

May 31, 2002

Mr. Theodore Sullivan
Vice President - Operations
Entergy Nuclear Northeast
James A. FitzPatrick Nuclear Power Plant
Post Office Box 110
Lycoming, NY 13093

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT - NRC TRIENNIAL FIRE
PROTECTION INSPECTION REPORT NO. 50-333/02-002

Dear Mr. Sullivan:

On April 26, 2002, , NRC completed a triennial fire protection team inspection at your James A. Fitzpatrick Nuclear Power Plant. The enclosed report documents the inspection findings which were discussed at an exit meeting on April 26, 2002, with yourself and other members of the Entergy Nuclear staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's regulations and with the conditions of your license. The purpose of the inspection was to evaluate your post-fire safe shutdown capability and fire protection program. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

No findings of significance were identified.

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Sincerely,

/RA/

James C. Linville, Chief
Electrical Branch
Division of Reactor Safety

Docket No. 50-333
License No. DPR-59

Enclosure: NRC Inspection Report 50-333/02-002

Mr. Theodore Sullivan

2

cc w/encl:

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Mr. Theodore Sullivan

3

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-333

License No: DPR - 59

Report No: 50-333/02-002

Licensee: Entergy Nuclear

Facility: James A. Fitzpatrick Nuclear Power Plant

Location: Lake Road
Scriba, NY

Dates: April 8 - 12, and April 22 - 26, 2002

Inspectors: R. Fuhrmeister, Sr. Reactor Inspector, Division of Reactor Safety
G. Morris, Reactor Inspector, DRS
K. Young, Reactor Inspector, DRS

Approved By: James C. Linville, Chief
Electrical Branch
Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000333/02-002, on 4/8 - 4/12 and 4/22 - 4/26/2002, Entergy Nuclear, James A. Fitzpatrick Nuclear Power Plant. Fire Protection.

The inspection was conducted by a team composed of regional specialists. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply are indicated by "no color" or by the severity level of the applicable violation.

A. Inspector Identified Findings

Cornerstone: Mitigating Systems

- No findings of significance were identified.

Report Details

Background

This report presents the results of a triennial fire protection team inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05, "Fire Protection." The objective of the inspection was to assess whether Entergy Nuclear has implemented an adequate fire protection program and that post-fire safe shut down capabilities have been established and are being properly maintained. The following fire areas were selected for detailed review based on risk insights from the James A. Fitzpatrick Nuclear Power Plant Individual Plant Evaluation and Individual Plant Evaluation for External Events:

- RB-1B, Reactor Building West Side, 272' and 300'
- CT-1, West Cable Tunnel
- CS-1, Cable Spreading Room
- BR-4, Battery Charger Room B
- TB-1, Turbine Building

This inspection was a reduced scope inspection in accordance with the March 23, 2001, revision to IP 71111.05, "Fire Protection." Issues regarding equipment malfunction due to fire-induced failures of associated circuits were not inspected. Criteria for review of fire-induced circuit failures are currently the subject of a voluntary industry initiative. The definition of associated circuits of concern used was that contained in the March 22, 1982, memorandum from Mattson to Eisenhut, which clarified the requests for information made in Generic Letter 81-12.

1. REACTOR SAFETY **Cornerstones: Initiating Events, Mitigating Systems**

1R05 Fire Protection (71111.05)

.1 Programmatic Controls

a. Inspection Scope

During tours of the facility, the team observed the material condition of fire protection systems and equipment, the storage of permanent and transient combustible materials, and control of ignition sources. The team also reviewed the procedures that controlled hot-work activities and combustibles at the site, as well as several hot-work permits and combustible control permits. These reviews were accomplished to ensure that the licensee was maintaining the fire protection systems, controlling hot-work activities, and controlling combustible materials in accordance with AP-14.02, "Combustibles and Flammable Material Control," and other fire protection program procedures.

b. Findings

No findings of significance were identified.

.2 Passive Fire Barriers

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to observe material condition and the adequacy of design of fire area boundaries, fire doors, and fire dampers. The team reviewed engineering evaluations, as well as surveillance and functional test procedures for selected items. The team also reviewed the licensee submittals and NRC safety evaluation reports (SERs) associated with fire protection features at JAFNPP. These reviews were performed to ensure that the passive fire barriers met the licensing and design bases as described in the licensee submittals, NRC SERs, and the JAFNPP Fire Hazards Analysis (FHA) report.”

