UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

August 10, 2020

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

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – INTEGRATED INSPECTION REPORT 05000333/2020002

Dear Mr. Hanson:

On June 30, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at James A. FitzPatrick Nuclear Power Plant. On July 29, 2020, the NRC inspectors discussed the results of this inspection with Mr. Pat Navin, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding did not involve a violation of NRC requirements.

If you disagree with a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; and the NRC Resident Inspector at James A. FitzPatrick Nuclear Power Plant.

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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

X /RA/

Signed by: Erin E. Carfang

Erin E. Carfang, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket No. 05000333
License No. DPR-59

Enclosure:
As stated

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number:	05000333
License Number:	DPR-59
Report Number:	05000333/2020002
Enterprise Identifier:	I-2020-002-0021
Licensee:	Exelon Generation Company, LLC
Facility:	James A. FitzPatrick Nuclear Power Plant
Location:	Oswego, NY
Inspection Dates:	April 1, 2020 to June 30, 2020
Inspectors:	E. Miller, Senior Resident Inspector J. England, Resident Inspector F. Arner, Senior Reactor Analyst B. Fuller, Senior Operations Engineer C. Lally, Senior Project Engineer D. Merzke, Senior Reactor Operations Engineer M. Orr, Reactor Inspector R. Rolph, Resident Inspector
Approved By:	Erin E. Carfang, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at James A. FitzPatrick Nuclear Power Plant, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Feedwater Check Valve Failure Results in Reactor Scram			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000333/2020002-01 Open/Closed	None	71152
A self-revealed Green finding was identified when Exelon failed to meet the requirements of EN-HU-106, "Procedure and Work Instruction Use and Adherence," Revision 0. Specifically, Exelon staff failed to adhere to the work instructions to inspect, disassemble, replace internal components, and apply a tack weld to a tie-down bolt that provides structural support to the 'A' feedwater pump discharge check valve. As a result, on January 31, 2020 a discharge check valve malfunction caused a reactor water level transient and subsequent reactor scram.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000333/2020-001-00	Automatic Scram Due to Main Turbine Trip on High RPV Water Level	71153	Closed

PLANT STATUS

FitzPatrick began the inspection period at rated thermal power. On May 16, 2020, operators reduced reactor power to 70 percent to perform a control rod pattern adjustment and planned maintenance. On May 17, 2020, operators restored reactor power to 100 percent. On June 27, 2020, operators reduced power to 75 percent to perform a control rod pattern adjustment and planned main turbine valve testing. On June 28, 2020, operators restored reactor power to 100 percent. FitzPatrick remained at or near rated thermal power for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week, conducted plant status activities as described in IMC 2515, Appendix D, observed risk significant activities, and completed on-site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or portions of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal hot temperatures for the switchyard and the control room/relay room ventilation system, on April 16, 2020.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) 'B' and 'D' emergency diesel generators on April 23, 2020
(2) 'B' core spray system on May 19, 2020
(3) 'B' core spray system on June 16, 2020

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

(1) East crescent area, fire area/zone XVII/RB-1E on April 10, 2020
(2) West crescent area, fire area/zone XVIII/RB-1W on April 10, 2020
(3) Pump rooms (screenwell) elevation 255', fire area/zone XIII/SP-2 on April 23, 2020
(4) Pump rooms (screenwell) elevation 255', fire area/zone XII/SP-1 on April 23, 2020
(5) Pump rooms (screenwell) elevation 255', fire area/zone IB/FP-1, FP-3 on April 23, 2020

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

Requalification Examination Results (IP Section 03.03) (1 Sample)

(1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam administered the week of May 26, 2020.

71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

(1) Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examination administered during the 2019 annual requalification exam in May 2019.

Annual Requalification Operating Tests

The inspectors evaluated the adequacy of Exelon's annual requalification operating test.

Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of Exelon in administering requalification operating tests required by 10 CFR 55.59(a)(2), and that Exelon is effectively evaluating their licensed operators for mastery of training objectives.

Requalification Examination Security

The inspectors evaluated the ability of Exelon to safeguard examination material, such that the examination is not compromised.

Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by Exelon, and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

Operator License Conditions

The inspectors evaluated Exelon's program for ensuring that licensed operators meet the conditions of their licenses.

Control Room Simulator

The inspectors evaluated the adequacy of Exelon's control room simulator in modeling the actual plant, and for meeting the requirements contained in 10 CFR 55.46.

Problem Identification and Resolution

The inspectors evaluated Exelon's ability to identify and resolve problems associated with licensed operator performance.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed and evaluated licensed operator performance in the control room during a downpower to perform control rod sequence exchange, control rod interference testing, 'A' reactor water recirculation motor generator set exciter brush replacement, and 'B' circulating water pump electrical connection repairs on May 16, 2020 and May 17, 2020.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

(1) The inspectors observed a simulator evaluation that involved a condensate booster pump trip, an unplanned start of reactor core isolation cooling system, a loss of a reactor protection system power supply, an unplanned opening of turbine bypass valves, and an anticipated transient without scram on May 5, 2020.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:

(1) Decay heat removal system on May 11, 2020

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

(1) Elevated risk associated with high pressure coolant injection system auxiliary oil system pressure control valve failure on April 10, 2020
(2) 115-kilovolt switchyard during a high wind warning on April 13, 2020
(3) Elevated risk during 02-184P-1B-(M), 'B' reactor water recirculation motor generator set knee brace restraint installation on May 5, 2020
(4) Elevated risk associated with 'A' emergency diesel generator during planned maintenance on May 12, 2020
(5) ‘B’ low pressure coolant injection (LPCI) independent power supply during ‘A’ LPCI inverter capacitor replacement on June 10, 2020

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

The inspectors evaluated Exelon's justifications and actions associated with the following operability determinations and functionality assessments:

(1) 70MOD-100, relay room purge damper indicated dual position following open signal on April 29, 2020
(2) 13TU-2, reactor core isolation cooling turbine inboard and outboard gland seal leaks on April 29, 2020
(3) 70MOD-108B, control room emergency ventilation system damper stuck open on April 29, 2020
(4) 'A' emergency diesel generator following inspector identification of a turbocharger oil leak on May 12, 2020

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

(1) Permanent Modification: Engineering Change 629000, Knee Brace Restraints for RWR MG Set ‘B’ Drive Motor (02-184P-1B(M)), on April 22, 2020

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated the following post maintenance test activities to verify system operability and functionality:

(1) 23PCV-12, high pressure coolant injection system oil pressure control valve following valve replacement on April 10, 2020
(2) 18RIA-051-27, east crescent radiation monitor following upscale alarm setpoint adjustment on April 17, 2020
(3) 'A' emergency diesel generator following planned maintenance on May 14, 2020

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (2 Samples)

(1) TST-186, EDG A and C Full Load Test (8-Hour Run) on April 23, 2020
(2) ISP-75-1, RCIC CST Low Water Level Switch Functional Test/Calibration on May 28, 2020

Inservice Testing (IP Section 03.01) (2 Samples)

(1) ST-24J, RCIC Flow Rate and Inservice Test (IST) on May 18, 2020
(2) ST-4N, HPCI Quick-Start, Inservice, and Transient Monitoring Test (IST) on June 3, 2020

FLEX Testing (IP Section 03.02) (1 Sample)

(1) Flex PM - Perform Functional Test and Inspection of FLEX-DG1 on June 25, 2020

RADIATION SAFETY

71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

Walkdowns and Observations (IP Section 03.01) (4 Samples)

The inspectors evaluated the following radioactive effluent systems during walkdowns:

(1) Turbine building ventilation system discharge to atmosphere 17RM-431 and 17RM-432
(2) Reactor building ventilation system discharge to atmosphere 17RM-452A and 17RM-452B
(3) Refuel floor ventilation system discharge to atmosphere 17RM-456A and 17RM-456B
(4) Main plant ventilation system discharge to atmosphere 17RM-50A and 17RM-50B

Sampling and Analysis (IP Section 03.02) (4 Samples)

Inspectors evaluated effluent samples, sampling processes and compensatory samples, as available.

