



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

August 11, 2021

Mr. David Rhoades
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 – BIENNIAL PROBLEM
IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000333/2021013

Dear Mr. Rhoades:

On July 1, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your James A. FitzPatrick Nuclear Power Plant and discussed the results of this inspection with Mr. Tim Peter, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at James A. FitzPatrick Nuclear Power Plant.

If you disagree with a cross-cutting aspect assignment 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,

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

Docket No. 05000333
License No. DPR-59

Enclosure:
As stated

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SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000333/2021013 DATED AUGUST 11, 2021

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Number: 05000333

License Number: DPR-59

Report Number: 05000333/2021013

Enterprise Identifier: I-2021-013-0016

Licensee: Exelon Nuclear

Facility: James A. FitzPatrick Nuclear Power Plant

Location: Oswego, NY

Inspection Dates: June 14, 2021 to July 01, 2021

Inspectors: G. Stock, Senior Resident Inspector
J. DeBoer, Senior Project Engineer
J. England, Resident Inspector
C. Khan, Senior Project Engineer

Approved By: Erin E. Carfang, Chief
Projects Branch 1
Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution 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

Failure to Correct a Condition Adverse to Quality for Fuel Failures			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000333/2021013-01 Open/Closed	[H.12] - Avoid Complacency	71152B
The inspectors identified a self-revealed, Green finding and associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," when Exelon did not correct a condition adverse to quality. Specifically, Exelon did not plan or complete required maintenance on the condensate booster pump check valves whose failure had previously resulted in fuel failures.			

Additional Tracking Items

None.

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), inspectors were directed to begin telework. In addition, regional baseline inspections were evaluated to determine if all or a portion 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.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 02.04) (1 Sample)

- (1) The inspectors performed a biennial assessment of the licensee's problem identification and resolution in the following areas:
 - Corrective Action Program Effectiveness including problem identification, problem prioritization and evaluation, and corrective actions
 - Use of Operating Experience
 - Completed Self-Assessments and Audits
 - Health of the Safety Conscious Work Environment

INSPECTION RESULTS

Assessment	71152B
Corrective Action Program Effectiveness – The inspectors determined that Exelon's problem identification and resolution program adequately supported nuclear safety and security. <u>Problem Identification:</u> The inspectors determined that, in general, Exelon identified issues and entered them into the corrective action program at a low threshold.	

However, during the review of issue reports (IRs) generated during the inspection period, the inspectors noted an appreciable reduction in the quantity of IRs generated during the COVID-19 public health emergency. The inspectors did not identify additional safety significant issues that had not been captured in the corrective action program.

Problem Prioritization and Evaluation: Based on the samples reviewed, the inspectors determined that, in general, Exelon appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. Exelon appropriately screened IRs for operability and reportability, categorized IRs by significance, and assigned actions to the appropriate department for evaluation and resolution.

Corrective Actions: The inspectors determined that, in general, the overall corrective action program performance related to resolving problems was effective. In most cases, Exelon implemented corrective actions to resolve problems in a timely manner.

However, the inspectors identified one Green NCV and two minor performance deficiencies associated with IRs 4369128, 4290066, and 4351989 respectively. These performance deficiencies pertain to resolving issues identified and evaluated in the corrective action program and are documented below.

Assessment	71152B
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Use of Operating Experience -

The team determined that Exelon appropriately evaluated industry operating experience for its relevance to the facility. Exelon appropriately incorporated both internal and external operating experience into plant procedures and processes, as well as lessons learned for training and pre-job briefs.

Self-Assessments and Audits -

The team reviewed a sample of self-assessments and audits to assess whether the licensee was identifying and addressing performance trends. In general, the team concluded that Exelon had an effective self-assessment and audit process.

However, the inspectors noted that previously identified NRC finding 05000333/2020001-02 had not been thoroughly reviewed for adequacy of evaluation and completion of corrective actions during Exelon's self-assessments. This issue is being documented as a Green NCV in the results section below.

Assessment	71152B
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Safety Conscious Work Environment -

The team interviewed site personnel across different functional areas to determine the adequacy of the safety conscious work environment. The purpose of these interviews was (1) to evaluate the willingness of the licensee staff to raise nuclear safety issues, (2) to evaluate the perceived effectiveness of the corrective action program at resolving identified problems, and (3) to evaluate the licensee's safety-conscious work environment.

