UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, DC 20555-0001

July 24, 2023

INFORMATION NOTICE 2021-01, SUPPLEMENT 1: LESSONS LEARNED FROM U.S. NUCLEAR REGULATORY COMMISSION INSPECTIONS OF DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES AT NUCLEAR POWER PLANTS

## ADDRESSEES

All holders of operating licenses, construction permits, or combined licenses for nuclear power reactors, except those that have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

## PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this supplement to Information Notice (IN) 2021-01, "Lessons Learned from U.S. Nuclear Regulatory Commission Inspections of Design-Basis Capability of Power-Operated Valves at Nuclear Power Plants," dated May 6, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21061A265) to alert addressees to lessons learned from NRC inspections of the design-basis capability of power-operated valves (POVs) at nuclear power plants. The NRC expects that addressees will review the information for applicability to their facilities and consider actions, as appropriate, to identify and address similar issues. Suggestions contained in this IN are not NRC requirements. Therefore, no specific action or written response is required.

## DESCRIPTION OF CIRCUMSTANCES

As discussed in IN 2021-01 (ML21061A265), the NRC staff initiated an inspection program described in Attachment 21N.02, "Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements," to NRC Inspection Procedure (IP) 71111, "Reactor Safety—Initiating Events, Mitigating Systems, Barrier Integrity." The most recent revision to IP 71111.21N.02 is dated October 9, 2020, and is publicly available at ADAMS Accession No. ML20220A667. The NRC issued IP 71111.21N.02 to assess the reliability, functional capability, and design-basis capability of risk-important POVs to determine whether licensees are maintaining the POV capability to perform as intended under design-basis conditions. During public meetings in late 2019 and early 2020 (for example, see ADAMS Accession Nos. ML19351E131 and ML20038A207), the NRC staff described the purpose of the IP 71111.21N.02 inspections and indicated that lessons learned from those inspections would be made available to the stakeholders. During a public meeting on December 8, 2020 (ML20338A012), participants requested that the lessons learned from the initial POV inspections be documented and made available as soon as possible. As a result, the NRC issued IN 2021-01 to provide lessons learned from the POV inspections conducted in 2020.

**ML23129A014**

During the POV inspection program, the NRC staff presented lessons learned from POV inspections at several industry meetings. For example, the NRC staff presented lessons learned from POV inspections at a public meeting with the Boiling Water Reactor Owners Group (BWROG) on December 1, 2021 (ML21334A168), and at a Motor-Operated Valve (MOV) Users Group meeting on January 24, 2023 (ML23018A081). With the completion of the POV inspection program at the end of 2022, participants at the January 24, 2023, meeting requested that the NRC staff provide a complete list of the lessons learned from all of the POV inspections as soon as possible.

**DISCUSSION**

The NRC staff conducted inspections using IP 71111.21N.02 to assess the reliability, functional capability, and design-basis capability of POVs to determine whether licensees are maintaining the POV capability to perform their safety functions as intended under design-basis conditions. The enclosure to IN 2021-01 contains background information related to the design-basis capability of POVs in nuclear power plants. The NRC inspections using IP 71111.21N.02 identified numerous lessons learned related to the design-basis capability of POVs installed in nuclear power plants.

The following summarizes the lessons learned from the POV inspections conducted by the NRC staff using IP 71111.21N.02:

- Inservice Testing (IST) Program: The NRC regulations in Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a, "Codes and standards," require licensees to develop an IST program to provide assurance of the operational readiness of pumps, valves, and dynamic restraints in accordance with the applicable edition and addenda of the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants, Division 1, OM Code: Section IST (OM Code), as incorporated by reference in 10 CFR 50.55a. For POVs within the scope of the applicable edition and addenda of the ASME OM Code, the NRC inspectors found that licensees did not always ensure that valves were properly included and categorized within the scope of the IST program, such as POVs with leakage limitation safety functions, remote-operated safety functions, or manual-operated safety functions.

