



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD.
KING OF PRUSSIA, PA 19406-2713

June 16, 2017

Mr. Bryan C. Hanson
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

**SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – TRIENNIAL FIRE
PROTECTION INSPECTION REPORT 05000333/2017007**

Dear Mr. Hanson:

On May 18, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The enclosed inspection report documents the inspection results, which were discussed on May 18, 2017, with Mr. Joseph Pacher, Site Vice President, and other members of your staff.

The inspection examined activities conducted under your license as they related to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed station personnel. The inspectors also reviewed mitigation strategies for addressing large fires and explosions.

The NRC inspectors did not identify any finding or violation of more than minor significance.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Glenn T. Dentel, Chief
Engineering Branch 2
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000333/2017007
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000333/2017007 DATED JUNE 16, 2017

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U. S. NUCLEAR REGULATORY COMMISSION**REGION I**

Docket No. 50-333

License No. DPR-59

Report No. 05000333/2017007

Licensee: Exelon Generation Company, LLC

Facility: James A. FitzPatrick Nuclear Power Plant

Location: Scriba, New York

Dates: May 1, 2017 through May 18, 2017

Inspectors: J. Rady, Acting Senior Reactor Inspector (Team Leader)
C. Cahill, Senior Reactor Analyst
G. DiPaolo, Senior Reactor Inspector
J. Ayala, Reactor Inspector
L. Dumont, Reactor Inspector
D. Kern, Senior Reactor Inspector (Training)

Observers: H. Roth, New York State Fire Protection Engineer

Approved by: Glenn T. Dentel, Chief
Engineering Branch 2
Division of Reactor Safety

SUMMARY

Inspection Report 05000333/2017007; 05/01/2017 - 05/18/2017; James A. FitzPatrick Nuclear Power Plant; Triennial Fire Protection Inspection.

This report covered a two week on-site triennial fire protection team inspection by specialist inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6, dated July 2016.

No findings were identified.

REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with U.S. Nuclear Regulatory Commission (NRC) Inspection Procedure (IP) 71111.05T, "Fire Protection (Triennial)." The objective of the inspection was to assess whether Exelon Generation Company, LLC (Exelon) had implemented an adequate fire protection program (FPP) and whether post-fire safe shutdown capabilities had been established and were properly maintained at James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The following fire areas and/or fire zones (FZ) were selected for detailed review based on prior inspection results and risk insights from the Fitzpatrick Individual Plant Examination of External Events.

Fire Area / Fire Zone

- FZ BR-3, Train 'B' Battery Room 3, 272' Elevation;
- FZ BR-4, Train 'B' Battery Charger Room 4, 272' Elevation;
- FZ CR-1, Main Control Room, 300' Elevation; and,
- FZ RB-1E, Reactor Building E. Crescent Area, 227' and 242' Elevation

Inspection of these fire areas/FZs fulfilled the IP requirement to inspect a minimum of three samples.

The inspection team evaluated Exelon's FPP against applicable requirements which included plant technical specifications; Operating License Condition 2.C.(3); NRC Safety Evaluation Reports; Title 10 of the *Code of Federal Regulations* (10 CFR) 50.48; 10 CFR Part 50, Appendix R; and Branch Technical Position Auxiliary and Power Conversion Systems Branch 9.5-1 and Appendix A. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.8; FPP; Fire Hazards Analyses; and 10 CFR Part 50, Appendix R, Safe Shutdown Analysis Report.

The team evaluated aspects of four mitigating strategies for responding to large fires and explosions, which are required by Operating License Condition 2.R and 10 CFR 50.54(hh)(2). Inspection of these strategies fulfills the IP requirement to inspect a minimum of one sample.

Specific documents reviewed by the team are listed in the Attachment to this report.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05T)

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the Fire Hazards Analysis Report (FHAR), post-fire safe shutdown analyses, and supporting drawings and documents to determine whether the safe shutdown capabilities were properly protected from fire damage. The team evaluated equipment and cable separation to determine whether the applicable separation requirements of the FitzPatrick design and licensing bases were maintained for the credited safe shutdown equipment and their supporting power, control, and instrumentation cables. The team's review included an assessment of the adequacy of the selected systems for reactivity control, reactor coolant inventory control, reactor pressure control, decay heat removal, process monitoring, and associated support system functions.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to evaluate whether the material conditions of the fire area boundaries were adequate for the fire hazards in the area. The team compared the fire area boundaries, including walls, ceilings, floors, fire doors, fire dampers, penetration seals, electrical raceway and conduit fire barriers, water spray curtains, and redundant equipment fire barriers to design and licensing basis requirements, industry standards, and the FitzPatrick FPP, as approved by the NRC, to identify any potential degradation or non-conformances.