(1) Refuel floor particulate and Iodine sampling and analysis
(2) Turbine building particulate and Iodine sampling and analysis
(3) Radwaste building particulate and Iodine sampling and analysis
(4) Main plant vent stack particulate and Iodine sampling and analysis

Dose Calculations (IP Section 03.03) (3 Samples)

The inspectors evaluated the following dose calculations:

(1) Release package G-20180102-1348C, Main Plant Vent Stack Particulate and Iodine
(2) Release package G-20180104-1502C, Main Plant Vent Stack Noble Gas
(3) Release package L-20181107-129B, Standby Liquid Control Drain Tank Discharge

Abnormal Discharges (IP Section 03.04) (1 Sample)

The inspectors evaluated the following abnormal discharges:

(1) There were no abnormal discharges to evaluate during this inspection period.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI02: RCS Leak Rate Sample (IP Section 02.11) (1 Sample)

(1) April 1, 2019 – March 31, 2020

71152 - Problem Identification and Resolution

Semi-Annual Trend Review (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed Exelon's corrective action program for potential adverse trends that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

The inspectors reviewed Exelon's implementation of its corrective action program related to the following issues:

(1) Common Cause Analysis for Equipment Reliability Challenges (IR 04313269)
(2) Reactor Scram on High Reactor Vessel Water Level (IR 04314313)

71153 - Followup of Events and Notices of Enforcement Discretion

Event Followup (IP Section 03.01) (1 Sample)

(1) High pressure coolant injection system following large oil leak from oil pressure control valve 23PCV-12 on April 10, 2020

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event report (LER):

(1) LER 05000333/2020-001-00, Automatic Scram Due to Main Turbine Trip on High RPV Water Level, (ADAMS Accession No. ML20091L895). The inspection conclusions associated with this LER are documented in this report under Inspection Results. This LER is closed.

INSPECTION RESULTS

Feedwater Check Valve Failure Results in Reactor Scram			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000333/2020002-01 Open/Closed	None	71152
A self-revealed Green finding was identified when Exelon failed to meet the requirements of EN-HU-106, “Procedure and Work Instruction Use and Adherence," Revision 0. Specifically, Exelon staff failed to adhere to the work instructions to inspect, disassemble, replace internal components, and apply a tack weld to a tie-down bolt that provides structural support to the ‘A’ feedwater pump discharge check valve. As a result, on January 31, 2020 a discharge check valve malfunction caused a reactor water level transient and subsequent reactor scram.			
Description: The feedwater system is a non-safety related system that consists of two steam driven pumps that provide a source of water inventory to the reactor vessel during normal operation. Each feedwater pump is designed with a discharge check valve at the exit of the pump to prevent any potential backflow into the pump. On January 31, 2020, while securing			

the ‘A’ feedwater pump from service as part of a planned downpower to conduct equipment maintenance, the discharge check valve failed to operate properly. By not preventing reverse flow, a portion of the ‘B’ feedwater pump discharge coolant flow was backflowing through the ‘A’ feedwater pump. Following a sudden closure of the ‘A’ feedwater pump discharge check valve, all flow from the ‘B’ reactor feedwater pump was directed into the reactor vessel. This sudden in-rush of feedwater caused an automatic high reactor water level and scram signal.

Following plant shutdown, inspection and repair was performed on the discharge check valve. Exelon staff identified severe valve damage. The damage included a fracture and loss of material including springs and the center tie-down bolt. The inspectors performed a review of previous maintenance and identified that maintenance was most recently performed in 2014 and 2012. The inspectors noted that work order 51193101 conducted in October 2012 showed that tack welds were required on the tie-bolt to prevent the bolt from rotating and becoming free. Specifically, Section 8.8.9 of procedure MP-059.77, “Nozzle Check Valve Maintenance,” Revision 4 stated to “tack weld tie-bolt to diffuser per attachment 5 and weld documents in work package.” Inspector interviews of Exelon staff confirmed that a tack weld had not been performed. Additionally, in 2014 the valve was inspected, found degraded with a gap between the valve body and diffuser head. This misalignment required valve disassembly and internal component inspection and replacement. Full disassembly and internal component replacement were not performed. There was no evidence that a tack weld was ever installed. Following the reactor scram, Exelon performed a root cause evaluation. Exelon determined the root cause to be the 2014 refueling outage inspection of sub-components internal to the feedwater discharge check valve was not performed. Exelon found the maintenance procedure allowed for performance discretion to be utilized by supplemental workforce which was implemented inappropriately. It was also noted that station leadership did not have formalized oversight for critical aspects of this work activity.