The personnel interviewed were randomly selected by the inspectors from the Operations, Engineering, Maintenance, Security, Chemistry, Radiation Protection, and Emergency Preparedness work groups. To supplement these discussions, the team interviewed the

Employee Concerns Program (ECP) Coordinator to assess their perception of the site employees' willingness to raise nuclear safety concerns. The team also reviewed the ECP case log and select case files.

All individuals interviewed indicated that they would raise safety concerns. All individuals felt that their management was receptive to receiving safety concerns and generally addressed them promptly, commensurate with the significance of the concern. In general, interviewees indicated they were adequately trained and proficient on initiating condition reports. All interviewees were aware of the licensee's ECP, stated they would use the program if necessary, and expressed confidence that their confidentiality would be maintained if they brought issues to the ECP. When asked whether there have been any instances where individuals experienced retaliation or other negative reaction for raising safety concerns, all individuals interviewed stated that they had neither experienced nor heard of an instance of retaliation at the site. The team determined that the processes in place to mitigate potential safety culture issues were adequately implemented.

Failure to Correct a Condition Adverse to Quality for Fuel Failures			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000333/2021013-01 Open/Closed	[H.12] - Avoid Complacency	71152B
<p>The inspectors identified a self-revealed, Green non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion XVI, "Corrective Action," when Exelon did not correct a condition adverse to quality. Specifically, Exelon did not plan or complete required maintenance on the condensate booster pump check valves whose failure had previously resulted in fuel failures.</p> <p><u>Description:</u> FitzPatrick has a series of pumps to transfer reactor water from the condenser to the reactor vessel for core cooling and steam production. There are three condensate pumps which supply water to three condensate booster pumps (CBPs) which supply water to two feedwater pumps. Each set of pumps has a discharge check valve to ensure pumps do not receive reverse flow when a pump is secured. On June 24, 2016, the 'C' CBP catastrophically failed due to reverse flow when the 'C' CBP discharge check valve failed. This catastrophic failure introduced foreign material into the reactor coolant system which led to five fuel failures during the following fuel cycle that ended September 10, 2018.</p> <p>The inspectors previously reviewed IR 4097375 which was initiated to perform a root cause evaluation of the fuel failures. Exelon determined that the maintenance procedure had inadequate detail for securing the CBP discharge pump check valve stem nut to the stem disc. The corrective actions included an update to the maintenance procedure to provide additional clarity, a repair of the 'C' check valve, and scheduling of the repairs of 'A' and 'B' check valves. This review resulted in a self-revealed, Green finding and associated NCV of Technical Specification 5.4.1, "Procedures," when Exelon did not maintain adequate guidance for securing the stem nut to the stem disc of condensate check valves, which resulted in a check valve failure, CBP failure, and subsequent fuel failures. Exelon generated IR 4341410 as a result of the NCV. See NRC inspection report 05000333/2020001, dated April 28, 2020 (ML 20119A050), for additional details.</p> <p>Among other assignments, IR 4341410 included an action to determine if corrective actions were completed or in place to address all aspects of the violation to prevent re-occurrence.</p>			

This assignment was marked as complete on June 13, 2020. On September 13, 2020, during the shutdown to enter the R24 refueling outage, the 'B' CBP discharge check valve failed, resulting in reverse flow through the 'B' CBP. Issue Report 4369128 was initiated to perform a corrective action program evaluation (CAPE) to evaluate this issue. The CAPE found that the actions from IR 4097375 from the 2016 'C' CBP check valve failure had not been completed or planned. Therefore, the actions from IR 4341410, which was generated in response to an NRC-issued NCV to verify these actions were completed or planned, was incorrectly marked as complete and no actions remained to ensure the required corrective actions to prevent future fuel failures would be completed.

Corrective Actions: Following the failure of the 'B' CBP discharge check valve in September 2020, Exelon secured the stem nut to the stem disc using the updated procedure during the R24 refueling outage.

Corrective Action References: 4097375, 4341410, 4369128

Performance Assessment:

Performance Deficiency: Exelon did not correct a condition adverse to quality as required by 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," and was determined to be a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Cladding Performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined the significance to be Green because this finding did not involve control manipulations that unintentionally added positive reactivity, did not result in a mismanagement of reactivity by operators that challenged fuel cladding integrity, and did not result in the mismanagement of foreign material exclusion or reactor coolant chemistry control program that challenged fuel cladding integrity.