The team randomly selected four fire barrier penetration seals for detailed inspection to verify proper installation and qualification. The team reviewed associated design drawings, selected barrier and penetration seal engineering evaluations, and a fire barrier and penetration seal inspection procedure. The team compared the observed in-situ seal configurations with the design drawings and tested or evaluated configurations. The team also compared the penetration seal ratings with the ratings of the barriers in which they were installed. This was accomplished to ensure that the licensee had installed and maintained fire barrier penetration seals in accordance with the design and licensing bases as described in the licensee submittals and NRC SERs.

b. Findings

No findings of significance were identified.

.3 Fire Detection Systems

a. Inspection Scope

The team reviewed the adequacy of the fire detection systems in the selected plant fire areas. This included a walk-down of the systems and review of the type of installed detectors as shown per location drawings. The team also reviewed licensee submittals and NRC SERs associated with the selected fire areas. Additionally, the team reviewed the licensee’s fire protection design basis document (DBD) and the National Fire Protection Association (NFPA) conformance report. These reviews were performed to ensure that the fire detection systems for the selected fire areas were installed and maintained in accordance with the design and licensing bases as described in the licensee submittals and NRC SERs. The team also reviewed fire detection surveillance procedures and the technical requirements of procedure AP-01.04, “Technical Specification Related Requirements, Lists, and Tables,” Rev. 7, to determine the adequacy of fire detection component testing and to ensure that the detection systems could function when needed.

b. Findings

No findings of significance were identified.

.4 Fixed Fire Suppression Systems and Equipment

a. Inspection Scope

The team reviewed the adequacy of the automatic carbon dioxide (CO₂) suppression system in the cable spreading room, the automatic water spray curtains in the reactor building, the automatic wet pipe sprinklers in the west cable tunnel, and the automatic wet pipe and pre-action sprinkler systems in the turbine building by performing walk-downs of the systems. The team verified suppression system functionality and the adequacy of surveillance procedure testing by reviewing completed surveillance procedures, the technical requirements procedure, the NFPA conformance report, the DBD, and hydraulic calculations for the sprinkler systems. The team reviewed initial discharge testing, design specifications, calculations, the DBD and engineering evaluations for the cable spreading room CO₂ suppression system. The team also reviewed and walked down pre-fire plans for the target areas. These reviews were performed to ensure that the fixed suppression systems in the selected risk significant fire areas met the design and licensing bases as described in the licensee submittals and NRC SERs, and that the systems could perform their intended functions in the event of a fire in the respective areas.

b. Findings

No findings of significance were identified.

.5 Manual Fire Suppression Capability

a. Inspection Scope

The team walked down selected standpipe systems and observed portable extinguishers to determine the material condition of manual fire fighting equipment and verify locations as specified in the pre-fire plans and fire protection program documents. Electric fire pump and diesel fire pump flow and pressure tests were also reviewed by the team to ensure that the pumps were meeting their design requirements. The team inspected the fire brigade's protective ensembles, self-contained breathing apparatus (SCBA), and various fire brigade equipment to determine operational readiness for fire fighting.

The team reviewed the fire brigade leader/member training and qualifications to assure that fire fighting personnel were properly trained and qualified. The team verified that selected fire brigade leaders and members had recently participated in a minimum of two fire drills and had current SCBA certification. The team also reviewed the fire brigade leader and fire brigade training documents. Additionally, the team toured the fire fighting training facility located in Oswego, NY, to witness fire brigade training and to determine fire brigade training capability and quality. The team discussed enhancements planned for the facility with the instructors.

The team reviewed pre-fire plans for the selected areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact safe shutdown.

