



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

October 30, 2017

EA-17-121

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 - INTEGRATED
INSPECTION REPORT 05000333/2017003 AND EXERCISE OF
ENFORCEMENT DISCRETION**

Dear Mr. Hanson:

On September 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the James A. FitzPatrick Nuclear Power Plant (FitzPatrick). On October 20, 2017, the NRC inspectors discussed the results of this inspection with Mr. Joseph Pacher, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

The inspectors reviewed Licensee Event Report 50-333/2017-001-00, which described the details associated with a reactor coolant system pressure boundary leak from the 'A' reactor water recirculation pump suction gate valve vent line. Although this constituted a violation of technical specifications involving pressure boundary leakage, the NRC concluded that the issue was not within your ability to foresee and correct, your actions did not contribute to the degraded condition, and the actions taken were reasonable to address the issue. As a result, the NRC did not identify a performance deficiency. A risk evaluation was performed, and the issue was determined to be of very low safety significance (Green). Based on the results of the NRC's inspection and assessment of this issue, I have been authorized, after consultation with the Director, Office of Enforcement, and the Regional Administrator, to exercise enforcement discretion in accordance with NRC's Enforcement Policy Section 2.2.4, "Using Traditional Enforcement to Disposition Violations Identified at Power Reactors," and Section 3.10, "Reactor Violations with No Performance Deficiencies."

The NRC inspectors did not identify any other findings or violations 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 the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000333/2017003
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – INTEGRATED INSPECTION REPORT 05000333/2017003 AND EXERCISE OF ENFORCEMENT DISCRETION dated October 30, 2017

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No. 50-333

License No. DPR-59

Report No. 05000333/2017003

Licensee: Exelon Generation Company, LLC

Facility: James A. FitzPatrick Nuclear Power Plant

Location: Scriba, NY

Dates: July 1, 2017, through September 30, 2017

Inspectors: K. Kolaczyk, Senior Resident Inspector
B. Sienel, Resident Inspector
R. Barkley, Senior Project Engineer
E. Burket, Reactor Inspector
R. Rolph, Health Physicist
G. Stock, Resident Inspector

Approved By: Arthur L. Burritt, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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SUMMARY

Inspection Report 05000333/2017003; 07/01/2017 – 09/30/2017; James A. FitzPatrick Nuclear Power Plant (FitzPatrick); Routine Integrated Inspection Report.

This report covered a 3-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process", dated October 28, 2016. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

No findings were identified.

REPORT DETAILS

Summary of Plant Status

FitzPatrick began the inspection period at 100 percent power. On August 15, 2017, operators performed a planned power reduction to approximately 60 percent to perform power suppression testing for a reactor fuel leak. The leak was suppressed by inserting one control rod. Power was restored to 100 percent on August 19. Operators performed a downpower to approximately 60 percent on August 20 to perform a subsequent control rod pattern adjustment and restored power to 100 percent on August 21. The unit remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed Exelon's preparations for severe thunderstorms in the Oswego County area on July 24, 2017. The inspectors reviewed the implementation of adverse weather preparation procedures before the onset of and during this adverse weather condition. The inspectors walked down the emergency diesel generators (EDGs) and emergency service water (ESW) to ensure systems availability. The inspectors verified that operator actions defined in Exelon's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

- Core spray 'B' during planned maintenance on core spray 'A' on August 8, 2017
- High pressure coolant injection (HPCI) during planned maintenance on reactor core isolation cooling (RCIC) on August 31, 2017
- Control room ventilation system 'B' prior to planned maintenance on system 'A' on September 5 and 6, 2017
- ESW system 'A' while the 'B' ESW system was out of service for planned maintenance on September 28, 2017

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the Updated Final Safety Analysis Report (UFSAR), technical specifications (TSs), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Exelon staff had properly identified equipment issues and entered them into the corrective action program (CAP) for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 5 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Exelon controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

- Reactor water recirculation motor generator set room, fire area/zone IA/MG-1, on July 5, 2017
- East and west electric bays, fire areas/zones II/SW-2 and IC/SW-1, on July 5, 2017
- 'A' train battery and battery charger rooms, fire areas/zones III/BR-1 and BR-2, on July 6, 2017
- Reactor building west crescent area, fire area/zone XVIII/RB-1W, on July 25, 2017
- EDGs spaces, south fire areas/zones V/EG-1, EG-2, and EG-5, on August 4, 2017

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)Internal Flooding Reviewa. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to identify internal flooding susceptibilities for the site. The inspectors' review focused on the 227-foot elevation of the east and west crescent rooms. The inspectors verified the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers. The inspectors also assessed the adequacy of operator actions that Exelon had identified as necessary to cope with flooding in this area and reviewed the CAP to determine if Exelon was identifying and correcting problems associated with both flood mitigation features and site procedures for responding to flooding.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (711111.07A – 1 sample)a. Inspection Scope