Cross-Cutting Aspect: H.12 - Avoid Complacency: Individuals recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Individuals implement appropriate error reduction tools. Specifically, the closure of IR 4341410 provided Exelon the opportunity to recognize the failure to complete or plan the corrective actions associated with IR 4097375. Exelon did not recognize this mistake, which resulted in the failure of the 'B' CBP discharge check valve in the same manner that in 2016 resulted in fuel failures.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XVI, states, in part, measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. Contrary to this requirement, prior to September 2020, Exelon did not adequately establish measures to assure that conditions adverse to quality were identified and corrected, in that maintenance on the CBP check valves that could affect the performance of safety-related equipment such as the reactor fuel cladding, was not

preplanned. Specifically, IRs 4341410 and 4369128 were closed without corrective maintenance being scheduled or performed. The corrective maintenance was determined to be required to prevent a catastrophic failure of CBP and the introduction of foreign material from the pump and discharge check valve into the safety related reactor coolant system.

Enforcement Action: This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy.

Minor Violation	71152B
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Minor Violation: The inspectors determined that Exelon did not prescribe documented instructions of a type appropriate to the circumstances for an activity affecting quality associated with their maintenance procedure for 4.16 kV Magna-Blast breakers. Contrary to 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," Exelon's maintenance procedure, MP-054.01, "4.16 kV Magna-Blast Breakers," did not have sufficient detail. Specifically, step 8.32.1, states, "check latching pawl spring retainer plate bolts are tight," which would not ensure the retaining bolts would remain tight and secured under all operating conditions until the next performance of the maintenance procedure as demonstrated on the 4.16 kV 'D' residual heat removal (RHR) breaker in October 2019.

Screening: The inspectors determined the performance deficiency was minor. The failure to adequately specify instructions to ensure the pawl latch bolts are tight and remain secure in the procedure is minor, because it did not adversely affect any cornerstones objectives, did not lead to a more significant safety concern, and was not a precursor to a more significant event. Specifically, a loose pawl latch support bolt was found inside a breaker cabinet in October 2019 and did not impact the operability of the 4.16 kV 'D' RHR breaker from performing its safety function.

Enforcement: This failure to comply with 10 CFR Part 50, Appendix B, Criterion V constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Minor Violation	71152B
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Minor Violation: The inspectors determined that Exelon's failure to revise procedure MA-AA-716-237, "CDA Work Activity Process," is contrary to 10 CFR 73.55(b)(10), "General Requirements," that was reasonably within Exelon's ability to foresee and correct and was a performance deficiency. Specifically, IR 4351989, Assignment 4 included actions to revise MA-AA-716-237 to include guidance on the requirement to perform a baseline audit of critical digital assets onsite. The assignment was closed without a revision being completed, which could lead to the failure to include guidance for the requirement for a baseline audit in a future revision to the procedure.

Screening: The inspectors determined the performance deficiency was minor. The failure to adequately revise procedure MA-AA-716-237 is minor, because it did not adversely affect any cornerstone objectives, did not lead to a more significant safety concern, and was not a precursor to a more significant event. Specifically, a failure to include the guidance for a baseline audit of critical digital assets onsite does not constitute an adverse impact to the cyber security program.