The team reviewed selected engineering evaluations, installation and repair work orders, and qualification records for a sample of penetration seals to determine whether the fill material was properly installed and whether the as-left configuration satisfied design requirements for the intended fire rating. The team also reviewed recent inspection records for fire dampers, penetration seals, and fire barriers to verify whether the inspection was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team evaluated manual and automatic fire suppression and detection systems in the selected fire areas to determine whether they were installed, tested, maintained, and operated in accordance with NRC requirements, National Fire Protection Association (NFPA) codes of record, and FitzPatrick's FPP, as approved by the NRC. The team also assessed whether the suppression systems' capabilities were adequate to control and/or extinguish fires associated with the hazards in the selected areas.

The team reviewed the as-built capability of the fire water supply system to verify whether the design and licensing basis and NFPA code of record requirements were satisfied, and to assess whether those capabilities were adequate for the hazards involved. The team reviewed the fire water system hydraulic analyses to assess the adequacy of a single fire water pump to supply the largest single hydraulic load on the fire water system plus concurrent fire hose usage. The team evaluated the fire pump performance tests to assess the adequacy of the test acceptance criteria for pump minimum discharge pressure at the required flow rate, and to verify whether the criteria was adequate to ensure that the design basis and hydraulic analysis requirements were satisfied. The team also evaluated the underground fire loop flow tests to determine whether the tests adequately demonstrated that the flow distribution circuits were able to meet design basis requirements. In addition, the team reviewed recent pump and loop flow test results to verify whether the testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

The team walked down accessible portions of the detection and water suppression systems in the selected areas and major portions of the fire water supply system, including motor and diesel driven fire pumps, interviewed system and program engineers, and reviewed selected issue reports (IRs) to independently assess the material condition of the systems and components. In addition, the team reviewed recent test results for the fire detection and suppression systems for the selected fire areas to verify whether the testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed Exelon's fire-fighting strategies (i.e., pre-fire plans) and smoke removal plans for the selected fire 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 post-fire safe shutdown capability. The team independently inspected the fire brigade equipment, including personnel protective gear (e.g., turnout gear) and smoke removal equipment, to determine operational readiness for fire-fighting. In addition, the team reviewed Exelon's fire brigade equipment inventory and inspection procedures and recent inspection and inventory results to verify whether adequate equipment was available, and whether any potential material deficiencies were identified.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walk downs to determine whether redundant trains of systems required for hot shutdown, located in the same or adjacent fire areas, would be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team evaluated whether:

- A fire in one of the selected fire areas would indirectly, through production of smoke, heat, or hot gases, cause unintended activation of suppression systems in adjacent fire areas that could potentially damage redundant safe shutdown trains;
- A fire suppression system rupture, inadvertent actuation, or actuation due to a fire, in one of the selected fire areas, would directly damage all redundant trains (e.g., sprinkler caused flooding of other than the locally affected train); and
- Adequate drainage was provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Alternative Shutdown Capability

a. Inspection Scope

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings, electrical drawings, the UFSAR, and other supporting documents for the selected fire areas to determine whether Exelon had properly identified the systems and components necessary to achieve and maintain post-fire safe shutdown conditions. The team evaluated selected systems and components credited by the safe shutdown analysis for reactivity control, reactor coolant inventory control, reactor pressure control, decay heat removal, process monitoring, and support system functions to assess the adequacy of Exelon's alternative shutdown methodology. The team also assessed whether alternative post-fire shutdown could be performed both with and without the availability of off-site power. The team walked down selected plant configurations to verify whether they were consistent with the assumptions and descriptions in the safe shutdown and the FHAR. In addition, the team evaluated whether the systems and components credited for use during post-fire safe shutdown would remain free from fire damage.

The team reviewed the training program for licensed and non-licensed operators to verify whether it included alternative shutdown capability. The team also verified whether personnel, required for post-fire safe shutdown, using either the normal or alternative shutdown methods, were trained and available on-site at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps (i.e., a procedure tabletop) to assess the adequacy of implementation and human factors within the procedures. The team also evaluated the time required to perform specific actions to verify whether

operators could reasonably be expected to perform those actions within sufficient time to maintain plant parameters within specified limits.

Specific procedures reviewed for normal and alternative post-fire shutdown included:

- AOP-28, Operation during Plant Fires, Revision 22; and,
- AOP-43, Plant Shutdown From Outside the Control Room, Revision 39.

The team reviewed selected operator manual actions to verify whether they had been properly reviewed and approved and whether the actions could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each fire area. The team also reviewed the periodic testing of the alternative shutdown transfer and isolation capability, and instrumentation and control functions, to evaluate whether the tests were adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

No findings were identified.

.06 Circuit Analysis

a. Inspection Scope

The team reviewed Exelon's post-fire safe shutdown analysis for the selected fire areas to determine whether the analysis identified both required and associated electrical circuits and cables for the systems and components necessary to achieve and maintain safe shutdown. The team reviewed electrical schematics and cable routing data for power, control, and instrumentation associated with selected components. Specifically, the team evaluated the selected circuits and cables to determine whether they were (a) adequately protected from potential fire damage, or (b) analyzed to show that fire-induced faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown, or (c) analyzed to show that potential damage could be mitigated with approved operator manual actions, in order to determine whether fire-induced faults could adversely impact safe shutdown capabilities. The team's evaluations considered credible fire scenarios, cable insulation attributes, cable failure modes, cable routing, and common power supply or electrical bus configurations.