- POV Operating Requirements and Capability: The NRC inspectors found that licensees did not always properly determine the operating requirements and actuator capability for POVs to perform their safety functions. For example, all appropriate parameters (such as valve friction coefficients or valve factors, maximum differential pressure conditions, motor torque temperature derating factors, stem friction coefficients, and butterfly valve bearing friction coefficients) are expected to be addressed when calculating valve operating requirements or actuator capability. Improper values for various parameters in POV calculations (such as incorrect stem pitch and lead values, valve, and stem friction coefficients less than tested values, and incorrect uncertainty assumptions) can lead to inadequate determinations of POV functionality. The NRC inspectors found that licensees did not always justify the use of POV parameters, such as valve friction coefficients, from outside sources. See IN 2012-14, "Motor-Operated Valve Inoperable Due to Stem-Disc Separation," dated July 24, 2012 (ML12150A046) for guidance on using POV data from outside sources. The NRC inspectors found that licensees did not always ensure that valve-specific valve factors were used if determined to be higher than generic valve factors with an appropriate extent of condition review. For globe valves, there is a potential for increased thrust and torque requirements (referred to as side

loading) to operate globe valves under high-flow dynamic conditions. The unwedging load required for valves is part of the evaluation of the capability of POVs to open to perform their safety functions. The specific design of each POV, including its valve, is used in determining appropriate calculation assumptions. The NRC inspectors found that licensees did not always ensure that all normal operating loads that act simultaneously with seismic loads were addressed. For MOVs, high ambient temperature can impact MOV motor output, such as described in Limitorque Technical Update 93-03, "Reliance 3-Phase Limitorque Corporation Actuator Motors (Starting Torque @ Elevated Temperature)," dated September 1993, which is available from Flowserve Corporation. The NRC inspectors found that licensees did not always ensure that sufficient information and test data were developed to validate the assumptions for rate-of-loading and load-sensitive behavior for plant-specific MOV applications. Stem lubricant degradation can impact the performance of all types of MOV stem nuts, including the ball-screw design. One-time stall torque limits for actuators are intended to address the structural capability of the actuator rather than calculating performance capability.

- Joint Owners' Group (JOG) Program for MOV Periodic Verification: Most licensees committed to implement the JOG Program on MOV Periodic Verification in response to Generic Letter (GL) 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," dated September 18, 1996 (ADAMS Legacy Library Accession No. 9609100488). The NRC staff accepted the JOG topical report on the JOG Program on MOV Periodic Verification in a safety evaluation report (SER) dated September 25, 2006 (ML061280315), and the associated supplement dated September 18, 2008 (ML082480638). In November 2006, the JOG issued Topical Report MPR-2524-A, "Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary" (ML063490194), to reflect the final NRC SER and included the JOG responses to NRC staff requests for additional information and the final SER. The JOG MOV Program included a limited amount of MOV tests performed by the participating licensees at their nuclear power plants over approximately 5 years to assess whether there was a potential for degradation of valve friction coefficients for various valve types and applications. Because of the limited amount of MOV test data and the different methods used by individual licensees to evaluate the test data, the valve friction coefficients determined for MOVs as part of the JOG MOV Program do not represent a database of valve friction coefficients that can be applied in general to calculate the thrust and torque required to operate various MOVs under design-basis conditions. Therefore, the MOV test results collected by participants of the JOG MOV Program are only applicable to the implementation of the JOG MOV Program. The NRC inspectors found that licensees did not always re-justify the qualifying basis for MOVs following extensive maintenance (such as disassembly) to determine whether the valves were susceptible to performance degradation as part of the JOG MOV Program. The JOG periodic verification test intervals are based on the margin and risk ranking of each MOV within the scope of the JOG MOV Program, such that up-to-date POV risk rankings are important when implementing the JOG MOV Program.

- ASME OM Code, Appendix III, "Preservice and Inservice Testing of Active Electric Motor-Operated Valve Assemblies in Water-Cooled Reactor Nuclear Power Plants": As required under 10 CFR 50.55a(b)(3)(ii), licensees implementing the 2009 or later editions of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a, must meet the MOV requirements in ASME OM Code, Mandatory Appendix III. For MOVs within the scope of the JOG MOV Program, a licensee may rely on the dynamic testing conducted as part of that program to satisfy the requirement in Appendix III for a mix of

static and dynamic testing. The ASME OM Code, Mandatory Appendix III, as incorporated by reference in 10 CFR 50.55a relies on new MOVs being demonstrated to be capable of performing their safety functions.

- Licensee Commitments: The NRC regulations in 10 CFR 50.55a(b)(3)(ii) supplement the testing requirements for MOVs in the ASME OM Code by requiring that licensees establish a program to ensure that MOVs continue to be capable of performing their design-basis safety functions. When implementing the JOG MOV Program, the MOV diagnostic test frequency is based on the provisions of the JOG MOV Program, such as when the design-basis capability margin is determined to be low. Licensees committed to implementing the JOG MOV Program are expected to follow their commitment process to modify the JOG MOV Program test intervals or notify the NRC in accordance with that process. For example, the JOG MOV Program does not include grace periods for the specified JOG test intervals. Further, the JOG program schedule is specified in years rather than refueling outages. In addition, a change in the risk ranking of an MOV, or an adjustment to MOV capability margin based on performance data, can result in a different diagnostic testing interval under the JOG MOV Program.