The inspectors reviewed 'A' and 'B' control room chiller heat exchanger readiness and availability to perform their safety functions. The inspectors reviewed the design basis for the components and verified Exelon's commitments to NRC Generic Letter 89- 13, "Service Water System Requirements Affecting Safety-Related Equipment." The inspectors discussed the results of the most recent inspection with engineering staff and reviewed pictures of the as-found and as-left conditions. The inspectors verified that Exelon initiated appropriate corrective actions for identified deficiencies. The inspectors also verified that the number of tubes plugged within the heat exchangers did not exceed the maximum amount allowed.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 2 samples).1 Quarterly Review of Licensed Operator Requalification Testing and Traininga. Inspection Scope

The inspectors observed licensed operator simulator training on July 27, 2017, which included a loss of condenser vacuum, a reactor scram, a loss of coolant accident, and the failure of select components to automatically start as required. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating

procedures. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classification made by the shift manager and the TS action statements entered by the control room supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

The inspectors observed power suppression testing on August 16, 2017. The inspectors observed portions of the testing, including crew briefings and reactivity manipulations using control rods. Additionally, the inspectors observed crew performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 3 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component performance and reliability. The inspectors reviewed CAP documents, work orders (WOs), and maintenance rule basis documents to ensure that Exelon was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the structure, system, or component was properly scoped into the maintenance rule in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.65 and verified that the (a)(2) performance criteria established by Exelon was reasonable. As applicable, for structures, systems, and components classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these structures, systems, and components to (a)(2). Additionally, the inspectors ensured that Exelon was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

- HPCI on September 12, 2017
- ESW on September 26, 2017
- Structures monitoring program - EDG rooms and plant building roofs on September 30, 2017

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Exelon performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Exelon personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Exelon performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

- Planned 'A' core spray and 'A' standby gas treatment maintenance the week of August 7, 2017
- Unplanned maintenance on the power supply to the HPCI flow controller on August 17, 2017
- Planned 'B' standby liquid control, 'B' standby gas treatment, and 'B' core spray maintenance and a tornado watch the week of August 21, 2017
- Emergent reactor protection system (RPS) relay and RCIC controller replacements the week of September 18, 2017
- Planned 'D' EDG maintenance the week of September 25, 2017

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 5 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

- Issue report (IR) 4023206 regarding slow increasing trend on 'K' safety relief valve tailpipe temperature on July 24, 2017
- IR 4041996 regarding operability of HPCI with reduced flow controller demand on August 14, 2017
- IR 4043584 regarding the operability of both trains of ESW and residual heat removal service water with a nonfunctional screenwell supply fan on August 23, 2017

- IR 4052170 regarding operability of EDGs with potential preconditioning on September 14, 2017
- IR 4055355 regarding high temperature on transformer 71T-12 with electric fire pump 76P-2 operating on September 25, 2017

The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to Exelon's evaluations to determine whether the components or systems were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, such as in the case of operator workarounds, the inspectors determined whether the measures in place would function as intended and were properly controlled by Exelon.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 1 sample)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated a modification to the spent fuel pool implemented by Engineering Change 52728, "Fukushima Spent Fuel Pool Level Instrumentation." The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors walked down the installed level instrumentation and reviewed documents associated with the design change, including the installation WO, post-modification test results, and revised operator logs and abnormal operating procedures.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief and post-job critique where possible, confirmed work site cleanliness was maintained, and witnessed the test or

reviewed test data to verify quality control hold points were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

- WO 80211977 to replace the 'A' core spray outboard isolation valve, 14MOV-11A, breaker on August 9, 2017
- WO 80210455 to replace the 'A' core spray pump minimum flow isolation valve, 14MOV-5A, breaker on August 9, 2017
- WO 4674708 to replace the HPCI flow controller on August 18, 2017
- WO 4656740 to correct a packing leak on RCIC steam admission valve 13MOV-131 on August 30, 2017
- WO 4687253 to replace RPS relay 05A-K1E, control rod drive scram discharge volume high level scram trip logic relay on September 20, 2017
- WO 80461688 to replace the RCIC flow controller on September 21, 2017

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 3 samples)

a. Inspection Scope

The inspectors observed the performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems, and components to assess whether test results satisfied TSs, the UFSAR, and Exelon procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied.

Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

- ST-9BA, EDG 'A' and 'C' full load test and ESW pump operability test, performed on August 14, 2017
- ISP-100C-RPS, RPS instrument functional test/calibration (ATTS), performed on September 11, 2017
- ST-3JA, Core spray initiation logic system 'A' functional test, performed on September 14, 2017

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06 – 1 sample)

Training Observations

a. Inspection Scope

The inspectors observed a simulator training evolution for licensed operators on July 27, 2017, which required emergency plan implementation by an operations crew. Exelon planned for this evolution to be evaluated and included in performance indicator (PI) data regarding drill and exercise performance. The inspectors observed event classification and notification activities performed by the crew. The inspectors also attended the post-evolution critique for the scenario. The focus of the inspectors' activities was to note any weaknesses and deficiencies in the crew's performance and ensure that Exelon evaluators noted the same issues and entered them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure (71124.01 – 1 sample)

a. Inspection Scope

The inspectors reviewed Exelon's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR Part 20, Regulatory Guide 8.38, and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the PIs for the occupational exposure cornerstone, radiation protection program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

Contamination and Radioactive Material Control (1 sample)

The inspectors observed the monitoring of potentially contaminated material leaving the radiological controlled area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material. The inspectors selected several sealed sources from inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with requirements.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03 – 1 sample)

a. Inspection Scope

The inspectors reviewed the control of in-plant airborne radioactivity and the use of respiratory protection devices in these areas. The inspectors used the requirements in 10 CFR Part 20, Regulatory Guides 8.15 and 8.25, NUREG/CR-0041, TSs, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the UFSAR to identify ventilation and radiation monitoring systems associated with airborne radioactivity controls and respiratory protection equipment staged for emergency use. The inspectors also reviewed respiratory protection program procedures and current PIs for unintended internal exposure incidents.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were identified at an appropriate threshold and addressed by Exelon's CAP.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 – 2 samples)

a. Inspection Scope

The inspectors reviewed the monitoring, assessment, and reporting of occupational dose. The inspectors used the requirements in 10 CFR Part 20, Regulatory Guides 8.9 and 8.34, TSs, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed radiation protection program audits, National Voluntary Laboratory Accreditation Program dosimetry testing reports, and procedures associated with dosimetry operations.

Special Dosimetric Situations (1 sample)

The inspectors reviewed Exelon's worker notification of the risks of radiation exposure to the embryo/fetus, the dosimetry monitoring program for declared pregnant workers, external dose monitoring of workers in large dose rate gradient environments, and dose

assessments performed since the last inspection that used multi-badging, skin dose, or neutron dose assessments.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with occupational dose assessment were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Unplanned Scrams and Unplanned Scrams with Complications (2 samples)

a. Inspection Scope

The inspectors reviewed FitzPatrick submittals for the following Initiating Events cornerstone PIs for the period of July 1, 2016, through June 30, 2017:

- Unplanned Scrams
- Unplanned Scrams with Complications

To determine the accuracy of the PI data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors reviewed FitzPatrick operator narrative logs, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The inspectors reviewed Exelon submittals for the occupational radiological occurrences PI for the first quarter 2016 through the second quarter 2017. The inspectors used PI definitions and guidance contained in NEI Document 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed electronic personal dosimetry accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized PI occurrences. The inspectors conducted walkdowns of various locked high radiation area and very high radiation area entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 2 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, “Problem Identification and Resolution,” the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify Exelon entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended IR screening meetings. The inspectors also confirmed, on a sampling basis, that, as applicable, for identified defects and non-conformances, Exelon performed an evaluation in accordance with 10 CFR Part 21.

b. Findings

No findings were identified.

.2 Annual Sample: Equipment Reliability in Relation to Preventive Maintenance Deferrals

a. Inspection Scope

In August 2016, Entergy performed a common cause analysis (CCA) under condition report (CR) CR-JAF-2016-3051 based on a degrading trend in equipment performance issues. Considering Entergy’s late 2015 decision to permanently shut down and their subsequent preparations to begin the decommissioning of FitzPatrick in January 2017, followed by the August 2016 announcement of a plan to transfer ownership to Exelon and continue at-power operation, the inspectors performed a review of Entergy’s CCA and proposed corrective actions in the fall of 2016. During this inspection, the inspectors reviewed FitzPatrick’s equipment reliability (ER) excellence plan and preventive maintenance (PM) optimization efforts to evaluate the progress of these efforts since that time. The inspectors interviewed site staff, toured areas of the reactor building to examine the condition of equipment, examined the status of the corrective actions previously planned, reviewed plans for reducing the PM backlog, and reviewed PMs previously deferred due to the proposed decommissioning of the station.

b. Findings and Observations

No findings were identified.

The CCA had previously determined the common cause was “declining support for the equipment reliability process” as well as focusing on maintaining the systems necessary for safe storage after the station’s planned shutdown. Corrective actions included the

establishment of an ER excellence plan (WT-WTJAF-2016-0263) and an ER site communications plan. Exelon also has a long range plan to improve the PM program.

