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

February 10, 2021

Mr. David P. 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 – INFORMATION REQUEST TO SUPPORT TRIENNIAL BASELINE DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES UNDER 10 CFR 50.55a REQUIREMENTS INSPECTION; INSPECTION REPORT [05000333/2021011]

Dear Mr. Hanson:

The purpose of this letter is to notify you that the U.S. Nuclear Regulatory Commission (NRC) Region I staff will conduct a team inspection at your James A. FitzPatrick Nuclear Power Plant. Amar Patel, a Senior Reactor Inspector from the NRC's Region I office, will lead the inspection team. The inspection will be conducted in accordance with Inspection Procedure 71111.21N.02, "Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements," dated October 9, 2021 (ADAMS Accession No. ML20220A667).

The inspection will assess the reliability, functional capability, and design bases of risk-important power-operated valves (POV) as required by Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a, and Appendix A and B requirements. The inspectors will select a sample of POVs based on risk insights, safety significance and operating margin.

During a telephone conversation on January 21, 2021, with Mr. Mark Hawes of your FitzPatrick Plant staff, we confirmed arrangements for an information gathering site visit and the two-week onsite inspection. The schedule is as follows:

- Information gathering visit: Week of March 29, 2021
- Onsite weeks: Weeks of May 3 and May 17, 2021.

The purpose of the information gathering visit is to meet with members of your staff and to become familiar with your programs and procedures intended to ensure compliance with 10 CFR 50.55a for POVs. The lead inspector will discuss aspects of the programs including any specific applicable regulatory commitments made by your facility and your use of NRC Regulatory Guides or industry standards. Frank Arner, a Region I Senior Risk Analyst, will support Amar Patel during the information-gathering visit to review probabilistic risk assessment data and identify the final POV samples to be examined during the inspection.

Experience with previous design basis team inspections of similar depth and length has shown this type of inspection is resource intensive, both for NRC inspectors and licensee staff. In order to minimize the inspection impact on the site and to ensure a productive inspection for both parties, we have enclosed a request for information needed for the inspection.

Insofar as possible, this information should be provided electronically to the lead inspector at the NRC Region I office by March 26, 2021. Additional documents may be requested during the information gathering visit and/or during team preparation week (the week prior to the first onsite inspection week). The inspectors will minimize your administrative burden by specifically identifying only those documents required for the inspection.

If there are any questions about the inspection or the material requested in the enclosure, please contact the lead inspector at 610-337-5220 or via e-mail at amar.patel@nrc.gov.

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, Control Number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget Control Number.

This letter and its enclosure 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*, Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Thank you in advance for supporting this resource intensive but important engineering inspection.

Sincerely,

X /RA/

Signed by: Melvin K. Gray

Mel Gray, Chief
Engineering Branch 1
Division of Reactor Safety

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

Enclosure:
Document Request: Power-Operated
Valves Inspection

cc: Distribution via ListServ

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – INFORMATION REQUEST TO SUPPORT TRIENNIAL BASELINE DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES UNDER 10 CFR 50.55a REQUIREMENTS INSPECTION; INSPECTION REPORT [05000333/2021011] DATED FEBRUARY 10, 2021

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DOCUMENT REQUEST: POWER-OPERATED VALVES INSPECTION

Inspection Report: 05000333/2021011;

Onsite Inspection Dates: May 3, through May 7; and May 17, through May 21;

Inspection Procedure: Inspection Procedure 71111.21N.02, Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements

Lead Inspector: Amar Patel, Senior Reactor Inspector
610-337-5220
amar.patel@nrc.gov

I. Information Gathering Visit

During this visit, we plan to obtain sufficient insights to finalize POV samples for this inspection. We would like to meet with POV specialists to discuss the upcoming inspection and our sample selection process. The primary valve types to be reviewed for this inspection include motor-operated valves (MOV) and air-operated valves (AOV); and additional valve types include hydraulic-operated valves (HOV), solenoid-operated valves (SOV), and pyrotechnic-actuated (squib) valves. During this visit, the lead inspector will (a) discuss the scope of the planned inspection; (b) identify additional information needed to review in preparation for the inspection; (c) ensure that the information to be reviewed is available at the beginning of the inspection; and (d) verify that logistical issues will be identified and addressed prior to the team's arrival. Please reserve a room during the site visit with a telephone, wireless internet access, and a licensee computer with access to procedures, corrective action program documents, and a printer.