The team reviewed the JAFNPP fire suppression effects analysis to determine if a pipe rupture, inadvertent actuation of a suppression system, or manual fire suppression activities in the selected fire areas could inhibit the plant's ability reach a safe shutdown condition. Additionally, the team performed in-plant walk-downs to evaluate the physical configuration of electrical raceways and safe shutdown components in the cable spreading room (CSR), west cable tunnel, areas of the reactor building, areas of the turbine building and the battery charger room B to determine whether water from manual fire suppression activities in these areas could cause damage that could inhibit the plant's ability to safely shutdown. The team also reviewed the licensee's actions to address the potential for CO₂ migration to ensure that fire suppression and post-fire safe shutdown actions would not be impacted.

b. Findings

No findings of significance were identified.

.6 Safe Shutdown Capability

a. Inspection Scope

The team reviewed the Updated Final Safety Analysis Report (UFSAR), the Fire Hazards Analysis (FHA), design basis documents (DBD), and the Safe Shutdown Analysis, to evaluate the methods and equipment used to achieve hot shutdown following postulated fires in the selected fire areas. The team further reviewed piping and instrumentation drawings (P&IDs) for post-fire safe shutdown systems to determine required components for establishing flow paths, to identify equipment required to isolate flow diversion paths, and to verify appropriate components were identified as required safe shutdown equipment.

The team evaluated the separation of selected power, control and instrumentation cables necessary to achieve safe shutdown. The team walked-down a sample of cable raceways and compared the as-built raceways to the related drawings and cable routing printouts to confirm the accuracy of the safe shutdown analysis.

The team evaluated, on a sample basis, electrical protective device coordination studies to ensure adequate protection for the power source for the redundant or alternate safe shutdown equipment.

The team reviewed system flow diagrams, electrical schematics and one line diagrams to evaluate the adequacy of the alternate shutdown transfer and isolation capability for safe shutdown control functions.

The team also performed field walk-downs to validate the equipment locations considered in the analysis and to evaluate the protection of the equipment from the effects of fires.

The team sampled sections of abnormal operating procedures (AOPs), associated with shutdown following a fire, to confirm the availability of selected components required for different fire scenarios.

The team verified that the applicable requirements of 10 CFR 50, Appendix R, sections III.G and III.L for achieving and maintaining safe shutdown were properly addressed. The team verified that systems necessary to assure the safe shutdown functions of reactivity control, reactor coolant makeup, reactor heat removal, and process monitoring were protected or independent from the selected areas. Where deviations from Appendix R requirements were identified, the team verified that the deviations had been approved and that conditions required by the deviations were implemented and being maintained.

b. Findings

No findings of significance were identified.

.7 Safe Shutdown Analyses

a. Inspection Scope

The team reviewed system flow diagrams, electrical one line diagrams, control panel diagrams, control circuit schematic diagrams, cable tray designations, fire zone/area arrangements drawings, panel and rack diagrams, design and operating procedures, circuit breaker coordination curves, calculations, modifications, vendor information and the electrical cable and raceway information system (ECRIS) to verify the conclusions of selected sections of the safe shutdown analysis and to ensure that procedures, equipment, fire barriers, and systems exist so that the post-fire capability exists to safely shut down the plant.

Due to the issuance of Change Notice 00-020 against Inspection Procedure 71111.05, "Fire Protection," the team did not review associated circuit issues during this inspection. This change notice has suspended this review pending completion of an industry initiative in this area.

b. Findings

No findings of significance were identified.

.8 Operational Implementation of Post-Fire Safe Shutdown Capability

a. Inspection Scope

The team reviewed post-fire shutdown procedures for the selected areas to determine if appropriate information is provided to plant staff to perform required actions to achieve and maintain safe shutdown. This review included a comparison of the procedures with the safe shutdown analysis to ensure that the actions assumed in the safe shutdown analysis were included in the procedures. The team also reviewed training lesson plans and job performance measures (JPMs) for post-fire shutdown activities.

b. Findings

No findings of significance were identified.

.9 Post-Fire Safe Shutdown Emergency Lighting and Communications

a. Inspection Scope

The team observed the placement and aim of emergency battery light units throughout the plant to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation for post-fire safe shutdown. The team also evaluated installed and portable communication systems to determine if communications could be maintained in the event of a fire in the selected areas and during a shutdown from outside of the control room.

The team reviewed preventive maintenance procedures, surveillance procedures and vendor information to determine if adequate surveillance testing was being accomplished to ensure operation of the emergency lights.

b. Findings

No findings of significance were identified.