Procedure EN-HU-106, "Procedure and Work Instruction Use and Adherence," Step 5.2.2[2] states, “Procedure or work instruction users shall strictly adhere to the procedure or work instruction.” Contrary to this requirement, Exelon staff failed to properly inspect, disassemble and perform a tack weld. As a result, the feedwater check valve tie-bolt became dislodged, causing the valve to fail to close promptly, resulting in a reactor water level transient and a reactor scram.

Corrective Actions: Procedure MP-059.77, "Nozzle Check Valve Maintenance," was revised to require complete valve disassembly for inspection. Exelon also plans to replace both feedwater discharge check valves with an upgraded valve model with four tie bolts instead of one, which is less susceptible to turbulent flow degradation. Lastly, customized oral boards will be created for each major discipline of supplemental workforce to ensure procedure compliance requirements are understood.

Corrective Action References: IR 04314313

Performance Assessment:

Performance Deficiency: Contrary to EN-HU-106, "Procedure and Work Instruction Use and Adherence," Step 5.2.2[2], which states, “Procedure or work instruction users shall strictly adhere to the procedure or work instruction”, Exelon staff failed to inspect, disassemble, and apply a tack weld to the ‘A’ feedwater pump discharge check valve.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Human Performance attribute of the Initiating Events

cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, Exelon staff's failure to inspect, disassemble and apply a tack weld in accordance with MP-059.77 resulted in the 'A' feedwater pump discharge check valve tie-bolt becoming dislodged, the valve to fail, and a subsequent reactor water level transient and scram. This finding is also similar to IMC 0612 Appendix E, Example 5.b, in that the maintenance staff failed to follow work instructions as written. As a result, the Initiating Events cornerstone was adversely affected and the error caused a reactor scram.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Question B of Exhibit 1 was answered "No" to the question of did the finding cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to the stable shutdown condition. The inspectors determined that this finding was of very low safety significance (Green) because it did not cause a reactor trip coincident with the loss of mitigation equipment relied upon to transition the plant from the onset of a reactor trip to a stable shutdown condition.

Cross-Cutting Aspect: None.

Enforcement: Inspectors did not identify a violation of regulatory requirements associated with this finding.

Observation: Common Cause Analysis for Equipment Reliability Challenges	71152

The inspectors reviewed Exelon's response to IR 04313269, which documented a common cause trend review of the following equipment: instrument air compressor failures, 'A' recirculating water motor generator set ground, 'B' recirculating water motor generator set unintended speed change, 'A' and 'B' continuous air monitor failures, electro-hydraulic system fault that caused cycling of hydraulically controlled valves, and a low pressure coolant injection inverter failure. Disposition of the IR by Exelon staff identified under Performance Improvement Integrated Matrix (PIIM) 2020-0008 described a gap to excellence with respect to equipment reliability. Specifically, station personnel did not ensure that some installation and parts quality deficiencies were identified and resolved before contributing to equipment challenges, resulting in reactor water recirculation system reliability challenges, a downpower, and rework.