II. Information Requested for Selection of Power-Operated Valves

The following information is requested by March 26, 2021, to facilitate inspection preparation. Feel free to contact the lead inspector if you have any questions regarding this information request. Please provide the information electronically in "pdf" files, Excel, or other searchable formats, preferably on some portable electronic media (e.g., CD-ROM, DVD). The files should contain descriptive names and be indexed and hyperlinked to facilitate ease of use. Information in "lists" should contain enough information to be easily understood by someone who has knowledge of light water reactor technology and POVs.

1. A word-searchable Update Final Safety Analysis Report. If not available in a single file per unit, please ensure a collective table of contents is provided.

2. Site (and corporate if applicable) procedures associated with implementation of the MOV program required by 10 CFR 50.55a(b)(3)(ii) and/or ASME OM Code Mandatory Appendix III; and site (corporate) procedure for AOV program.

3. List of corrective action documents related to the MOV and AOV programs since 3/2016 (include document No., title/short description, date).

DOCUMENT REQUEST: POWER-OPERATED VALVES INSPECTION

4. List of significant modifications, repairs, or replacement of safety related POVs completed since 3/2016, including date completed (include document No., title, date completed).

5. Any self-assessments or quality assurance type assessments of the MOV/AOV programs (performed since 3/2016).

6. List and electronic copy of all Emergency Operating Procedures.

7. List of Abnormal Operating Procedures.

8. Identify the edition of the ASME Operation and Maintenance of Nuclear Power Plants (OM Code) that is the Code of Record for the current 10-year Inservice Test Program interval, as well as any standards to which the station has committed with respect to POV capability and testing.

9. For each of the following MOVs, provide the information listed in the table below (further information on what/how to provide was discussed during the January 21, 2021 phone call with Mark Hawes).

Reactor Water Recirc Pump A Discharge Isolation Valve, 02-2MOV-53A
RHR Shutdown Cooling Outboard Isolation Valve, 10MOV-17
RHR A LPCI Inboard Injection Valve, 10MOV-25A
RHR A Containment Spray Outboard Isolation Valve, 10MOV-26A
Residual Heat Removal A Containment Spray Inboard Isolation Valve, 10MOV-31A
Residual Heat Removal B Containment Spray Inboard Isolation Valve, 10MOV-31B
Residual Heat Removal A Torus Cooling Supply Valve, 10MOV-34A
Residual Heat Removal A to Torus Spray Isolation Valve, 10MOV-38A
Residual Heat Removal Loop B Torus Cooling Isolation Valve, 10MOV-39B
Residual Heat Removal Heat Exchanger B Bypass Valve, 10MOV-66B
Residual Heat Removal Heat Exchanger A Service Water Outlet Isolation Valve, 10MOV-89A
Reactor Water Cleanup Supply Inboard Isolation Valve, 12MOV-15
Reactor Water Cleanup Supply Outboard Isolation Valve, 12MOV-18
Reactor Core Isolation Cooling Turbine Steam Supply Outboard Isolation Valve, 13MOV-16
Reactor Core Isolation Cooling - RCIC Pump Discharge to Reactor Inboard Valve, 13MOV-21
Core Spray Loop A Inboard Isolation Valve, 14MOV-12A
Core Spray Pump A Suction from Suppression Pool Isolation Valve, 14MOV-7A
High Pressure Cooling Injection Steam Supply Inboard Isolation Valve, 23MOV-15
High Pressure Cooling Injection Pump to Reactor Outboard Isolation Valve, 23MOV-20
Emergency Service Water Loop A Supply Header Isolation Valve, 46MOV-101A

Item	Parameter/Information*
1	MOV Identification
2	Safety Function
3	Valve manufacturer, type, and size
4	Actuator manufacturer, type, and size
5	Motor manufacturer, type (AC/DC), and size
6	Valve ASME Class
7	Risk Significance
8	Control Switch Trip (CST) Application (Close/Open)