.10 Electrical Raceway Fire Barrier Systems

a. Inspection Scope

The design and qualification testing for raceway fire barriers were also reviewed and a walk-down of installed barriers was performed for the selected fire areas. These reviews were performed to ensure that the electrical raceway fire barrier systems met the licensing and design bases as described in the licensee submittals, NRC SERs, and the JAFNPP Fire Hazards Analysis (FHA) report.”

b. Findings

At JAFNPP, Hemyc fire wrap is used to protect conduit associated with power cables in the west cable tunnel. The Hemyc fire wrap is provided to meet the separation requirements of 10 CFR 50, Appendix R, Section G, "Fire Protection of Safe Shutdown Capability." A fire barrier with a one hour fire rating is required to ensure the availability of an air handling unit which supports "B" train DC power for postulated fires in the west cable tunnel area. Since the Hemyc fire barriers were installed after the effective date of Appendix R, they are required to meet the technical requirements of Appendix R or have appropriate documentation to justify a deviation.

The NRC previously identified issues at the Shearon Harris Nuclear Power Plant (IR 50-400/99-13) regarding the acceptability of the Hemyc fire barrier qualification tests. The NRC Region II staff requested the Office of Nuclear Reactor Regulation (NRR) assistance in a Task Interface Agreement (TIA), in evaluating the resolution of these issues.

At JAFNPP, the licensee evaluated the adequacy of the Hemyc fire barrier in evaluation JAF-ANAL-FPS-00816, "Fire Barrier Analysis Promatec [B & B Insulation, Inc.] Insulco/Hemyc Protective Wrap System," Rev. 0. This analysis, which concluded the installations at JAFNPP provided a one hour fire resistance capability, was based, in part, on the results of the qualification tests discussed in the TIA. These qualification tests are CTP-1026, "'Hemyc' Cable Wrap System (Redundant Cable Protection - One Hour)," dated December 8, 1982, and CTP-1077, "One (1) Hour Fire Qualification Test 2 Inch 'Hemyc' System Direct Wrap on Conduit," dated March 10, 1986.

The team noted that the Hemyc fire wrap at JAFNPP was in good repair and was included in the licensee's surveillance program for periodic inspections.

The adequacy of the Hemyc barrier at JAFNPP is unresolved pending further NRC review to determine whether the qualification tests of the Hemyc fire wrap systems are acceptable (**URI 05000333/2002-002-01**).

4. **OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems

.1 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team reviewed self-assessment reports and quality assurance audit reports for fire protection activities conducted during the past two years. Selected deviation/event reports (DERs) for fire protection and post-fire safe shutdown equipment were also reviewed. This review included the DERs initiated to address issues identified during this inspection. The team also reviewed selected outstanding and completed fire protection equipment work requests. These reviews were conducted to determine if

Entergy Nuclear Northeast at JAFNPP was identifying fire protection deficiencies and implementing appropriate corrective actions.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

.1 Exit Meeting Summary

The inspectors presented their preliminary inspection results to Mr. T. Sullivan and other members of the Entergy Nuclear staff at an exit meeting on April 26, 2002.

The inspectors asked whether any materials examined during the inspection should be considered proprietary. Materials identified as proprietary were returned to Entergy at the completion of the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Entergy Nuclear

T. Sullivan, Vice President of Operations
B. O'Grady, General Manager
A. Halliday, Regulatory Compliance Manager
P. Russel, Operations Manager
R. Davis, System Engineering Manager
A. Khanifar, Design Engineering Manager
S. Downer, Human Relations Manager
O. Limpas, Director of Site Engineering
T. Savory, Electrical Design Supervisor
G. Tiner, Training Coordinator
V. Wall, Operations Shift Manager
J. Pachacek, Fire Protection Engineer
R. Angus, Fire Protection System Engineer
D. Stokes, Fire and Safety Specialist
J. Stead, Component Engineer
T. Andersen, Senior Electrical Design Engineer
B. Eng, Engineering Programs, White Plains
F. McGuinness, Electrical Engineer, Pilgrim

