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

January 13, 2022

Mr. John Grabnar
Site Vice President
Energy Harbor Nuclear Corp.
Beaver Valley Power Station
Route 168
Shippingport, PA, 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNITS 1 AND 2 – INFORMATION REQUEST TO SUPPORT TRIENNIAL BASELINE DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES INSPECTION; INSPECTION REPORT 05000334/2022010 AND 05000412/2022010

Dear Mr. Grabnar:

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 Beaver Valley Power Station, Units 1 and 2. Paul Cataldo, 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, 2020 (ADAMS Accession No. ML20220A667).

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 January 13, 2022, with Ms. Julie Hartig, Regulatory Compliance Supervisor, we confirmed arrangements for an information gathering visit and the two-week onsite inspection. Depending on site access conditions, the information gathering visit may be performed onsite, remote, or a hybrid inspection. The schedule is as follows:

- Information gathering visit: Week of February 14, 2022
- Onsite weeks: Weeks of March 14 and March 28, 2022

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. Dave Werkheiser, a Region I Senior Risk Analyst, will support Paul Cataldo 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 the information gathering week of February 14, 2022. Recognizing the timeframe, my staff will work with your staff to prioritize our document requests so these activities can be accomplished, as much as possible, in the normal course of your activities. 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 603-395-5536 or via e-mail at Paul.Cataldo@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,

Melvin K. Gray Digitally signed by Melvin K. Gray
Date: 2022.01.13 14:12:08 -05'00'

Mel Gray, Chief
Engineering Branch 1
Division of Operating Reactor Safety

Docket Nos. 05000334 and 05000412
License Nos. DPR-66 and NPF-73

Enclosure:
Document Request for Design Bases Assurance Inspection

cc: Distribution via ListServ ®

SUBJECT: BEAVER VALLEY POWER STATION, UNITS 1 AND 2 – INFORMATION REQUEST TO SUPPORT TRIENNIAL BASELINE DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES INSPECTION; INSPECTION REPORT 05000334/2022010 AND 05000412/2022010 DATED JANUARY 13, 2022

DISTRIBUTION:
MYoung, DORS
LCline, DORS
GEatmon, DORS, SRI
RRolph, DORS, RI
NEsch, DORS, AA
LHowell, RI OEDO
RidsNrrPMBeaverValley
ResourceRidsNrrDorlLpl1 Resource

DOCUMENT NAME: "G:\DRS\Engineering Branch 1\-- Cataldo\BV DBAI - POV March 2022\BVPS DBAI - POV RFI Letter.docx"
ADAMS ACCESSION NUMBER: ML22013A751

X SUNSI Review		X Non-Sensitive ☐ Sensitive		X Publicly Available ☐ Non-Publicly Available	
OFFICE	RI/DORS	RI/DORS			
NAME	PCataldo	MGray			
DATE	1/13/22	1/13/22			

OFFICIAL RECORD COPY

DOCUMENT REQUEST FOR DESIGN BASES ASSURANCE INSPECTION

Inspection Report:	05000334/2022010 and 05000412/2022010
Onsite Inspection Dates:	March 14 through March 18, 2022; and March 28 through April 1, 2022
Inspection Procedure:	Inspection Procedure 71111.21N.02, Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements
Lead Inspector:	Paul Cataldo, Senior Reactor Inspector 603-395-5536 Paul.Cataldo@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), and solenoid-operated valves (SOVs). 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. Depending on the local COVID environment and potential travel restrictions, this visit may be either onsite, performed remotely through a series of Microsoft Teams, or a hybrid inspection. If performed onsite, 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 the week of February 14, 2022, 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, Word, Excel, or other searchable formats, preferably utilizing the typical file-sharing applications, such as eDocs, Certrec or Box. 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 the 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.

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 January 1, 2017, (include document No., title/short description, date).

7. List of corrective action documents related to each of the 30 POVs listed below since January 1, 2017 (include document No., title/short description, date).

8. List of significant modifications, repairs, or replacement of safety-related POVs completed since January 1, 2017, including date completed (include document No., title, date completed). If none are available, please provide a list of modifications on the same population of valves, looking back an additional 5 years.