- MOVs Outside JOG MOV Program Scope: JOG Topical Report MPR-2524-A indicates that some MOVs are outside the scope of the JOG MOV Program, which are defined by JOG as Class D valves. Therefore, licensees committed to implementing the JOG MOV Program to satisfy GL 96-05 and that are implementing the JOG MOV Program as part of their compliance with 10 CFR 50.55a(b)(3)(ii) are required by the NRC regulations to establish methods to periodically demonstrate the design-basis capability of their Class D valves. The NRC staff considers it infeasible to modify the classification of a JOG Class D valve to a JOG Class A or JOG Class B valve, which the JOG defines as not susceptible to degradation by direct information or not susceptible to degradation by extension, respectively.

- Electric Power Research Institute (EPRI) MOV Performance Prediction Methodology (PPM): The NRC inspectors found that licensees evaluating MOVs using the EPRI MOV PPM did not always address all of the applicable provisions when determining valve operating requirements under the EPRI MOV PPM Program. JOG Topical Report MPR-2524-A, and the EPRI MOV PPM Topical Report TR-103237, as accepted in the applicable NRC safety evaluations[1] specify the conditions for implementing these programs. As part of the EPRI MOV PPM Methodology, EPRI assumed that each valve is maintained in good condition for the EPRI MOV PPM to remain valid for that valve. Therefore, MOVs classified as JOG Class A or JOG Class B need to be maintained in good internal condition to satisfy the EPRI MOV PPM. Further, this method includes EPRI Type 1 warnings, which indicate potential valve damage, when implementing the EPRI MOV PPM. Where the EPRI MOV PPM is used as the best available information, industry data should be monitored for those valves to identify any information that might challenge that assumption. When implementing the EPRI MOV PPM for butterfly valves, the calculated maximum transmitted torque is applied when evaluating the acceptability of the valve weak link and actuator ratings. When applying the EPRI MOV PPM for globe valves, the globe valve model in the EPRI methodology specifies the provisions to be implemented, such as using the outside seat diameter to calculate the required operating thrust.

[1] The EPRI MOV PPM safety evaluation report is available at ML15142A761 with later updates based on topical report supplements.

Separate EPRI guidance for evaluating MOV diagnostic test data obtained under static conditions (i.e., without differential pressure or flow) cannot be applied beyond the capability of that testing to predict MOV performance under dynamic conditions (i.e., differential pressure and flow). Additional guidance on the EPRI methodology is provided in NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Revision 3, issued July 2020 (ML20202A473).

- Limitorque Actuator Structural Capability: The NRC inspectors found that licensees evaluating Limitorque motor actuators for their structural capability did not always justify increasing the thrust ratings beyond their original limits. Limitorque Technical Update 92-01, "Thrust Rating Increase SMB-000, SMB-00, SMB-0 & SMB-1 Actuators" (undated technical guidance available from Limitorque) evaluated Kalsi Engineering Document #1707C (a proprietary report by Kalsi Engineering) and approved its use to increase the maximum allowable thrust for Limitorque actuator models SMB-000, SMB-00, SMB-0, and SMB-1 up to 140 percent of the original ratings, with certain conditions.[2] Limitorque has indicated that licensees that participated in the Kalsi study or that possess a copy of proprietary Kalsi Engineering Document #1707C may apply the 162 percent maximum thrust rating described in the Kalsi report, where the specific conditions are implemented as provided in that document. The individual POV subparts are expected to be able to withstand the maximum thrust and torque that the POV actuator can produce (sometimes referred to as a weak link evaluation). The structural limits specified in the ASME Boiler and Pressure Vessel Code are not applicable to POV internal parts that involve the operating motion of the valve and actuator. Proper bolt material and length are part of weak link calculations for POVs.