In addition, the team reviewed cable raceway drawings and cable routing databases for a sample of components required for post-fire safe shutdown to determine whether those cables were routed as described in the safe shutdown analysis. The team also reviewed equipment important to safe shutdown, but not part of the success path, to assess whether Exelon's safe shutdown methodologies were appropriate, conformed to design and licensing basis requirements, and appropriately considered the guidance in NRC Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Revision 2.

Cable failure modes were reviewed for the following components:

- 14P-1A, Core Spray Pump 'A';
- 13MOV-21, Reactor Core Isolation Cooling (RCIC) Pump Discharge Isolation Valve to Reactor;
- 13MOV-41, RCIC Pump Suction Isolation Valve From Torus;
- 10AOV- 71A, Residual Heat Removal (RHR) 'A' Discharge Isolation Valve to Torus;
- 10MOV-16B, RHR 'B' Minimum Flow Isolation Valve; and,
- 02-3LI58A, Reactor Level Indicator.

The team reviewed a sample of circuit breaker and fuse over-current protection coordination studies to determine whether equipment needed for post-fire safe shutdown activities could be adversely affected due to a lack of coordination that could result in a common power supply or common electrical bus concern. The team also evaluated whether coordination studies appropriately considered multiple faults due to fire. In addition, the team reviewed a sample of circuit breaker maintenance records, for components required for safe shutdown, to determine whether the breakers were properly maintained.

The team assessed the transfer of control from the main control room to the alternative shutdown location to determine whether it would be adversely affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

No findings were identified.

.07 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis, and associated documents to verify whether an adequate method of communications would be available to plant operators following a fire. During this review, the team considered the effects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team inspected selected emergency storage lockers to independently verify whether portable communication equipment was available for the fire brigade and plant operators. In addition, the team evaluated whether radio or phone repeaters, transmitters, and power supplies would be reasonably unaffected by a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of eight-hour emergency lights throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation or instrumentation monitoring for post-fire safe shutdown. The team also verified whether the battery power supplies were rated for at least an eight-hour capacity. Preventive maintenance procedures, the vendor manual, completed surveillance tests, and battery replacement practices were also reviewed to evaluate whether the emergency lighting had been maintained consistent with the manufacturer's recommendations and in a manner that would ensure reliable operation.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

Exelon did not identify any systems or components that would require repairs to achieve post-fire cold shutdown. The team assessed Exelon's determination that no dedicated repair procedures, equipment, or materials were needed to accomplish repairs of components required for cold shutdown which might be damaged by a fire, to verify whether cold shutdown could be achieved within the time frames specified in the design and licensing bases without performing any cold shutdown repairs.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified whether compensatory measures were in place for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g., detection and suppression systems and equipment, passive fire barriers, or pumps, valves, or electrical devices providing safe shutdown functions or capabilities). The team evaluated whether the short term compensatory measures adequately compensated for the degraded function or feature until appropriate corrective action could be taken and whether Exelon was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings were identified.

.11 Review and Documentation of FPP Changes

a. Inspection Scope

The team reviewed recent changes to the approved FPP to assess whether those changes had an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed Exelon's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHAR. A sample of hot work and transient combustible control permits were reviewed to assess the adequacy of Exelon's FPP administrative controls. The team performed plant walk downs to independently verify whether transient combustibles and ignition sources were being properly controlled in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Large Fires and Explosions Mitigation Strategies

a. Inspection Scope

The team conducted a review of selected mitigation strategies intended to maintain or restore core decay heat removal and spent fuel pool cooling capabilities under the circumstances associated with the loss of large areas of the plant due to explosions and/or fires. The team assessed whether Exelon continued to meet the requirements of License Condition 2.R and 10 CFR 50.54(hh)(2).

The team reviewed the following mitigation strategies:

- Makeup to the Spent Fuel Pool with Permanently Installed and Portable Equipment;
- External Spray;
- Operation of Safety Relief Valves; and,
- Makeup to the Reactor with the Portable Pump.

The team's review included: a detailed assessment of the procedural guidance; a tabletop discussion with licensed operators; a walk down of four mitigation strategies with operators to assess the feasibility of the strategies and operator familiarity; maintenance and surveillance testing of selected strategy equipment; and an inventory

check of the B.5.b pump and equipment trailers to ensure the appropriateness of equipment storage and availability.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The team reviewed a sample of IRs associated with the FPP, post-fire safe shutdown issues, and mitigation strategy issues to determine whether Exelon was appropriately identifying, characterizing, and correcting problems associated with these areas and whether the planned or completed corrective actions were appropriate. The IRs reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

The team presented the inspection results to Mr. Joseph Pacher, Site Vice President, and other members of Exelon's staff on May 18, 2017. The team verified that this report does not contain proprietary information.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Cooney, Fire Protection Engineer
M. Hawes, Licensing Specialist
R. Jennings, Fire Marshall
J. Pechaceke, Senior Reactor Operator
C. Pragman, Exelon Corporate Fire Protection
C. Smolinski, Operations Support Manager
D. Starczewski, Engineering Supervisor
M. Taylor, Exelon Corporate Fire Protection
C. Wallace, System Engineer
E. Weimer, Fire Protection System Engineer

NRC Personnel

B. Sienel, Senior Resident Inspector, FitzPatrick
G. Stock, Acting Resident Inspector, FitzPatrick

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Opened and Closed

None.