9	Design-Basis Differential Pressure (DBDP) and Flow (Close/Open)
10	Rising-Stem Valve: Assumed Valve Factor (VF)
11	Quarter-Turn Valve: Assumed bearing torque coefficient
12	Assumed Stem Friction Coefficient (SFC)
13	Assumed Load Sensitive Behavior (LSB) (%)
14	% Uncertainties (e.g., diagnostic equipment, CST repeatability, etc.)
15	Calculated Required Thrust/Torque (Close/Open)
16	Least Available Output (e.g., actuator, CST, rating, spring pack, weak link)
17	Test Conditions (e.g., fluid differential pressure (DP), system pressure, flow, and temperature; ambient temperature; and motor voltage) (Close/Open)
18	Thrust and torque required to overcome dynamic conditions (Close/Open)
19	Rising-Stem Valve: Measured VF (Close/Open)
20	Rising-Stem Valve: Available VF (Close/Open)
21	Measured SFC (Close/Open)
22	Measured LSB (%)
23	Quarter-Turn Valve: Measured bearing torque coefficient (Close/Open)
24	Determined % Margin (Close/Open)
25	*Basis for Design-Basis Capability:*
25.a	Dynamic test performed at design-basis DP/flow conditions
25.b	Extrapolation of dynamic test data
25.c	Justification from normal operation at or above design-basis conditions
25.d	Industry dynamic test methodology (such as EPRI MOV PPM)
25.e	Grouped with similar valves dynamically tested at plant
25.f	Grouped with similar valves dynamically tested at other plants
25.g	Valve qualification testing (such as ASME QME-1-2007)
25.h	Other (such as large calculated margin)
**Specify Not Applicable (NA) as appropriate*	

10. For each of the following AOVs, provide the information listed in the table below.

Recirculation Loop Inboard Sample Isolation Valve, 02-2AOV-39
Reactor Building Closed Loop Cooling Supply to Recirculation Pump & Motor B Coolers Isolation Valve, 15AOV-132B
Drywell Floor Drain Pumps A&B Discharge Outboard Isolation Valve, 20AOV-83
High Pressure Coolant Injection Turbine Steam Supply Upstream Drain Isolation Valve, 23AOV-42
Main Steam Line A Inboard Isolation, 29AOV-80A
Main Steam Line C Outboard Isolation, 29AOV-86C
Torus Exhaust Inner Isolation Valve, 27AOV-117
Torus Exhaust Outer Isolation Valve, 27AOV-118

Item	Parameter/Information*
1	AOV Identification
2	Safety Function
3	Fail safe position (open/close)
4	Valve manufacturer, type, and size
5	Actuator manufacturer, type, and size

6	Valve ASME Class
7	Risk Significance
8	Design-Basis Differential Pressure (DBDP) and Flow (Close/Open)
9	Rising-Stem Valve: Assumed Valve Factor (VF)
10	Quarter-Turn Valve: Assumed bearing torque coefficient
11	% Uncertainties (e.g., diagnostic equipment, CST repeatability, etc.)
12	Calculated Required Thrust/Torque (Close/Open)
13	Minimum allowable air pressure (Beginning/End Stroke)
14	Maximum allowable air pressure (Beginning/End Stroke)
15	Minimum allowable spring preload (Beginning/End Stroke)
16	Maximum allowable spring preload (Beginning/End Stroke)
17	Least Available Actuator Output (e.g., actuator capability, actuator limit, valve weak link limitation)
18	Test Conditions (e.g., fluid differential pressure (DP), system pressure, flow, and temperature; and ambient temperature) (Close/Open)
19	Thrust and torque required to overcome dynamic conditions (Close/Open)
20	Rising-Stem Valve: Measured VF (Close/Open)
21	Quarter-Turn Valve: Measured bearing torque coefficient (Close/Open)
22	Determined Margin (%) (Least margin for air stroke operation, spring stroke operation, maximum spring load, and structural capability)
23	*Basis for Design-Basis Capability:*
24.a	Dynamic test performed at design-basis DP/flow conditions
24.b	Extrapolation of dynamic test data
24.c	Justification from normal operation at or above design-basis conditions
24.d	Industry dynamic test methodology
24.e	Grouped with similar valves dynamically tested at plant
24.f	Grouped with similar valves dynamically tested at other plants
24.g	Valve qualification testing (such as ASME QME-1-2007)
24.h	Other (such as large calculated margin)
**Specify Not Applicable (NA) as appropriate*	

11. For each of the following miscellaneous POVs, provide the information listed in the table below.

    Containment Analyzer A Torus Sample Inner Isolation Valve, 27SOV-119E2
    Standby Liquid Control B Double Squib Activated Shear Explosive Valve, 11EV-14B

Item	Parameter/Information*
1	Safety Function
2	Fail safe position (open/close/as-is)
3	Valve manufacturer, type, and size
4	Actuator manufacturer, type, and size
5	Valve ASME Class
6	Risk significance
7	Design-basis differential pressure and flow (close/open)
8	Minimum required Voltage at the POV
9	Available voltage at the POV
10	Environmental Qualification harsh environment (Y/N)

11	Normally energized (Y/N)
12	Time in service
**Specify Not Applicable (NA) as appropriate*	