- POV Testing: For POV diagnostic testing, the NRC inspectors found that licensees did not always ensure that (1) POV tests were properly conducted, (2) acceptance criteria for the POV testing applied the correct assumptions (such as actuator thrust limits), (3) proper evaluations of test data were completed to demonstrate that the POVs can perform their safety functions, and (4) records of evaluations were maintained in accordance with plant procedures. Computer software relies on appropriate values for applicable parameters to be input when conducting diagnostic testing to determine accurate thrust and torque values (such as proper stem material properties). POV test acceptance criteria are expected to be properly translated from POV design calculations into test procedures. Diagnostic equipment are expected to be installed and operating properly as part of the POV testing and evaluation of results. Operating requirements for valves apply throughout the full valve stroke. Fully complete POV test data evaluations will ensure that the required parameters (such as valve friction coefficient or valve factor, stem factor, and rate of loading) are properly calculated and within the acceptable range. The JOG MOV Program specifies that valve friction values from testing are compared to the JOG threshold values for valve friction to verify that the valve is operating in a manner consistent with the results of the JOG program assumptions. Variation in valve performance can occur when relying on a single test to establish POV operating requirements.

- POV Leakage Limitations: Some POVs have specific limitations related to leakage past the valve disk when closed. MOVs can be set to fully close and meet their leakage

[2] NRC IN 92-83, "Thrust Limits for Limitorque Actuators and Potential Overstressing of Motor-Operated Valves," dated December 17, 1992, discussed Limitorque Technical Update 92-01 and the applicable study by Kalsi Engineering.

limitations when controlled by the torque switch. MOVs that have a safety function to close and be leaktight have more challenges when controlled by the limit switch instead of the torque switch. For example, the NRC inspectors found that licensees did not always have a valid test or analysis demonstrating that the limit switch control setting of the MOV under static conditions would achieve the required leaktight performance when the MOV is closed under dynamic conditions. The leak rate requirements are also to be addressed for MOVs with long closing torque switch bypass settings. The ASME OM Code as incorporated by reference in 10 CFR 50.55a requires a documented program for leak-testing power-operated relief valves. With respect to previous POV capability issues, GL 79-46, "Containment Purging and Venting During Normal Operation—Guidelines for Valve Operability," dated September 27, 1979 (ML031320191), provides recommendations to demonstrate that containment purge valves can close and seal under design-basis conditions, including seismic loads.

- POV Qualification: The NRC inspectors found that licensees did not always justify the qualification of POVs to perform their design-basis safety functions, including functional, environmental, and seismic capability. With respect to environmental qualification, preventive maintenance activities include replacing all valve subcomponents within their specific qualified lifetime. Environmental effects can affect the performance of POVs (including squib valves) that must remain functional for long periods of time following a loss-of-coolant accident or other adverse conditions. NRC inspections identified that some licensees lacked adequate justification to extend the qualified life of POVs installed in their nuclear power plants. Limitorque qualified its safety-related MOV actuators for 40 years or 2,000 cycles, whichever comes first. Licensees may extend the qualified life of their Limitorque actuators if they have adequate justification. The justification for the extension of the qualified life of the actuator, including attention to radiation levels and ambient temperature conditions where MOVs are located, includes assurance that the environmental qualification requirements are not exceeded and that appropriate replacement frequencies for MOVs or their individual parts are established. EPRI has developed guidance for extending the qualified life of Limitorque actuators beyond their original qualified life. The presence of radiation hot spots and ambient temperature conditions can impact the service life for the environmental qualification of a valve actuator.

- MOV Stem-Disk Connections: The NRC staff discussed operating experience with MOV stem-disk connections in IN 2017-03, "Anchor/Darling Double Disc Gate Valve Wedge Pin and Stem-Disc Separation Failures," dated June 15, 2017 (ML17153A053). The BWROG prepared guidance to address the issue of potential failure of the stem-disk connection in Anchor/Darling double-disk gate valves. The BWROG guidance (such as evaluating the weak link of the wedge pin under motor stall conditions) includes specific provisions in assessing the susceptibility for separation of the stem-disk connection in Anchor/Darling double-disk gate valves.

- Valve Position Verification: Paragraph ISTC-3700, "Position Verification Testing," in Subsection ISTC, "Inservice Testing of Valves in Water-Cooled Reactor Nuclear Power Plants," of the ASME OM Code requires that valves with remote position indicators be observed locally at least once every 2 years to verify that valve operation is accurately indicated. The NRC regulations in 10 CFR 50.55a(b)(3)(xi) specify supplemental position indication (SPI) requirements when implementing ASME OM Code, 2012 Edition (or later editions), paragraph ISTC-3700, for licensees to verify that valve operation is accurately indicated by supplementing

valve position indicating lights with other indications, such as flow meters or other suitable instrumentation, to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies. Licensees proposing additional time to implement the 2012 or later editions of the ASME OM Code (including 10 CFR 50.55a(b)(3)(xi)) may submit a request for an alternative in accordance with 10 CFR 50.55a(z) for NRC staff review. Additional information on this topic is found in two monthly Reactor Oversight Process meeting summaries (ML21041A409 and ML21047A290). The NRC regulations in 10 CFR 50.55a(b)(3)(xi) require verification of valve position indication, including specifying actions to meet SPI requirements such as leakage testing, flow measurement, or diagnostic trace analysis.

