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

June 2, 2020

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

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – INFORMATION REQUEST TO SUPPORT TRIENNIAL BASELINE DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES INSPECTION; INSPECTION REPORT 05000317/2020011 AND 05000318/2020011

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 Calvert Cliffs Nuclear Power Plant, Units 1 and 2. David Kern, 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 July 26, 2019 (ADAMS Accession No. ML19067A240).

The inspection will assess the reliability, functional capability, and design bases of risk-important power-operated valves (POVs) 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 May 26, 2020, with Mr. Ken Greene, Regulatory Affairs Engineer, we confirmed arrangements for an information gathering visit and the two-week onsite inspection. Dependent on site access conditions, the information gathering visit may be onsite or may be performed remotely. The schedule is as follows:

- Information gathering visit: Week of July 6
- Onsite weeks: Weeks of August 10 and August 24

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. David Werkheiser, a Region I Senior Risk Analyst, will support David Kern 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.

It is important that all of these documents are up-to-date and complete in order to minimize the number of additional documents requested during the preparation and onsite portions of the inspection. Insofar as possible, this information should be provided electronically to the lead inspector at the NRC Region I office by June 24, 2020. 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 610-337-6931 or via e-mail at David.Kern@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 10 CFR 2.390, “Public Inspections, Exemptions, Requests for Withholding.”

Sincerely,

X /RA/

Signed by: Melvin K. Gray

Mel Gray, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos. 05000317 and 05000318
License Nos. DPR-53 and DPR-69

Enclosure:
Document Request for Design Bases Assurance Inspection

cc: Distribution via ListServ ®

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – INFORMATION REQUEST TO SUPPORT TRIENNIAL BASELINE DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES INSPECTION; INSPECTION REPORT 05000317/2020011 AND 05000318/2020011 DATED JUNE 2, 2020

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ADAMS ACCESSION NUMBER: ML20154K460

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DOCUMENT REQUEST FOR DESIGN BASES ASSURANCE INSPECTION

Inspection Report:	05000317/2020011 and 05000318/2020011
Onsite Inspection Dates:	August 10 through August 14, 2020; and August 24 through August 28, 2020
Inspection Procedure:	Inspection Procedure 71111.21N.02, Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements
Lead Inspector:	David Kern, Senior Reactor Inspector 610-337-6931 David.Kern@nrc.gov

I. Information Gathering Visit

During this visit, we plan to obtain sufficient insights to finalize power-operated valve (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 (MOVs) and air-operated valves (AOVs); and additional valve types include hydraulic-operated valves (HOVs), solenoid-operated valves (SOVs), 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 June 24, 2020, 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 Updated Final Safety Analysis Report. If not available in a single file for each 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. Site response(s) to NRC Generic Letter (GL) 95-07, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves.

DOCUMENT REQUEST FOR DESIGN BASES ASSURANCE INSPECTION

4. Site response(s) to NRC GL 96-05, Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves.

5. Site evaluation of NRC Information Notice 2012-14, MOV Inoperable due to Stem-Disc Separation.

6. List of corrective action documents related to the MOV and AOV programs since August 1, 2015 (include document No., title/short description, date).

7. List of corrective action documents related to each of the 30 POVs listed below since August 1, 2015 (include document No., title/short description, date).

8. List of significant modifications, repairs, or replacement of safety-related POVs completed since August 1, 2015, including date completed (include document No., title, date completed).

9. List of POVs removed from the In-Service Test program since January 1, 1990.

10. Any self-assessments or quality assurance type assessments of the MOV/AOV programs (performed since August 1, 2015).

11. Most recent POV (e.g., MOV, AOV, SOV) program health report.

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

13. List of Abnormal Operating Procedures.

14. 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.

15. For each of the following MOVs, provide the information listed in the table below.

    - 1-CVC-269-MOV, Chemical and Volume Control - Safety Injection to Charging Header
    - 1-CVC-501-MOV, Chemical and Volume Control - VCT Outlet Isolation Valve
    - 1-EAD-5462-MOV, Plant Drains - Normal Containment Sump Discharge to Auxiliary Building
    - 1-FW-4516-MOV Feedwater - Steam Generator Feedwater Isolation Valve
    - 1-FW-4517-MOV Feedwater - Steam Generator Feedwater Isolation Valve
    - 1-RC-403-MOV, Reactor Coolant - PORV Blocking Valve
    - 1-SI-4144-MOV, Safety Injection/Containment Spray - Containment Sump Outlet Isolation
    - 1-SI-615-MOV, Safety Injection/Containment Spray - LPSI Header Isolation Valve
    - 1-SI-652-MOV, Safety Injection/Containment Spray - Shutdown Cooling Return Header
    - 2-CVC-504-MOV, Chemical and Volume Control - RWT to Charging Pump Suction Valve

DOCUMENT REQUEST FOR DESIGN BASES ASSURANCE INSPECTION

- 2-EAD-5463-MOV, Plant Drains - Normal Containment Sump Discharge to Auxiliary Building
- 2-FW-4516-MOV, Feedwater - Steam Generator Feedwater Isolation Valve
- 2-RC-405-MOV, Reactor Coolant - PORV Blocking Valve
- 2-SI-399-MOV, Safety Injection/Containment Spray - Shutdown Cooling Heat Exchanger
- 2-SI-4142-MOV, Safety Injection/Containment Spray - RWT Outlet Valve
- 2-SI-4145-MOV, Safety Injection/Containment Spray - Containment Sump Outlet Isolation
- 2-SI-651-MOV, Safety Injection/Containment Spray - Shutdown Cooling Return Header
- 2-SI-652-MOV, Safety Injection/Containment Spray - Shutdown Cooling Return Header

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	

16. For each of the following AOVs/SOVs, provide the information listed in the table below.

- 1-AFW-4521-CV, Auxiliary Feedwater - AFW to 11 Steam Generator Blocking Valve
- 1-MS-4043-CV, Main Steam - Main Steam Header Isolation Valve (MSIV)
- 1-MS-4071-CV, Main Steam - Steam Generator Auxiliary Feedwater (AFW) Pump Turbine Steam Supply Valve
- 1-RC-404-ERV, Reactor Coolant - Power-Operated Relief Valve (PORV)
- 1-SW-5153-CV, Saltwater - 12A & 12B SRW Heat Exchangers Saltwater Back-up Outlet
- 1-SW-5171-CV, Saltwater - 11 ECCS Pump Room Air Cooler Outlet Valve
- 2-AFW-4533-CV, Auxiliary Feedwater - AFW to 22 Steam Generator Blocking Valve
- 2-CVC-504-MOV, Chemical and Volume Control - RWT to Charging Pump Suction Valve
- 2-MS-3939-CV, Main Steam - Atmospheric Dump Valve
- 2-RC-402-ERV, Reactor Coolant - Power-Operated Relief Valve (PORV)
- 2-SRW-1582-CV, Service Water - Containment Cooling Unit SRW Emergency Discharge
- 2-SRW-1638-CV, Service Water - Turbine Building SRW Isolation Valve
- 2-SW-5206-CV, Saltwater - 21 CC Heat Exchanger Saltwater Normal Outlet Valve

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*	