Nuclear Regulatory Commission

R. Rasmussen, Senior Resident Inspector
D. Dempsey, Resident Inspector
J. Linville, Chief, Electrical Branch

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000333/2002-002-01 URI Adequacy of Hemyc Cable Wrap Fire Barrier Test and Evaluation (Section 1R05.10)

Closed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
CSR	Cable Spreading Room
DBD	Design Basis Document
DER	Deviation/Event Report
FHA	Fire Hazards Analysis
IPE	Individual Plant Evaluation
IPEEE	Individual Plant Evaluation for External Events
IP	Inspection Procedure
IR	Inspection Report
JAFNPP	James A. Fitzpatrick Nuclear Power Plant
JPM	Job Performance Measure
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
P&ID	Piping and Instrumentation Drawing
SCBA	Self Contained Breathing Apparatus
SER	Safety Evaluation Report
TIA	Task Interface Agreement
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item

LIST OF DOCUMENTS REVIEWED

Fire Protection Program Documents

Design Basis Documents (DBD) for Fire Protection (076 System), Rev. 3:

DBD - 076, Tab I, "Water Supply and Distribution System"
DBD - 076, Tab II, "Fixed Suppression Systems"
DBD - 076, Tab III, "Portable Fire Suppression Equipment"
DBD - 076, Tab IV, "Fire Detection and Alarm System"
DBD - 076, Tab V, "Fire Hazards Analysis"
DBD - 076, Tab VI, "Fire Resistive Building Features"
DBD - 076, Tab VII, "Smoke Removal Systems"
DBD - 076, Tab VIII, "Plant Drains System"
DBD - 076, Tab IX, "Safe Shutdown Analysis"
DBD - 076, Tab X, "Emergency Lighting System"
DBD - 076, Tab XI, "Shutdown Communication Systems"

Pre-Fire Plans:

PPF-PWR02, "West Cable Tunnel/Elev. 258' Fire Area/Zone IC/CT-1," Rev. 2
PPF-PWR04, "Battery Room Complex/Elev. 272', 282' Fire Area/Zone III/BR-1, IV/BR-3, BR-4, XVI/BR-5," Rev. 2
PPF-PWR11, "Cable Spreading Room/Elev. 272' Fire Area/Zone VII/CS-1," Rev. 2
PPF-PWR21, "Reactor Building - West/Elev. 272' Fire Area/Zone X/RB-1B," Rev. 3
PPF-PWR25, "Reactor Building - West/Elev. 300' Fire Area/Zone X/RB-1B, VIII/RB-1C," Rev. 3
PPF-PWR41, "Condenser Pit/Elev. 244' Fire Area/Zone 1E/TB-1," Rev. 1
PPF-PWR42, "Turbine Building -North/Elev. 252' Fire Area/Zone 1E/TB-1," Rev. 2
PPF-PWR43, "Turbine Building - South/Elev. 252' Fire Area/Zone 1E/TB-1," Rev. 3
PPF-PWR45, "Turbine Building - North/Elev. 272' Fire Area/Zone 1E/TB-1," Rev. 2
PPF-PWR46, "Turbine Building - South/Elev. 272' Fire Area/Zone 1E/TB-1," Rev. 2
PPF-PWR48, "Turbine Building/Elev. 300' Fire Area/Zone 1E/TB-1," Rev. 3

Modification Packages

DCN JD-00-004, Permanent Hydrogen Storage Facility

Piping and Instrumentation Drawings

FB-30A, "Administration Building Plumbing & Fire Protection," Rev. 21
FB-48A, "Flow Diagram Fire Protection Water Piping System 76," Rev. 29
FB-48B, "Site Utilities Fire Protection Water Supply Flow Diagram," Rev. 9
FB-49A, "Flow Diagram Fire Protection Water System 76," Rev. 39
FB-49B, "Flow Diagram Fire Protection Water Piping System 76," Rev. 9
FB-56A, "Flow Diagram CO2 and Foam Fire Extinguishing System," Rev. 11
FM-22A, Rev. 52, Reactor Core Isolation Cooling System 13
FM-23A, Rev. 44, Core Spray System 14
FM-25A, Rev. 65, High Pressure Coolant Injection System 23
FM-47A, Rev. 45, Nuclear Boiler Vessel Instruments