The inspectors concluded that the issue was appropriately categorized and prioritized in accordance with station procedures. However, the completed evaluation did not address the issue of concern. The evaluation stated that the scope was changed at the direction of site senior leadership, with a new area of concern with several equipment issues identified during the restoration from a forced outage on January 31, 2020. Some of those equipment issues were also present when looking at previous refueling outage windows. To preclude further known repeat issues from impacting startup or shutdown periods, an evaluation is to be performed to identify repeat issues, as well as other potential items that can be addressed to prevent delays and potential challenges to the plant during that time frame. Exelon evaluated all repetitive equipment failures that impacted startup or shutdown during the previous five refueling outages. The scope of the evaluation did not address the original list of equipment issues, which were not necessarily repetitive, nor did they occur during shutdown or startup of the plant. The inspectors questioned whether a second IR should have been initiated to document the new issue of concern. For the original assignment to be complete in accordance with procedure PI-AA-127, "Passport Action Tracking Management Procedure,"

Revision 3, all required actions must be complete and documentation satisfactory. Exelon did not complete the analysis of common cause issues described in PI-AA-125-1006, "Investigation Techniques Manual," Revision 4, for the equipment issues described.

Because there was no common cause trend evaluation of equipment reliability issues, there were no corrective actions identified to address any potential adverse trend in equipment reliability. Exelon has identified a trend in equipment reliability, documented in the corrective action program as IR 04301960 and PIIM 2020-0008. Since identification, additional equipment failures include a feedwater check valve resulting in a reactor scram, 'B' reactor water cleanup pump trips, and failure of a high pressure coolant injection oil pump pressure control valve resulting in an unplanned limiting condition of operation entry. Exelon staff are developing a 2020 Equipment Reliability Excellence Plan to address the trend. To address the inspectors' concerns, Exelon staff initiated IR 04344170 to track documentation and completion of the station equipment reliability assessment and road map plan, to include the additional recent equipment failures.

Observation: Semi-Annual Trend Review	71152

The inspectors evaluated a sample of issues and events that occurred over the first and second quarters. The evaluation did not reveal any new trends that could indicate a more significant safety issue. The inspectors determined that, in most cases, the issues were appropriately evaluated by Exelon staff for potential trends at a low threshold and resolved within the scope of the corrective action program. Exelon experienced additional equipment failures that included the 'A' feedwater pump discharge check valve, which caused a reactor scram, multiple reactor water cleanup pump trips, 125-volt direct current station battery grounds, a high pressure coolant injection pressure control valve failure, and abnormal spiking on the turbine building high range effluent radiation monitor. The inspectors performed a review of Exelon's common cause analysis of the trends as part of an annual Problem Identification and Resolution sample. The results of the inspection are documented in this report.

The inspectors also identified a trend associated with inadequate post maintenance testing criteria that resulted in early alarms or failure to meet procedural acceptance criteria during surveillance testing as documented in IRs 04347868, 04349230, and 04277010.

The inspectors also reviewed for trends associated with impacts of COVID-19. One trend was identified by the station associated with social distancing guidelines as documented in IR 04337509.

Based on the overall results of the semi-annual trend review, the inspectors determined that Exelon had generally identified adverse trends at FitzPatrick before they could become more significant safety problems. The inspectors independently evaluated the deficiencies noted above for significance in accordance with the guidance in IMC 0612, Appendix B, "Issue Screening," and Appendix E, "Examples of Minor Issues," and determined them to be minor.

Observation: Reactor Scram on High Reactor Vessel Water Level	71152

On January 31, 2020, while securing 'A' feedwater pump for planned maintenance, the 'A' feedwater pump discharge check valve, 34FWS-4A, did not properly close. The 34FWS-4A stayed open allowing feedwater flow from the 'B' feedwater pump to backflow through the 'A' feedwater pump. The 'B' feedwater pump increased speed to maintain reactor water level within the proper range. After some time, the 'A' feedwater pump discharge check valve

rapidly seated, redirecting the additional flow from the ‘B’ feedwater pump into the reactor. This additional flow resulted in high water level and an automatic reactor scram.