Closed

None.

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing and Design Basis Documents

AP-14.01, Fire Protection Program, Revision 14
Branch Technical Position CMEB 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants, Revision 2
DBD-010, Design Basis Document for the Reactor Heat Removal System, Revision 13
DBD-013, Design Basis Document for the Reactor Core Isolation Cooling System, Revision 11
DBD-014, Design Basis Document for the Core Spray System, Revision 10
DBD-076 Tab X, Emergency Lighting System, Revision 5
DBD-076 Tab XI, Shutdown Communications, Revision 2
Design Basis Document for Fire Protection System (System 076), Revision 4
JAF UFSAR Update, Revision 6
JAF Amended Facility Operating License, dated 10/17/08

JAF Technical Requirements Manual Specifications, Revision 64
JAF Technical Specifications, Revision 32
JAF-RPT-04-00478, JAF Fire Hazards Analysis, Revision 3
JAF-RPT-FPS-01975, 10CFR50 Appendix R Safe Shutdown Analysis Report, Revision 2
JAF-RPT-FPS-02367, Fire Protection Plan, Revision 14
NRC Confirmatory Order EA-15-100, dated 4/6/2016
NRC Generic Letter 86-10 – Supplement 1, Fire Endurance Test Acceptance Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains within the Same Fire Area, dated 3/25/94
NRC Generic Letter 86-10, Implementation of Fire Protection Requirements, dated 4/24/86
NRC Letter to NYPA, JAF Exemption Requests – 10 CFR 50.48 Fire Protection and Appendix R to 10 CFR Part 50, dated 2/1/84
NYPA Letter JPN-83-44, JAF Draft Safety Evaluation of Appendix R Exemption Requests, dated 5/19/83
NYPA Letter JPN-84-46, JAF Appendix R to 10 CFR 50, Clarification of Exemption Requests, dated 7/16/84
QDR 02.01, Qualification Documentation Report for General Electric 7700 Series AC and DC Motor Control Centers, Revision 2

Calculations, Analysis, and Engineering Evaluations

0090-00066-C-003, JAF Fire Suppression Effects Analysis, Revision 4
12966-PE(N)-020, Flooding Levels of Reactor Building Floors Resulting from High Energy Line Breaks, Revision 0
DCME-02-0611, JAF Peak Clad Temperatures for an Appendix R Fire Event, dated 2/14/02
DCME-02-0612, JAF Peak Clad Temperatures for an Appendix R Fire Event, dated 2/14/02
JAF-ANAL-FPS-00738, Miscellaneous Fire Door Deficiencies, Revision 4
JAF-ANAL-FPS-01139, JAF Fire Barrier Analysis – Various Unsealed Penetrations from Crescents and Main Steam Tunnel to Torus, Revision 2
JAF-ANAL-FPS-01141, Fire Barrier Analysis – Various Unsealed Penetrations between the Reactor Building 272' Elevation and the East and West Crescent Areas, Revision 0
JAF-ANAL-FPS-02767, Analysis of Eliminating Fixed Fire Detection Capability on the Refueling Floor, Revision 0
JAF-CALC-16-00005, Reactor Building Water Spray Curtain Internal Flooding Analysis, Revision 0
JAF-CALC-ELEC-00640, 125Vdc Electrical Distribution System Coordination Analysis – Appendix R Analysis, Revision 4
JAF-CALC-FPS-02013, Hydraulic Calculations for Fire Suppression Systems, Revision 1
JAF-CALC-HPCI-00820, Basis for Removal of Certain High Pressure Coolant Injection Electrical Components from the JAF Environmental Qualification Program, Revision 2
JAF-RPT-ELEC-00864, Appendix R 4160Vac and 600Vac Breaker Coordination Evaluation, Revision 0
JAF-SE-97-023, Elimination of Fire Detection Capability on the Refueling Floor, Revision 0
MDE-137-0585, Analysis to Extend Operator Actions for Alternate Shutdown Panels in Support of FitzPatrick Compliance with Appendix R, Revision 2
OE/VI 890339, Steam Leak Detection System Inoperability Due to Unrecognized Design Interaction with the Fire Protection System, dated 4/30/93

Drawings and Wiring Diagrams

1.83-37, Elementary Diagram Automatic Depressurization System, Revision 21
1.83-38, Elementary Diagram Automatic Depressurization System, Revision Q
1.83-39, Sheet 1, Elementary Diagram Automatic Depressurization System, Revision M