The inspectors reviewed the ER excellence and long range plans and noted the following progress on these actions:

- The station was reenrolled in the Boiling Water Reactor Owners Group after ownership of the station transferred to Exelon
- The ER coordinator position was filled in May 2017, a position that the CCA acknowledged had been turned over three times in the past 3 years
- Deferred critical PMs as well, as those in the second half of their grace period, remain well above the goals originally set forth in the ER excellence plan, but are trending down

The inspectors previously noted that the CCA found the majority of events that impacted the degrading trend in equipment performance were critical generation systems. The ER excellence plan actions addressed generic actions, such as single point vulnerabilities and scram vulnerability assessments, while the long-term plan had a number of actions to address specific systems.

The inspectors also reviewed the PM excellence plan and the PM long-range plan and noted that many of the actions had been completed, and progress had been made on most of the other items. Inspector observations included:

- The ER index reached a low point in June 2017, and improved in July 2017, although it has not yet returned to the goal outlined by the ER excellence plan (the goal was to reach >90 by December 2017, but Exelon's current projections are that will not be achieved until the second half of 2018)
- A new top 10 list had been created by the plant health committee, with many of the items involving non-safety-related equipment (consistent with the CCA observations)
- The unplanned power change PI tracked by the NRC (an indicator of equipment reliability) improved in 4Q/2016, 1Q/2017, and 2Q/2017

Finally, the inspectors reviewed a sample of PMs that had been deferred or deleted based on the anticipated decommissioning to confirm whether they had been reactivated given the decision to continue plant operations. The previous NRC inspection noted five approved PMCRs that had defueling-based justifications and required re-evaluation. Entergy entered CR-JAF-2016-4132 in its CAP at that time to document the condition. The inspectors reviewed the current status of the CR and noted that Exelon reviewed all the PM change requests approved between November 2015 and August 2016 (including the five noted by the NRC) and corrected the PM frequency/schedule as necessary in light of the decision to continue operating the facility.

Overall, the inspectors concluded that Exelon's actions were reasonable and appropriate. The station identified a negative trend in ER, developed a plan to improve ER, and is in the process of implementing those corrective actions. The ongoing effort to address PMs in their grace period and optimize the PM program are reducing the backlog of PMs in an effort to improve the reliability of equipment. However, returning the ER index to the desired goal is taking longer than originally planned due to

significant staffing changes experienced during the recent ownership transfer as well as the need to service, or procure and install, equipment during upcoming outage windows.

.3 Annual Sample: Ventilation System Damper Positioning Problems

a. Inspection Scope

The inspectors performed an in-depth review of FitzPatrick's evaluation and corrective actions associated with ventilation system damper problems as documented in CR-JAF-2016-04088. Specifically, between January 2015 and October 2016, 25 CRs associated with ventilation system dampers were entered into the station CAP. FitzPatrick staff developed a corrective action to evaluate this condition for trends and performed an analysis to determine whether an adverse trend existed for ventilation system damper failures.

The inspectors assessed FitzPatrick's trend analysis and implemented and planned corrective actions to evaluate whether FitzPatrick staff appropriately identified, characterized, and corrected problems associated with the issue. The inspectors compared the actions taken to the requirements of FitzPatrick's CAP and 10 CFR Part 50, Appendix B. The inspectors reviewed associated documents and interviewed engineering personnel to assess the reasonableness of FitzPatrick's evaluations and the planned and completed corrective actions.

b. Findings and Observations

No findings were identified.

CR-JAF-2016-04088 documented 25 CRs associated with ventilation system damper problems in both safety-related and non-safety-related systems. These problems involved dampers not changing position as expected during routine plant operations and dampers indicating a "dual position" when the damper was in the opened or closed position. The inspectors focused their review on the 18 CRs associated with the safety-related control and relay room air conditioning systems damper problems. During normal operation, the control and relay room air conditioning systems are designed to provide fresh air ventilation with temperature and humidity control for habitability and equipment operability. During accident conditions, the systems are designed to provide safety-related cooling for essential control room and relay room equipment and personnel. The motor operated dampers in these systems are mechanically adjusted by a linkage that is controlled by an actuator receiving an "open" or "close" electronic signal, and each damper provides position indication in the main control room.

Since CR-JAF-2016-04088 was generated in October 2016, prior to the FitzPatrick license transfer to Exelon, staff performed a trend analysis in accordance with Entergy procedure EN-LI-121, "Trending and Performance Review Process." Specifically, FitzPatrick staff determined that the damper failure issue met the definition of an "improvement item" versus an "adverse trend" as defined in EN-LI-121. FitzPatrick staff concluded that because the majority of the positioning problems were not repeatable and since the same failure mechanisms did not occur in sufficient quantity to develop a trend, this issue did not meet the definition of an adverse trend, which would have resulted in higher prioritized corrective actions to address the issue.