The inspectors reviewed Exelon’s IRs, corrective action program evaluation, interviewed personnel familiar with the event, and conducted walkdowns. Exelon determined the root cause to be inadequate inspection and maintenance of the internal sub-components of the 34FWS-4A check valve. Procedure PI-AA-125-1001, "Root Cause Analysis Procedure," Section 4.4.2.9, “Determine Extent of Cause and Condition,” requires the evaluation of similar components, equipment, processes, procedures, programs, or similar situations. Additionally, PI-AA-125-1006, "Investigation Techniques Manual," Attachment 19, “Extent of Condition/Extent of Cause,” provides several examples to illustrate the need to include more risk significant systems as part of an extent of condition. One example describes a maintenance failure: “An issue occurred that involved the failure of a rack root valve gland follower. The failure resulted in a leak and was corrected, and the Apparent Cause was performed. The Apparent Cause determined the failure was caused by improper maintenance practice, overtorquing. Some time period later, a second rack root valve gland follower failed and resulted in a plant scram. The extent of condition for the ACE should have considered the potential Nuclear Safety Risk of the condition and determined other rack root valves in more sensitive locations.” The extent of condition was determined to be a single valve, the ‘B’ feedwater pump discharge check valve 34FWS-4B. The inspectors determined that Exelon did not adequately assess extent of condition in accordance with PI-AA-125-1001 and PI-AA-125-1006. The inspectors found that although Exelon reviewed the opposite train because it has the only valve of the same model number at FitzPatrick, the station failed to assess maintenance performed on other operational conditional critical components for similar maintenance errors. The station also did not perform a risk assessment as described in Attachment 19 of PI-AA-125-1006.

The inspectors determined Exelon’s root cause evaluation and corrective actions for the check valve were adequate. The above item was evaluated using IMC 0612, Appendix B, “Issue Screening,” and IMC 0612, Appendix E, “Examples of Minor Issues,” and determined to be of minor significance.

Observation: Automatic Scram Due to Main Turbine Trip on High RPV Water Level	71153

On January 31, 2020, while securing the ‘A’ feedwater pump from service as part of a planned downpower to conduct equipment maintenance, the discharge check valve failed to operate properly. By not preventing reverse flow, a portion of the ‘B’ feedwater pump discharge was backflowing through the ‘A’ feedwater pump. Following a sudden closure of the ‘A’ feedwater pump discharge check valve, all flow from the ‘B’ reactor feedwater pump was directed into the reactor vessel. This sudden in-rush of feedwater caused an automatic high reactor water level and scram signal.

The site performed a root cause evaluation and determined the root cause to be the 2014 refueling outage inspection of sub-components internal to the feedwater discharge check valve was not performed. The site found the maintenance procedure allowed for performance discretion to be utilized by supplemental workforce, which was implemented inappropriately. It was also noted that station leadership did not have formalized oversight for critical aspects of this work activity.

As part of corrective actions, the maintenance procedure was revised to require complete valve disassembly for inspection. Exelon also plans to replace both feedwater discharge

check valves with an upgraded valve model with four tie bolts instead of one, which is less susceptible to turbulent flow degradation. Lastly, customized oral boards will be created for each major discipline of supplemental workforce to ensure procedure compliance requirements are understood.

The NRC identified one Green finding. The NRC evaluation of this event is discussed in Section 71152 of this inspection report. The inspectors also identified a minor violation of 10 CFR Part 50.72(b)(3)(v)(C), "any event of condition that at the time of discovery could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material," when Exelon did not identify this as part of Event Notification #54503 or when it was discovered during the development of LER 05000333/2020-001-00. The inspectors determined this issue to be minor because although it was not properly captured as part of the Event Notification, it was later identified by Exelon staff and reported as part of the LER. Exelon has entered this issue into the corrective action program as IR 04314313 and is developing corrective actions to address this issue. Licensee Event Report 05000333/2020-001-00 is closed.