1.83-39, Sheet 2, Elementary Diagram Automatic Depressurization System, Revision 3
 11825-1.43-226, Drip Shield Fabrication and Installation Details for Safety and Non-Safety Related Motor Control Centers, Revision A
 11825-SE-10AA, 125Vdc Wiring Diagram Upstream Shutoff Valve 13MOV-041 BMCC-3 Compartment OA2 System 13, Revision 9
 11825-SE-10W, 125Vdc Wiring Diagram Downstream Shutoff Valve 13MOV-021 BMCC-1 Compartment OB2 System 13, Revision 6
 11825-SE-18BB-3, 120Vac Wiring Diagram 10SOV-69A, 10SOV-71A and 10SOV-150A System 10, Revision 2
 6.32-77, Dual 3-Way Solenoid Valve and Manifold Assembly, Revision 4
 ESK -6ML, Elementary Diagram 600V Circuits - MOV RHR Pumps 10P-3A(B) Minimum Flow Bypass Valves 10MOV-16A(B), Revision 14
 ESK-11AAB, Elementary Diagram 125Vdc Circuits - SOVs ADS Valves 02SOV-71E1 and 71F1, Revision 8
 ESK-11AS, Elementary Diagram – 125Vdc Circuits - MOV RCIC System Pump Discharge and Test Bypass to Condensate Storage Tank MOVs, Revision 15
 ESK-11AT, Elementary Diagram – 125Vdc Circuits MOV RCIC System – Pump Suction from Suppression Chamber MOVs, Revision 13
 ESK-5BF, DC Elementary Diagram 4160V Circuit Core Spray Pump 14P-1, Revision 25
 ESK-7G, Elementary Diagram RHR System SOVs Steam Pressure Reducing Discharge Service Water Crosstie Valves, Revision 4
 FE-1AH, Sheet 1, 125Vdc One Line Diagram, Revision 33
 FE-1AJ, Sheet 2, 125Vdc One Line Diagram, Revision 21
 FE-1AL, 125Vdc One Line Diagram, Revision 28
 FE-1B, Station Service Transformers, Revision 15
 FE-1J, Emergency Bus 10600, Revision 15
 FE-3BF, Sheet 5, External Connections Diagram Main Control Board Section 09-4, Revision 27
 FE-3FT, External Connections Core Spray Panel 09-46 System 14, Revision 13
 FE-3GM, Sheet 7, External Connections Diagram Main Control Board Sect. 09-3, Revision 28
 FPSSK-1, Fire Area/Zone Arrangement Plan Below Elevation 272', Revision 1
 FPSSK-2, Fire Area/Zone Arrangement Plan Elevation 272', Revision 3
 FPSSK-3, Fire Area/Zone Arrangement Plan Elevation 300', Revision 3
 FPSSK-4, Fire Area/Zone Arrangement Plan Elevations 286', 326', 344', and 369', Revision 2
 FPSSK-6, Fire Area/Zone Arrangement Sections, Revision 1
 FPSSK-7, Fire Area/Zone Arrangement Sections, Revision 1
 NP-12-104, Detail E-4 Silicone Foam Typical Electrical Penetration Seals, Revision 1
 NP-12-TE-02, Typical Silicone Elastomer Installation for Upgrading Existing Penetration Seals, Revision 1
 SE-9GM, 600V Wiring Diagram 10MOV-016B System 10, Revision 9

Piping and Instrumentation Diagrams

1.61-152, Elementary Diagram Reactor Core Isolation Cooling System, Revision 9
 1.61-153, Elementary Diagram Reactor Core Isolation Cooling System, Revision 10
 1.61-154, Elementary Diagram Reactor Core Isolation Cooling System, Revision N
 11825-FB-3C, Yard City Water and Fire Protection Plan, Revision 1
 FB-48A, Flow Diagram Fire Protection Water Piping System 76, Revision 34
 FB-48B, Flow Diagram Fire Protection Water Supply Flow Diagram, Revision 11
 FB-49A, Flow Diagram Fire Protection Water Piping System 76, Revision 40
 FB-49B, Flow Diagram Fire Protection Water Piping System 76, Revision 12
 FM-20A, Flow Diagram Residual Heat Removal System 10, Revision 72
 FM-20B, Flow Diagram Residual Heat Removal System 10, Revision 72

FM-22A, Flow Diagram Reactor Core Isolation Cooling System 13, Revision 56
FM-23A, Flow Diagram Core Spray System 14, Revision 49
FM-47A, Flow Diagram Nuclear Boiler Vessel Instruments System 02-3, Revision 52
LP-02-3-74, Loop Diagram Reactor Vessel Level Indication 02-3LT-95 and 02-3LI-95 on 25RSP
Remote Shutdown Panel, Revision 1
LP-02-3G, Loop Diagram Reactor Recirculating Pump Trip Level and Pressure, Revision 3

Large Fires and Explosions Mitigation Strategies Documents

0-AOP-SEC-3, Event Contingency Actions, Revision 3
0-SOP-ESP-002, Emergency Contingency Plan, Revision 12
0-SOP-ESP-003, Emergency Contingency Plant Strategy Attachments, Revision 1
2-SOP-ESP-001, Local Equipment Operations and Contingency Actions, Revision 4
3-SOP-ESP-001, Local Equipment Operations and Contingency Actions, Revision 9