The inspectors independently reviewed the supporting documentation to determine whether this conclusion was reasonable. The inspectors noted that the failure effect for each CR was that the damper was indicating dual position versus the expected fully closed or fully open position depending on the procedure being performed. The inspectors reviewed WOs and CRs and determined the causes varied. The failure mechanisms included the damper linkage not traveling the specified distance to make up the position switch, a slight bow in a damper, and a deficient position indicator.

Although an adverse trend was not identified, FitzPatrick staff concluded that an upward trend in motor operated damper position indication equipment problems existed and developed enhancements that were tracked as corrective actions in the CAP. Corrective action #3 (CA3) of CR-JAF-2016-04088 was to track completion of four outstanding WOs to determine the dual position indication cause and adjust the PM strategy as appropriate. In accordance with Entergy and Exelon procedures, the completion of this corrective action was being tracked in the work management system. Corrective action #4 (CA4) was to identify components that experienced three or more CRs during the current PM interval and evaluate the need to revise the PM interval, address the need to replace the position switch, and evaluate the need to replace the motor operated damper actuator. This corrective action was closed in December 2016, and resulted in a change to the PM in which the actuator would be inspected more frequently. The inspectors reviewed these corrective actions to determine whether they were appropriate based on the safety significance of the issues. The inspectors concluded that FitzPatrick appropriately evaluated and characterized the condition and developed and implemented reasonable corrective actions based on the safety significance of the issues.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 2 samples)

.1 (Closed) Licensee Event Report (LER) 05000333/2017-001-00: Vent Line Socket Weld Failure

a. Inspection Scope

On January 14, 2017, Entergy (the FitzPatrick licensee at that time) was performing a planned shutdown to support a refueling outage. During the initial drywell walkdown, a reactor coolant system (RCS) pressure boundary leak was discovered on the 'A' reactor water recirculation pump suction gate valve vent line. The apparent cause evaluation determined that the 3/4-inch vent line developed a crack at the toe of the socket weld due to high cyclic fatigue induced by vibration from the reactor recirculation system. The affected vent pipe was replaced with a prefabricated vent pipe using a reinforced socket weld technique with a new tie-back support to mitigate vibrations in the future. The extent of condition found that the recirculation pump 'A' discharge vent and drain lines and the recirculation pump 'B' suction and discharge vent lines could potentially be susceptible to the same vibration fatigue. The welds associated with these lines were reinforced as well during the January 2017 outage to reduce the possible effects of vibration. The LER and associated evaluations and follow-up actions were reviewed for accuracy, the appropriateness of corrective actions, violations of requirements, and potential generic issues.

b. Findings

Description. On January 14, 2017, during the initial drywell walkdown following shutdown for a refueling outage, Entergy personnel identified a through-wall leak on the vent line off of the bonnet of the motor operated gate valve on the suction side of the 'A' reactor water recirculation pump. A three- to four-foot steam plume was observed. Entergy determined this constituted a violation of TS 3.4.4, "RCS Operational Leakage," that requires RCS leakage to be limited to no pressure boundary leakage. Based on the unidentified leakage rate of 0.06 gallons per minute measured during plant operation and visual inspection of the leak area, the leak likely existed while the plant was online. The condition was reported in Event Notification 52490 as required by 10 CFR 50.72(b)(3)(ii)(A) because it represented a degradation of a principal safety barrier.

The inspectors reviewed LER 05000333/2017-001, CR-JAF-2017-00245, and the associated apparent cause evaluation. Entergy determined that this leak was caused by the existing pipe support allowing for excessive lateral movement which led to higher stresses in the socket weld connection. Additionally, the recirculation pumps were operated at a reduced flow condition for an extended period during the previous cycle, which likely resulted in an increased number of vibration cycles. The inspectors also reviewed the leakage data over the previous cycle and Entergy's operational decision making IR and determined that the existence of RCS pressure boundary leakage was not within Entergy's ability to foresee and correct and therefore was not a performance deficiency. The inspectors screened the significance of the condition using IMC 0609, Appendix A, "The Significance Determination Process (SDP) For Findings At-Power," and determined that the condition represented very low safety significance (Green) because it would not have resulted in exceeding the RCS leak rate for a small loss of coolant accident and would not have likely affected other systems used to mitigate a loss of cooling accident.

Enforcement. TS 3.4.4 requires, in part, that RCS operational leakage shall be limited to no pressure boundary leakage. If pressure boundary leakage exists, the TS 3.4.4 limiting condition for operation action statement requires the unit be in at least hot shutdown within 12 hours and in cold shutdown within 36 hours. Contrary to the above, for a period that began on an unknown date that was likely more than 36 hours before January 14, 2017, and ending on January 14, 2017, RCS pressure boundary leakage existed, and the licensee did not place FitzPatrick in at least hot shutdown within 12 hours and in cold shutdown within 36 hours.