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

- On July 29, 2020, the inspectors presented the integrated inspection results to Mr. Pat Navin, Site Vice President, and other members of the licensee staff.
- On June 25, 2020, the inspectors presented the radiological effluent technical specifications inspection results to Mr. Pat Navin, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	WC-JF-107-1000	Seasonal Readiness T&RM for JAF	3
	Work Orders	04935128		
71111.04	Drawings	FM-23A	Flow Diagram Core Spray System 14	49
	Procedures	OP-14	Core Spray System	40
		OP-22	Diesel Generator Emergency Power	69
		ST-3AB	Core Spray Loop B Monthly Operability Test	14
71111.05	Fire Plans	PFP-PWR14	Crescent Area-east/Elev. 227', 242, Fire area/zone XVII/RB-1E	3
		PFP-PWR15	Crescent Area-west/Elev. 227',242', Fire area/zone XVIII/RB-1W	4
		PFP-PWR33	Pump Rooms (Screenwell) Elevation 255', Fire Area/Zone XII/SP-1, XIII/SP-2, IB/FP-1,FP-3	2
71111.12	Corrective Action Documents	04223580		
		04333696		
	Procedures	ER-AA-2002	System and Equipment Health Monitoring	23
	Work Orders	04845796		
		04971054		
		05029008		
71111.13	Corrective Action Documents	04180694		
		04334315		
	Engineering Changes	629000	Knee Brace Restraint	1
	Procedures	AOP-13	Severe Weather	37
		OP-AA-107	Integrated Risk Management	2
		OP-AA-108-111-1001	Severe Weather and Natural Disaster Guidelines	20
		OP-AA-108-117	Protected Equipment Program	5
		WC-AA-101	Online Work Control Process	29
	Work Orders	04850203		
		05017104		
71111.15	Corrective Action	04327659		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents	04329789		
		04331252		
		04334623		
		04339136		
		04340242		
		04719452		
	Corrective Action Documents Resulting from Inspection	04340330		
	Miscellaneous	DBD-070	Design Basis Document for the Control Room Relay Room Ventilation and Cooling Systems	14
	Procedures	ST-18	Main Control Room Emergency Fan and Damper Operability Test	34
	Work Orders	04965323		
71111.19	Corrective Action Documents	04194946		
		04325869		
		04333779		
		04334315		
	Drawings	FM-25B	Flow Diagram HPCI Lube Oil System, System 23	34
	Miscellaneous	R290-0083	Instructions for Installation and Operations Model VC-210Diaphragm Control Valve	0
	Procedures	EOP-5/6	Secondary Containment Control Radioactivity Release Control	10
		MP-023.15	HPCI Lube Oil Balancing	13
		MP-093.11	EDG System Mechanical PM*	55
		ST-09BA	EDG A and C Full Load Test and ESW Pump Operability Test	17
	Work Orders	04754280		
		04818405		
		5028908		
71111.22	Corrective Action Documents	04337858		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Corrective Action Documents Resulting from Inspection	04338045		
		04338208		
		04344159		
	Procedures	ST-24J	RCIC Flow Rate and Inservice Test (IST)	53
		ST-4N	HPCI Quick-Start, Inservice, and Transient Monitoring Test (IST)	74
		TST-186	EDG A and C Full Load Test (8 Hour Run)	0
	Work Orders	04992944		
		04992944		
71124.06	Corrective Action Documents	04212315		
		04272027		
		04335906		
		04343548		
	Miscellaneous		2018 Annual Radioactive Effluent Release Report	
			2019 Annual Radioactive Effluents Release Report	
	Work Orders	04830571		9/24/2018
		04960199		11/12/2019
71152	Corrective Action Documents	04301960		
		04313269		
	Miscellaneous	PIIM 2020-0008	T6 Gap to Excellence	
	Procedures	PI-AA-120	Issue Identification and Screening Process	10
		PI-AA-125	Corrective Action Program (CAP) Procedure	7
		PI-AA-125-1001	Root Cause Analysis Manual	5
		PI-AA-125-1006	Investigation Techniques Manual	5
		PI-AA-127	Passport Action Tracking Management Procedure	3
71153	Corrective Action Documents	04084848		
		04194946		
		04334315		
	Miscellaneous	R290-0083	Instructions for Installation and Operations Model VC-210 Diaphragm Control Valve	0
	Procedures	FM-25B	Flow Diagram HPCI Lube Oil System, System 23	34
		ST-4B	HPCI Monthly Operability Test	62

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	04854297		
		82700213		