Fire Protection Evaluations of Modifications and Design Changes

EC14004, Replace 71T-2 and 71T-3 Fire Suppression and Detection, Revision 0
EC2229, Security Communications System Upgrades Phase II - Heliac Coaxial Cable System,
Revision 0
EC43187, Replacement of Deluge System on 71T-1A, Revision 0
EC56112, Revise the Fire Areas/Fire Zones for Power Cable Routing to 10MOV-17, Revision 0
EC61046, Elimination of Fire Detection Capabilities on the Refuel Floor, Revision 0
EC13018, Remove 10SOV-101A(B)(C)(D) and Associated Cables, Revision 2
EC15566, Provided Corrected Equipment Remark for 10MOV-131 in Area 08 (RB-1C) and
71MCC-152 in Area 09 (RB-1A), Revision 2
EC17551, Removal of 71UPS-1 and Installation of 71UPP Static Inverter, Revision 2
EC35161, Removal of Components Required to Support the Steam Condensing Mode of RHR
from the Safe Shutdown Analysis, Revision 2
EC43148, Installation of New RPV Level Transmitter (02-3LT-95) and New RPV Level Indicator
(02-3LI-95), Revision 3
JAF-SE-94-108, Fire Barrier Penetration Seals, Fire Dampers, and Fire Doors, AP-01.04
Changes, Revision 3
TRM-11-005, Revise TRM Bases B 3.7.M Fire Barrier Penetrations, dated 10/28/11

Quality Assurance Audits and Self Assessments

QA-9-2017-JAF-1, Quality Assurance Audit Report, dated 3/22/17

Procedures

AP-10.10, On-Line Risk Assessment, Revision 10
AP-14.01, Fire Protection Program, Revision 14
AP-14.04, Fire Penetration Breach Permit, Revision 7
EN-DC 161, Control of Combustibles, Revision 16
EN-DC-127, Control of Hot Work and Ignition Sources, Revision 16
EN-DC-128, Fire Protection Impact Reviews, Revision 10
EN-DC-153, Preventive Maintenance Component Classification, Revision 14
EN-OP-139, Fire Watch Program, Revision 1
EN-TQ-125, Fire Brigade Drills, Revision 4
EN-WM-104, Online Risk Assessment, Revision 15
FPP-1.1, Fire Brigade Duties and Outside Fire Department Response, Revision 12
FPP-1.11, Pre-Fire Plans, Revision 7
FPP-1.12, Fire Protection Impairments, Revision 0
FPP-1.13, Fire Brigade Equipment Inventory, Revision 2

FPP-1.8, Compensatory Fire Watch, Revision 11
 FPP-3.40, Fire Protection Standpipe Test, Revision 5
 FPP-3.41, Fire Protection Hose Station Inspection and Rerack Test, Revision 2
 FPP-3.46, Powerblock Fire Protection Standpipe Flow Test, Revision 1
 FPP-3.56, Portable Fire Extinguisher Inspection Procedure, Revision 2
 FPP-3.57, East Diesel Fire Pump 76P-4 Operational Check, Revision 2
 FPP-3.61, Fire Water Header and Nozzle Inspections (Non-Outage), Revision 0
 MP-076.07, 6-Volt Battery-Pack Emergency Light Maintenance, Revision 30
 MP-076.16, Fire Door Maintenance, Revision 14
 MP-076.21, Holophane Emergency Light Maintenance, Revision 7
 MST-076.05, Exide/Lightguard F-100 Emergency Light Surveillance Test, Revision 30
 MST-076.06, Holophane Emergency Light Surveillance Test, Revision 14
 MST-076.11, Fire Barrier Penetration Functional Integrity Surveillance Test, Revision 20
 MST-076.12, High Pressure Coolant Injection Foam System Sample and Test, Revision 7
 SE-8AM, Wiring Diagram 4160V Switchgear 1105 Bus 10500 Circuit Breaker 10530 Core Spray Pump 14P-1A, Revision 5
 ST-16J1, Control Room and Relay Room Emergency Lighting Test, Revision 13
 ST-16J2, Turbine Building, Heater Bay, and Electric Bay Emergency Lighting Test, Revision 12
 ST-16J3, Emergency Diesel Generator Building, Screenwell, and Warehouse 2 Emergency Lighting Test, Revision 13
 ST-16J4, Administration Building Emergency Lighting Test, Revision 13
 ST-16J5, Reactor Building Emergency Lighting Test, Revision 17
 ST-18BA, Control Room Envelope Ventilation Automation System 'A' Operability Test, Revision 3
 ST-76N, Nozzle Air Flow Test for High Pressure Coolant Injection System, Revision 8
 ST-76Q, High Pressure Coolant Injection Foam System Header Integrity and Nozzle Inspections, Revision 1
 ST-76Y, Fire Door Inspection and Operability Test, Revision 19
 ST-76-Z, Non-Divisional Fire Damper Inspection, Revision 21
 ST-76-ZB, Division 'B' Fire Damper Inspection, Revision 0
 ST-76-ZC, Division 'A' Fire Damper Inspection, Revision 0