This issue is considered within the traditional enforcement process because there was no performance deficiency associated with the violation of NRC requirements. IMC 0612, "Power Reactor Inspection Reports," Section 03.22 states, in part, that traditional enforcement is used to disposition violations receiving enforcement discretion or violations without a performance deficiency. The NRC Enforcement Policy, Section 2.2.1 states, in part, that, whenever possible, the NRC uses risk information in assessing the safety significance of violations. Accordingly, after considering that the condition represented very low safety significance, the inspectors concluded that the violation would be best characterized as Severity Level IV under the traditional enforcement process. However, the NRC is exercising enforcement discretion (EA-17-121) in accordance with Section 3.10 of the NRC Enforcement Policy, which states that the NRC may exercise discretion for violations of NRC requirements by reactor licensees for which there are no associated performance deficiencies. In reaching this decision, the

NRC determined that the issue was not within the licensee's ability to foresee and correct, the licensee's actions did not contribute to the degraded condition, and the actions taken were reasonable to identify and address the condition. Furthermore, because the licensee's actions did not contribute to this violation, it will not be considered in the assessment process or the NRC's Action Matrix. This LER is closed.

.2 (Closed) LER 05000333/2017-002-00: Residual Heat Removal to Reactor Water Recirculation Loop 'A' Weld Flaw Indication

On January 22, 2017, a manual phased array ultrasonic test examination identified an indication in dissimilar metal weld 24-10-130 while the plant was in Mode 5 for refueling outage R22. Weld 24-10-130 joined the 'A' residual heat removal low pressure coolant injection system to the 'A' reactor water recirculation loop. FitzPatrick staff analyzed the indication in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code and determined it did not meet the acceptance criteria of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," IWB-3514-2, which resulted in a degraded reactor coolant pressure boundary. FitzPatrick staff performed an apparent cause evaluation and determined the direct cause to be intergranular stress corrosion cracking. As a corrective action, FitzPatrick staff installed a full structural weld overlay using material that is intergranular stress corrosion cracking resistant (Alloy 52M) to stop crack propagation while establishing a new structural pressure boundary.

The inspectors reviewed the LER and apparent cause evaluation in order to assess the condition and associated corrective actions. No findings or violations of NRC requirements were identified. This LER is closed.

40A6 Meetings, Including Exit

On October 20, 2017, the inspectors presented the inspection results to Mr. Joseph Pacher, Site Vice President, and other members of the Exelon staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION**KEY POINTS OF CONTACT**Licensee Personnel

J. Pacher, Site Vice President
 T. Peter, Plant Manager
 C. Adner, Director, Site Operations
 H. Borick, Senior Operations Instructor
 W. Drews, Manager, Site Regulatory Assurance
 J. Jones, Manager, Emergency Preparedness
 A. King, Radiation Protection Supervisor
 D. Loope, Radiation Protection Manager
 T. Redfearn, Manager, Security
 B. Sanders, Chemistry Supervisor
 A. Smith, Director, Training
 A. Sterio, Director, Site Engineering

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATEDClosed

05000333/2017-001-00	LER	Vent Line Socket Weld Failure (Section 4OA3.1)
05000333/2017-002-00	LER	Residual Heat Removal to Reactor Water Recirculation Loop A Weld Flaw Indication (Section 4OA3.2)

LIST OF DOCUMENTS REVIEWED**Section 1R01: Adverse Weather Protection**Procedures

AOP-13, Revision 26, Severe Weather
 WC-AA-101-1006, Revision 2, On-Line Risk Management and Assessment

Miscellaneous

FitzPatrick Station Control Room Logs for July 24, 2017
 Nine Mile Point Nuclear Station Unit 1 Control Room Logs for July 24, 2017

Section 1R04: Equipment AlignmentProcedures

Design Basis Document 23, HPCI System, Revision 12
 ODSO-4 Shift Turnover and Log Keeping, Revision 120
 OP-14, Core Spray System, Revision 37
 OP-15, High Pressure Coolant Injection, Revision 62
 OP-21, ESW System, Revision 38

OP-55B, Control Room Ventilation and Cooling, Revision 36
ST-18, Main Control Room Emergency Fan and Operability Test, Revision 32
ST-9BA, EDG 'A' and 'C' Full Load Test and ESW Pump Operability Test, Revision 16

Drawings

FB-45A, Flow Diagram Control and Relay Room Heating and Ventilation Systems, Revision 42
FM-25A, Flow Diagram High Pressure Coolant Injection, Revision 75
FM-46B, Flow Diagram Emergency Service Water System, Revision 57

