPMENT NO.

FIGURE 4.2.4.7-4  
FIRE PROTECTION DEVIATION  
FUEL BUILDING  
PLAN EL. 778'-0" & 781'-0"  
FIRE AREA F-1

8430 EAST AVALON  
SANTA ANA, CA 92705