Operations Procedures

AOP-28, Operation during Plant Fires, Revision 22
 AOP-43, Plant Shutdown from Outside the Control Room, Revision 39
 AP-12.15, Control of Time Critical Operator Actions, Revision 3

Fire Fighting Strategies (i.e., Pre-Fire Plans)

PFP-PWR04, Battery Room Complex, Elevation 272', Fire Area/Zone III/BR-1, BR-2, IV/BR-3, BR-4 and XVI/BR-5, Revision 2
 PFP-PWR13, Main Control Room and Control Room HVAC Equipment Rooms, Elevation 300', Fire Area 7/Fire Zone CR-1, Revision 6
 PFP-PWR14, Crescent Area East, Elevation 227' and 242', Fire Area/Zone XVII/RB-1E, Revision 3

Fire Brigade Training

FP-13-1.1, Fire Training Program Overview, Revision 5
 FP-13-1.2, Fire Protection Responsibilities and Make-up, Revision 6
 FP-13-1.3, Personal Protective Equipment, Revision 9
 FP-13-2.2, Fire Chemistry and Fire Behavior, Revision 9
 FP-13-2.3, Portable Extinguishers and Extinguishing Techniques, Revision 6

FP-13-3.1, Fire Protection Training, Revision 11
FP-13-4.1, Self-Contained Breathing Apparatus, Revision 6
FP-13-4.2, Emergency Communication and Lighting, Revision 7
FP-13-5.1, Fire Streams and Attacks, Revision 11
FP-13-5.2, Ventilation, Revision 9
FP-13-5.3, Foam and Foam Producing Equipment, Revision 5
FP-13-6.1, Fire Brigade Leadership and Incident Management, Revision 6
FP-13-6.2, Hoseline, Hydrants and Standpipe, Revision 5
TP-4.02, Fire and Rescue Training, Revision 14

Operator Safe Shutdown Training

SDLP-10, Reactor Heat Removal System Lesson Plan, Revision 28
SDLP-13, Reactor Core Isolation Cooling Lesson Plan, Revision 19
SDLP-14, Core Spray System Lesson Plan, Revision 18

Fire Brigade Drills and Critiques

Fire Brigade Drills and Critiques, dated 11/11/16, 11/13/16, 12/8/16, 12/26/16 and 2/16/17

Transient Combustible, Hot Works, and Ignition Source Permits and Evaluations

Hot Work Permit 17-27, dated 4/27/17
Transient Combustible Evaluation 17-21, dated 3/2/17
Transient Combustible Evaluation 17-22, dated 3/2/17
Transient Combustible Evaluation 17-23, dated 3/20/17
Transient Combustible Evaluation 17-24, dated 3/27/17
Transient Combustible Evaluation 17-25, dated 4/12/17

Completed Tests and Surveillances

FPP-1.13, Fire Brigade Equipment Inventory, Performed 12/16/16
FPP-1.13, Fire Brigade Equipment Inventory, Performed 3/5/17
FPP-3.58, Yard Loop West/South PIV Flush and Blitzfire Nozzle Flow Test, Performed 7/19/14
FPP-3.59, Yard Loop East and East Loop West PIV Flush, Performed 7/20/14
MST-076.11, Inspection of Electrical Penetration 1FC006N54*FPSSK-708(28), Performed 3/19/13
MST-076.11, Inspection of Electrical Penetration 1FC006N58*FPSSK-708(28), Performed 3/19/13
MST-076.11, Inspection of Electrical Penetration 1FC006R58*FPSSK-707(28), Performed 12/14/10
MST-076.11, Inspection of Electrical Penetration 1WX240N01*FPSSK-573, Performed 11/16/15
MST-076.11, Inspection of Electrical Penetration 1WX240N01*FPSSK-642, Performed 12/11/10
ST-43A, Remote Shutdown Panel 25RSP Component Operation and Isolation Verification, Performed 6/9/15
ST-43B, Remote Shutdown Panel 25ASP-1 Component Operation and Isolation Verification, Performed 6/21/15 and 9/22/16
ST-43C, Remote Shutdown Panel 25ASP-2 Component Operation and Isolation Verification, Performed 3/12/15
ST-43D, Remote Shutdown Panel 25ASP-3 Component Operation and Isolation Verification, Performed 6/21/15
ST-43G, Remote Shutdown Panel 25ASP-5 Component Operation and Isolation Verification, Performed 2/3/17 and 2/9/17
ST-76AD, East Diesel Fire Pump 76P Performance Test, Performed 6/6/16 and 8/24/15
ST-76B, Electric Fire Pump 76P-2 Operational Check, Performed 2/16/17 and 3/6/17