Section 1R05: Fire Protection

Procedures

AP-14.01, Fire Protection Program, Revision 14
EN-DC-161, Control of Combustibles, Revision 16
PFP-PWR04, Battery Room Complex, Elevation 272' and 282' Fire Area/Zone III/BR-1, BR-2, IV/BR-3, BR-4, XVI/BR-5, Revision 2
PFP-PWR15, Crescent Area West, Elevation 227' and 242', Revision 4
PFP-PWR23, Motor Generator Set Room, Elevation 300' Fire Area 1A/Fire Zone MG-1, Revision 5
PFP-PWR23 Switchgear Room East Elevation 272' Fire Area 2/Fire Zone II SW-2, Revision 4
PFP-PWR23 Switchgear Room West Elevation 272' Fire Area 2/Fire Zone IC/SW-1, Revision 2
PRP-PWR31, Emergency Diesel Generator Spaces - South, Elevation 272', Revision 4

Issue Report

04039219

Miscellaneous

JAF-RPT-04-00478, JAF Fire Hazards Analysis, Revision 2

Section 1R06: Flood Protection Measures

Miscellaneous

JAF UFSAR Revision 18
JAF Individual Plant Examination, April 1998, Revision 1

Section 1R07: Heat Sink Performance

Procedure

ST-8S, Control and Relay Room Refrigeration Water Chiller System Manual Valve Exercise Test, Revision 12

Miscellaneous

NRC Generic Letter 89-13, Service Water Program, Revision 0

Section 1R11: Licensed Operator Regualification Program

Procedure

NF-AB-431, Power Suppression Testing, Revision 8

Section 1R12: Maintenance Effectiveness

Procedure

ST-8Q, Testing of the Service Water System (IST) [Inservice Test], Revision 48

Condition Reports

CR-JAF-2014-3121	CR-JAF-2014-3124	CR-JAF-2016-1991
CR-JAF-2016-3715	CR-JAF-2016-4064	CR-JAF-2017-0109
CR-JAF-2017-0138	CR-JAF-2017-1011	CR-JAF-2017-1018

Issue Reports

3992540	3992596	3992644	3993791
3997043	3997991	3999593	4017240
4028247	4041996	4043212	4043299
4044235	4045198		

Work Order

456958

Miscellaneous

(A)(1) Evaluation of the Service Water System, May 3, 2017
 EN-DC-105, Condition Monitoring of Maintenance Rule Structures, Revision 12
 JAF-RPT-07-00006, Maintenance Rule Structural Monitoring Report 2013-2015, Revision 5
 JAF-RPT-HPCI-02289, Maintenance Rule Basis Document System 23 High Pressure Coolant Injection, Revision 9
 JAF-RPT-MULTI-02294, Maintenance Rule Basis Document for Service Water Systems, Revision 12
 NUREG-1801, Generic Aging Lessons Learned Report, Revision 1
 Regulatory Guide 1.160, Monitoring the Maintenance at Nuclear Power Plants, Revision 2

Section 1R13: Maintenance Risk Assessments and Emergent Work ControlProcedures

AOP-13, Severe Weather, Revision 26
 OP-AA-108-117, Protected Equipment Program, Revision 4

Issue Report

4045034

Drawing

FM-48A, Flow Diagram, SBTG System, Revision 31

Section 1R15: Operability Determinations and Functionality AssessmentsProcedures

OP-33, Fire Protection, Revision 57
 OP-46A, 4160 V and 480 V Normal AC Power Distribution, Revision 63A
 ST-4B, HPCI Monthly Operability Test, August 30, 2016 and October 24, 2016
 ST-4N, HPCI Quick-Start, Inservice, and Transient Monitoring Test (IST), October 16, 2016, and August 18, 2017

Condition Reports

JAF-CR-2015-2850
 JAF-CR-2015-3618
 JAF-CR-2016-4029

Issue Reports

4023206	4043199	4043496	4055355
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Miscellaneous

JAF-RPT-03-00056, Operational Leakage Action Levels for Two Stage Target Rock Safety/Relief Valves, Revision 1

JAF-RPT-FPS-02496, Maintenance Rule Basis Document for System 076, Revision 11

Section 1R18: Plant Modifications

Procedures

AOP-53, Loss of Spent Fuel Storage Pool, Reactor Head Cavity Well, or Dryer Separator Storage Pit Water Level, Revision 10

EN-DC-115, Engineering Change Process, Revisions 18 and 21

Issue Reports

4014483

4026247

Work Order

80452749

Section 1R19: Post-Maintenance Testing

Procedures

IMP-23.3, HPCI System Flow Indication Calibration (IST), Revision 25

ISP-66-1A, Scram Discharge Instrument Volume High Water Level Instrument Functional Test/Calibration, completed September 20, 2017

MP-056.01, AC Motor Control Center Maintenance and Subcomponent Replacement, Revision 83