Control Circuit Schematics

ESK-5BF, Rev. 24	Pump 14P-1A
ESK-5BH, Rev. 12	Pump 10P-1B
ESK-5BR, Rev. 14	Pump 10P-1D
ESK-5BX, Rev. 24	Pump 10P-3D
ESK-6MH, Rev. 12	Valve 10 MOV-13D
ESK-6MP, Rev. 22	Valve 10 MOV-25B
ESK-6MZ, Rev. 15	Valve 10 MOV-89B
ESK-6MAJ, Rev. 9	Valve 14 MOV-12A
ESK-6MAN, Rev. 7	Valve 14 MOV-7A
ESK-11AK, Rev. 17	Valves 23 MOV-14 & 16
ESK-11AL, Rev. 14	Valve 23 MOV-19
ESK-11AS, Rev. 14	Valve 13 MOV-21
ESK-11AQ, Rev. 17	Valve 13 MOV-131

Design Drawings

One Line Diagrams

FE-1H, REV. 13, 4160 Volt One Line Diagram, Emergency Bus 10500
 FE-1J, REV. 14, 4160 Volt One Line Diagram, Emergency Bus 10600
 FE-1L, REV. 30, 600 Volt One Line Diagram, Swgrs. L15 & 16, MCCs 153 & 163
 FE-1P, REV. 26, 600 Volt One Line Diagram, Swgr. L34, MCC 343
 FE-1Q, REV. 27, 600 Volt One Line Diagram, Swgr. L44
 FE-1S, REV. 38, 600 Volt One Line Diagram, MCCs 152, 161 & 162
 FE-1Y, REV. 31, 600 Volt One Line Diagram, MCC 165
 FE-!AJ, Rev. 20, 125 Volt DC One Line Diagram, MCCs B1, B2, B3 & B6
 FE-1AL, Rev. 27, 125 Volt DC One Line Diagram, Distribution Centers A2 & B2
 FE-1AN, Rev. 18, 125 Volt DC One Line Diagram, Distribution Center B3
 FE-1AX, Rev. 20, 125 Volt DC One Line Diagram, Distribution Center A5

Cable Tray Designation Drawings:

FE-34AC, Rev. 6, Control Bay - X Trays
 FE-34AD, Rev. 6, Control Bay - K Trays
 FE-34AE, Rev. 5, Control Bay - L Trays
 FE-34AF, Rev. 12, Control Bay - C Trays
 FE-34V, Rev. 4, Reactor Building - H & L Trays
 FE-34W, Rev. 4, Reactor Building - K & X Trays
 FE-34X, Rev. 9, Reactor Building - C Trays
 FE-34Y, Rev. 6, Turbine Building - K Trays
 FE-34Z, Rev. 11, Turbine Building - C Trays
 FE-34AA, Rev. 5, Turbine Building - X Trays
 FE-34AB, Rev. 6, Turbine Building - H & L Trays

Fire Area/Zone Arrangement Drawings:

FPSSK-1, Rev 1, Plan Below EL. 272
 FPSSK-2, Rev 1, Plan EL. 272
 FPSSK-3, Rev 1, Plan EL. 300
 FPSSK-4, Rev 1, Plan EL. 286
 FPSSK-6, Rev 1, Sections
 FPSSK-7, Rev 1, Sections

Rack Drawings:

7.70-163, Rev. F, Instrument Rack 25-51, Sheet 2
 7.70-181, Rev. F, Instrument Rack 25-51, Sheet 1

Coordination Curves:

JAF-CRVE-ELEC-CC-H05-L15 & 25
 JAF-CRVE-ELEC-CC-H05 & 06-10P-1AC & BD
 JAF-CRVE-ELEC-CC-H05 & 06-10P-3AC & BD
 JAF-CRVE-ELEC-CC-H05 & 06-14P-1A & B
 JAF-CRVE-ELEC-CC-H06-L16 & 26
 JAF-CRVE-ELEC-CC-H05 & 06-BUSCOORD
 JAF-CRVE-ELEC-CC-L15-MCC152
 JAF-CRVE-ELEC-CC-L15-MCC153
 JAF-CRVE-ELEC-CC-L15-MCC161
 JAF-CRVE-ELEC-CC-L15-MCC163
 JAF-CRVE-ELEC-CC-L15-MCC165-OB2
 JAF-CRVE-ELEC-CC-L16-BUSCOORD