Enforcement: This failure to comply with 10 CFR 73.55(b)(10) constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On July 1, 2021, the inspectors presented the biennial problem identification and resolution inspection results to Mr. Tim Peter, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Corrective Action Documents	4088255, 4172631, 4172786, 4181419, 4203649, 4209610, 4214072, 4214685, 4217452, 4217456, 4217461, 4217469, 4235204, 4242588, 4242812, 4242967, 4243175, 4243309, 4243467, 4245107, 4248381, 4249285, 4252619, 4252625, 4254542, 4255339, 4259118, 4259960, 4261157, 4263641, 4264673, 4266594, 4266619, 4268075, 4272535, 4272607, 4275996, 4277359, 4278000, 4280784, 4283131, 4284016, 4286038, 4286782, 4287157, 4288680, 4290066, 4290155, 4295495, 4298887, 4301960, 4303018, 4303614, 4310346, 4314313, 4333464, 4334577, 4335845, 4340861, 4342700, 4347674, 4347868, 4351640, 4351989,		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4351992, 4352172, 4352692, 4356688, 4362198, 4368023, 4369253, 4370217, 4371328, 4377749, 4384096, 4387104, 4391081, 4391085, 4391086, 4391691, 4399580, 4403261, 4403310, 4403583, 4403584, 4406839, 4406877, 4408097, 4416039, 4416224, 4416476, 4416743, 4421382		
	Corrective Action Documents Resulting from Inspection	4429725, 4429750, 4429931, 4429938, 4429973, 4431571, 4432229, 4432231, 4432253, 4432254, 4432404, 4432510, 4432529, 4432708, 4433131		
	Miscellaneous	4155642-52	Perform a Level 3 OPEX Review L3-19-3 Unplanned Dose Rate	04/26/2019
		4383175, 4369885	NRC IN 2020-03 Recall of Edwards 135 Degree Heat Detectors	12/09/2020
		4406799, 4336123	Part 21 - SF-1154 Degraded Snubber Hydraulic Fluid	04/04/2021
		4155642-53	Surry Control Room Chiller Service Water Pump Outlet Valve Identified Closed versus Open	04/19/2019
		4256218	NRC IN 2019-02: EDG Excitation System Diode Failures	06/12/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4291213-02	10CFR21 Reporting of Defects and Non-Compliance for EMD Fuel Injector – seized plunger and bushing	10/24/2019
		4307626-03	Reportable Occurrence under 10CFR21: Reported Failure in Analog High Range Radiation Monitor (RP-2)	12/23/2019
		4359360-02	IER L2-20-05, Ineffective Use of Operating Experience Challenges FLEX Mitigation Strategies	10/06/2020
		4369686-02	NRC Information Notice 2020-02, FLEX Diesel Generator Operational Challenges	10/06/2020
		4391803-03	NRC Information Notice 2020-04 Operating Experience Related to Failure of Buried Fire Protection Main Yard Piping	12/23/2020
		4407914	Part 21 - Failure of Main Steam Isolation Valve Air Packs	03/10/2021
	Procedures	MP-054.01	4.16 KV MAGNE-BLAST BREAKER	34
		MP-054.03	4.16 KV MAGNE-BLAST BREAKER OVERHAUL	9
		OU-AA-101-1002	High Impact (HIT) Teams	8
		PI-AA-115	Operating Experience Program	5
		PI-AA-120	Issue Identification and Screening Process	11
		PI-AA-125	Corrective Action Program (CAP) Procedure	7
		PI-AA-125-1001	Root Cause Analysis Manual	6
		PI-AA-125-1003	Corrective Action Program Evaluation Manual	6
	Self-Assessments	PI-AA-125-1006	Investigation Techniques Manual	5
4231579		10 CFR 50.65 (a)(3) Periodic Assessment (Maintenance Rule),	04/26/2019	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			November 15 to March 2019	
		4315062	Chemistry Self Assessment for Program Oversight	06/05/2020
		4371929	JAF 2020 In Storage Maintenance Assessment	12/30/2020
		4088157	IST/APP J Self Assessment	12/29/2017
		4088171	Maintenance Rule Self Assessment	10/31/2020
		4216474	Raw Water Piping Integrity Management Program	09/17/2019
		4217856	Clearance and Tagging Self Assessment	06/11/2019
		4246072	Maintenance Rule A3 Assessment	05/07/2021
		4310717	Maintenance Rule (a)(3) Periodic Maintenance Effectiveness Assessment (4/1/19 - 3/31/21)	04/23/2021
		4312967	Conduct of Maintenance	
		NOSA-JAF-19-05	J. A. FITZPATRICK ENGINEERING DESIGN CONTROL AUDIT REPORT, PLAN AND TECHNICAL SPECIALIST ORIENTATION GUIDE	08/21/2019
		NOSA-JAF-20-03	Emergency Preparedness Audit Report	04/22/2020
		NOSA-JAF-20-05	J. A. FITZPATRICK ENGINEERING PROGRAMS AUDIT REPORT, PLAN AND TECHNICAL SPECIALIST	06/10/2020