ST-76C, West Diesel Fire Pump 76P-1 Operational Check, Performed 2/14/17 and 3/16/17
 ST-76J23, West Diesel Fire Pump 76P-1 Performance Test, Performed 5/8/14 and 2/6/16
 ST-76J24, Electric Fire Pump 76P-2 Performance Test, Performed 4/16/15 and 4/21/16
 ST-76J32, Smoke Detector Functional Test - East Crescent, Performed 1/10/17 and 3/20/16
 ST-76J40, Smoke Detector Channel Functional Test - Station Battery Rooms, Performed
 3/23/16
 ST-76J42, Smoke Detector Functional Test - Control Room Ventilation Rooms, Performed
 4/3/16
 ST-76J44, Smoke Detector Functional Test - Control Room Vent Exhaust Ducts, Performed
 2/8/16
 ST-76J53, Control Room Battery Powered Smoke Detector Test, Performed 7/10/15 and
 7/14/16
 ST-76N, Nozzle Air Flow Test for HPCI System, Performed 2/9/16
 ST-76Q, HPCI Foam System Header Integrity and Nozzle Inspection, Performed 2/18/16
 ST-76R, HPCI Foam System Nozzle Air Flow Test, Performed 5/17/13 and 5/14/16
 ST-76U, Fire System Flow Test, Performed 6/24/14
 ST-99C, Safe Shutdown Inventory and Panel Verification, Performed 9/30/16

Issue Reports (* denotes NRC identified during this inspection)

2016-01735	4011547*	CR-JAF-2013-02663
2016-02650	4011710*	CR-JAF-2013-03796
2016-03330	4012033*	CR-JAF-2014-02693
3995211	4012160*	CR-JAF-2014-02958
3999668*	4012322*	CR-JAF-2015-00337
3999670*	CR-HQN-2013-00423	CR-JAF-2015-03216
3999671*	CR-JAF-2008-01555	CR-JAF-2015-04422
3999673*	CR-JAF-2008-01597	CR-JAF-2016-00349
4000149*	CR-JAF-2012-05267	CR-JAF-2016-01399
4000151*	CR-JAF-2012-05659	CR-JAF-2016-01414
4006010*	CR-JAF-2012-08204	CR-JAF-2016-01723
4006553*	CR-JAF-2013-00087	CR-JAF-2016-02215
4006563*	CR-JAF-2013-00092	CR-JAF-2016-05069
4006592*	CR-JAF-2013-00389	
4006662*	CR-JAF-2013-01739	

Work Orders

00130566	52036992	52458283	52601193	52738102
00130568	52211087	52462868	52603370	52738106
00147028	52224965	52462869	52603376	52738382
00305197	52257594	52473649	52607619	80470247
00347088	52257595	52550492	52609122	82744430
31098400	52284848	52552269	52610862	
50055104	52387217	52600535	52611863	

Vendor Manuals

B060-0182, Baldor Motor Installation and Operations Instructions, Revision 0
 C742-0081, Cummins Diesel NH and NT-855/N927 Series
 C742-0197, Operation and Maintenance Manual for Fire Pump Diesel Engine
 E353-0051, Exide Electronics Emergency Lighting Unit, Revision 4

Industry Standards

NFPA 20-1970, Standard for the Installations of Stationary Pumps for Fire Protection

NFPA 25-1992, Water Based Fire Protection Systems

NFPA 80-1970, Standard for Fire Doors and Windows

Miscellaneous Documents

Fire Protection Impairment 15I-20, dated 7/28/2015

Fire Protection Impairment 16I-20, dated 3/14/2016

Fire Protection Impairment 16I-64, dated 7/18/2016

Fire Protection Impairment 16I-66, dated 7/19/2016

Fire Protection Impairment 17I-28, dated 3/1/2017

Fire Protection Program System Health Report 7/1/16-9/30/16

JAF-RPT-11-00010, Manual Operator Actions, Revision 0

LO-JAFLO-2012-00004, Updating FHA/Evaluating Effect on Safety After the Installation of Flammable Bottles/Cylinders

Memorandum of Understanding between Entergy Nuclear Northeast, James A. Fitzpatrick Plant and Scriba Volunteer Fire Department, dated 1/31/17

Memorandum of Understanding between Entergy Nuclear Northeast, James A. Fitzpatrick plant and Office of the Oswego County Fire Coordinator, dated 1/19/17

OE-NOE-2014-00013, NRC IN 2014-15, Inadequate Controls of Respiratory Protection Accessibility, Training and Maintenance

OE-NOE-2015-00030, NRC Information Notice (IN) 2015-02, Antifreeze Agents in Fire Water Sprinkler Systems

SDLP-02J, Automatic Depressurization System Lesson Plan, Revision 17

TS-TP-0004, Fire Tests of Floor Penetration Seals, dated January 1977

TS-TP-0043, Fire & Hose-Stream Tests of 20 Penetration Seal Configurations dated 8/29/80

LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
FHAR	Fire Hazards Analysis Report
FPP	fire protection program
FZ	fire zone
IP	Inspection Procedure
IR	issue report
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
RCIC	reactor core isolation cooling
RHR	residual heat removal
UFSAR	Updated Final Safety Analysis Report