FE-67B "Lighting Plan - Reactor Building EL. 272'0", Rev. 19

FE-67C, "Lighting Plan - Reactor Building EL. 300'0", Rev. 16

FPSSK-1 - 7, "Fire Area/Zone Arrangement Plan"

FPSSK-100, "Fire Barrier Penetrations Arrangement Plan Below EL 272'0", Rev. 4

FPSSK-101, "Fire Barrier Penetrations Arrangement Plan EL 272'0", Rev. 5

FPSSK-102, "Fire Barrier Penetrations Arrangement Plan EL 300'0", Rev. 4

FPSSK-103, "Fire Barrier Penetrations Arrangement Plan EL 286'0", 326'9", & EL 369'6",
 Rev. 4

FPSSK-1000, "Fire Protection System Hydraulic Data Sheets," Sheets 2 & 3

FPSSK-1001, "Fire Protection System Isometric Drawing Distribution System Outside Loop
 West Side," Sheets 1 - 5

FPSSK-1002, "Fire Protection System Isometric Drawing Distribution System Outside Loop
 East Side," Sheets 1 - 4

FPSSK-1003, "Fire Protection System Isometric Drawing Distribution System Screenwell, West
 Electrical Tunnel, Admin. Bldg.," Sheets 1 - 3

FPSSK-1005, "Fire Protection System Isometric Drawing Distribution System West Cable
 Tunnel," Sheets 1 - 3

FPSSK-1006, "Fire Protection System Isometric Drawing Distribution System Turbine Bldg.
 Foam Room Manifolds," Sheets 1 - 3

FPSSK-1007, "Fire Protection System Isometric Drawing Distribution System Reactor Building
 West Cable Tunnel," Sheets 1 - 3

NP12-104, "Detail "E-4" Silicone Foam Typical Electrical Pen. Seals (Walls and Floors)," Rev. 1

NP-12-TE-02, "Typical Silicone Elastomer Installation for Upgrading Existing Penetration,"
 Rev. 1

Engineering Evaluations/Modifications/Safety Evaluations/Change Requests

CTP-1026, "Hemyc Cable Wrap System (Redundant Cable Protection - One Hour)," 12/8/82
 CTP-1077, "One (1) Hour Fire Qualification Test 2" Hemyc System Direct Wrap on Conduit,"
 3/10/86
 F1-92-294, "Upgrade of Shutdown Communication System," Rev. 0
 JAF-ANAL-FPS-00322, "Fire Area VII EDG, ESW, RHR Pump B & Associated Min. flow Valve
 Operability," 8/9/91
 JAF-ANAL-FPS-00636, "Fire Barrier Analysis, Thermal Ceramics (Babcock & Wilcox) FP-60
 Electrical Circuit Protective System," Rev. 0
 JAF-ANAL-FPS-00734, "Fire Doors with Excessive Clearances That are Qualified Per Warnock
 Hersey International, Inc. Test No. WHI-495-0799," Rev. 2
 JAF-ANAL-FPS-00816, "Fire Barrier Analysis, Promatec [B&B Insulation, Inc.] Insulco/Hemyc
 Protective Wrap System," Rev. 0
 JAF-ANAL-FPS-01183, "Fire Barrier Analysis Electrical & Mechanical Penetration Seals," Rev.
 2
 JAF-ANAL-FPS-01392, "Fire Barrier Analysis, RB-1B to RB-1A 326' Elev. Of Reactor Bldg."
 Rev. 0
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Fire Brigade Training Drill Matrix, 2000-2002

Fire Drills and Critiques:

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Cable Spreading Room, 11/13/01

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West Cable Tunnel, 2/26/02

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FP-13-1.2, "Fire Protection Responsibilities and Make-up," Rev. 5

FP-13-1.3, "Personal Protective Equipment," Rev. 8

FP-13-2.1, "Fire Areas & Equipment," Rev. 2

FP-13-2.2, "Fire Chemistry/Fire Behavior," Rev. 8

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DER-01-02431	DER-01-02484	DER-01-03311	
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Miscellaneous Documents

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