ST-3PA, Core Spray Loop 'A' Quarterly Operability Test (IST), completed August 9, 2017

ST-4N, HPCI Quick-Start, Inservice, and Transient Monitoring Test (IST), completed August 18, 2017

ST-24J, RCIC Flow Rate and Inservice Test (IST), completed September 21, 2017

Issue Report

4047486

Section 2RS1: Radiological Hazard Assessment and Exposure Controls

Procedures

EN-RP-106, Radiological Survey Documentation, Revision 7

EN-RP-106-01, Radiological Survey Guidelines, Revision 3

EN-RP-121, Radioactive Material Control, Revision 13

Section 2RS3: In-Plant Airborne Radioactivity Control and Mitigation

Condition Reports

CR-JAF-2017-00123

CR-JAF-2017-00125

CR-JAF-2017-00145

CR-JAF-2017-00222

CR-JAF-2017-00495

CR-JAF-2017-00674

CR-JAF-2017-01712

2RS4: Occupational Dose Assessment

Procedures

EN-RP-201, Dosimetry Administration, Revision 5

EN-RP-203, Dose Assessment, Revision 9
 EN-RP-204, Special Monitoring Requirements, Revision 11
 EN-RP-204-01, Effective Dose Equivalent Monitoring, Revision 2
 EN-RP-205, Prenatal Monitoring, Revision 3
 EN-RP-206, Dosimeter of Legal Record Quality Assurance, Revision 6
 EN-RP-207, Planned Special Exposure, Revision 3
 EN-RP-208, Whole Body Counting/In-Vitro Bioassay, Revision 7

Condition Reports

CR-JAF-2017-00123	CR-JAF-2017-00125	CR-JAF-2017-00145
CR-JAF-2017-00222	CR-JAF-2017-00495	CR-JAF-2017-00674
CR-JAF-2017-01712		

Issue Reports

4011353	4024596	4037759	4037789
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Miscellaneous

Training Material Number FLP-RPI-RADBO, Biological Effects of Radiation, Revision 3
 Training Material Number FCBT-GET-RWTSS, Entergy Fleet Radiation Worker Training,
 Revision 11

Section 40A2: Problem Identification and ResolutionProcedures

EN-LI-120, CAP, Revision 27
 EN-LI-121, Trending and Performance Review Process, Revision 20
 PI-AA-125, CAP Procedure, Revision 5

Condition Reports

CR-JAF-2015-00892	CR-JAF-2015-05180	CR-JAF-2016-02646
CR-JAF-2016-03051	CR-JAF-2016-03144	CR-JAF-2016-03157
CR-JAF-2016-03593	CR-JAF-2016-04088	CR-JAF-2016-04132
CR-JAF-2017-00168		

Action Requests

258972
 259480
 262550

Issue Report

4021037

Drawing

FB-45A, System 70, Control and Relay Rooms Heating and Ventilation Flow Diagram,
 Revision 42

Work Orders

80451402	80453720	80454042	80454131
80456472			

Miscellaneous

Communication Plan 2016-2017 for Equipment Reliability
 Exelon Nuclear Performance Summary for Equipment Reliability Index

JAF-RPT-CRC-02299, Maintenance Rule Basis Document/System70/Control and Relay Room
Ventilation System, August 25, 2015
Monthly Indicator Data for Equipment Reliability Index, Including PM Status
NRC Quarterly Performance Indicators for FitzPatrick – 4Q2016, 1Q/2017, and 2Q2017
Open Plant Health Issues Actions
PM Long-Range Plan (last updated August 2017)
WT-JAF-2016-00263, 2016 – 2017 Excellence Plan for Equipment Reliability

Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

Procedure

EN-OP-109, Drywell Leakage, Revision 2

Condition Reports

CR-JAF-2016-03922	CR-JAF-2017-00245	CR-JAF-2017-00706
CR-JAF-2017-00805	CR-JAF-2017-00927	

Issue Reports

3992513
3992522

Drawings

FM-26A, Flow Diagram Reactor Water Recirculation System 02-2, Revision 62

Cause Evaluation

CR-JAF-2017-00706, Indication on RHR System Dissimilar Metal Weld, March 8, 2017

Miscellaneous

Equipment Apparent Cause Evaluation, 02-2MOV-43A Vent Line Socket Weld Failure
Updated Final Safety Analysis Report

LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
CAP	corrective action program
CCA	common cause analysis
CR	condition report
EDG	emergency diesel generator
ER	equipment reliability
ESW	emergency service water
HPCI	high pressure coolant injection
IMC	Inspection Manual Chapter
IR	issue report
LER	licensee event report
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PI	performance indicator
PM	preventive maintenance
RCIC	reactor core isolation cooling
RCS	reactor coolant system
RPS	reactor protection system
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
WO	work order