9. List of POVs removed from the In-Service Test program since January 1, 2012.

10. Any self-assessments or quality assurance type assessments of the MOV/AOV programs (performed since January 1, 2017).

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

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.

1QS-101A	Containment Depressurization - 1A QUENCH SPRAY PP DISCH ISOL
MOV-1CH-115C	Chemical and Volume Control - VCT OUT TO CHGPP SUCT HDR ISOL
MOV-1FW-151D	Feedwater & Auxiliary Feedwater - 1B SG AFW THROTTLE VLV (A HDR}
MOV-1MS-105	Main Steam - AFW TURB STEAM ISOL VLV
MOV-1RC-535	Reactor Coolant - PRZR PORV ISOL MOV
MOV-1RH-701	Residual Heat Removal - RESIDUAL HEATREMOVAL IN ISOL

MOV-1RW-102C2	Reactor Plant River Water - 1C RP RW PUMP DISCH VLV TO A-HDR
MOV-1SI-860B	Safety Injection - 1B LHSI PP RX CNMT SUMP SUCT ISOL
MOV-1SI-864B	Safety Injection - 1B LHSI PP TO RCL COLD LEGS ISOL
2CCP*MOV112A	Primary Component Cooling Water - (2RHS*E21A,22A) SUPPLY ISOL
2CHS*MOV310	Chemical and Volume Control - REGEN HX NORMAL CHARGING DISCHARGE VALVE
2QSS*MOV101A	Containment Depressurization - QUENCH PUMP 21A DISCHARGE ISOLATION VALVE
2RCS*MOV536	Reactor Coolant - (2RCS·PCV456) ISOLATION
2RHS*MOV701A	Residual Heat Removal - RHS TRAIN A SUPPLY ISOLATION
2RHS*MOV720B	Residual Heat Removal - RHS TRAIN RETURN TO CLOOP ISOLATION
2SIS*MOV865C	Safety Injection - SI ACCUMULATOR TK21A DISCH STOP
2SWE*MOV116A	Service Water - STBY SW PUMPS DISCH TO SWS A HDR
2SWS*MOV113D	Service Water - EMERG GEN HX 21 B SERV WTR HDR B COOLING WTR INLET VLV

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/HOVs, provide the information listed in the table below.

HYV-1FW-100C	Feedwater & Auxiliary Feedwater - 1C STEAM GENERATOR MAIN FEEDWATER CNMT ISOL VALVE
TV-1BD-100A	Steam Generator Blowdown - STM GEN 1ASLOWDOWN TRIP
TV-1CC-105D1	Reactor Plant Component Cooling Water - RCPMOTORS 1B AND 1C CCR OUT HDR CNMT ISOL
TV-1CC-111A2	Reactor Plant Component Cooling Water - CRDMSHROUD CLG COILS CCR IN CNMT ISOL
TV-1CH-200B	Chemical and Volume Control - 60 GPM LTDNORIFICE CNMT ISOL
TV-1MS-105B	Main Steam - AFW TURB STEAM SUP B TRN TRIPVLV
2CCP*AOV107B	Primary Component Cooling Water - RCP B THERMAL BARRIER COOLING WATER DISCHARGE
2DAS*AOV100A	Reactor Plant Vents & Drains - CNMT SUMP PMPSINSIDE CNMT DISCHARGE ISOLATION
2FWE*HCV100A	Feedwater & Auxiliary Feedwater - 21C SG AUXFEEDWATER THROTTLE VLV
2FWS*FCV488	Feedwater & Auxiliary Feedwater - 21B SG MAINFEED REG VALVE
2MSS*SOV105A	Main Steam - TURBINE DRIVEN AUX FEEDWATERPMP STEAMLINE A ISOL VALVE

DOCUMENT REQUEST FOR DESIGN BASES ASSURANCE INSPECTION

2MSS*SOV105F	Main Steam - TURBINE DRIVEN AUX FEEDWATERPUMP STEAMLINE C ISOL VALVE

Item	Parameter/Information*
1	AOV/SOV/HOV 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*	