- Valve Packing and Backseating: Valve packing replacements or adjustments can cause anomalous behavior that might adversely impact valve performance. A bent or damaged stem can cause packing loads to become more severe with valve operation. On occasion, some licensees backseat the stem of a valve to limit packing leaks. The NRC inspectors found that licensees did not always conduct a detailed evaluation (including appropriate examination) of the effects of backseating on the valve bonnet and stem to verify structural integrity. NUREG-1482 provides additional guidance for controlling the backseating process for a valve stem.

- Use of POV Computer Software: The NRC inspectors found that licensees did not always perform a complete verification and validation of POV computer software prior to implementation. These calculation methodologies need verification and validation for appropriate assumptions and data points. Further, stroke time might be calculated improperly when computer data are used to measure the MOV stroke time. The ASME OM Code specifies that the stroke time for a valve begins with the initiating signal and ends with completion of the valve stroke. However, some computer data output does not include the initial portion of the stroke signal for calculating the stroke time. It is important to update POV programs to address new computer software used in POV calculations.

- MOV Thermal Overload Devices: Thermal overload devices are installed in the control circuitry for some MOVs to protect the motor from damage in the event of an overload event. The performance of thermal overload devices can impact the safety function of MOVs if not evaluated periodically. NRC Regulatory Guide 1.106 (Revision 2), “Thermal Overload Protection for Electric Motors on Motor-Operated Valves,” dated February 2012 (ML112580358) provides guidance for the use of thermal overloads that reflects lessons learned from MOV programs.

- MOV Throttling Operation: Motors used to operate MOVs have limitations regarding their operating time. Limitorque specifies cooldown times for the frequent operation of MOV motors. The NRC inspectors found that licensees did not always evaluate the impact of motor heat-up on the capability of MOVs with design-basis safety functions to throttle system flow.

- Actuator Handwheel Operation: Some licensees rely on the actuator handwheel to manually operate MOVs to perform important functions at their nuclear power plants. For such MOVs, the NRC inspectors found that licensees did not always evaluate the handwheel for proper sizing and good working condition in demonstrating that the MOV

could perform its safety function. Improperly operating a valve by its manual handwheel can result in excessive handwheel torque that can damage the actuator and the valve.

- Preventive Maintenance and Modifications: The NRC inspectors found that licensees did not always determine a proper lubrication interval for each MOV stem to address potential lubrication grease degradation which can adversely affect MOV operation. MOVs installed in non-normal positions can cause MOV maintenance issues. For example, grease leakage into the limit switch compartment might interfere with the electrical operation of actuator wiring. Further, an MOV oriented with the disk in the horizontal plane can lead to abnormal performance of a gate valve as a result of increased disk and guide wear over time. In addressing potential pressure locking of a valve, modifications that prevent a valve from pressure locking, such as drilling a hole in the valve disk, can have long-term consequences (such as a permanent one-way valve). The NRC regulations in 10 CFR 50.59, "Changes, tests and experiments," are applicable to pressure-locking modifications for MOVs. Potential degradation of magnesium rotors in motors can adversely impact MOV performance. Missing or damaged external and internal parts of motors and actuators can impact operational readiness or qualification of a POV.

- Corrective Action: The NRC inspectors found that licensees did not always ensure that appropriate corrective actions in accordance with plant procedures were implemented when (1) POV test results fell outside of the specified acceptance criteria, (2) POV performance anomalies were observed, such as abnormal diagnostic traces or valve friction degradation, or (3) a mechanical problem with the POV was identified, such as a manual declutch lever malfunction. The ASME OM Code as incorporated by reference in 10 CFR 50.55a includes corrective action requirements for POV leak testing. Overload events when testing or operating POVs are expected to be addressed in accordance with the licensee's corrective action program and the manufacturer recommendations.

- POV Records: The NRC inspectors found that licensees did not always follow their procedures for maintaining records associated with POV qualification, testing, operation, maintenance, and corrective action, in accordance with the quality assurance requirements in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." As part of the QA program, POV performance is monitored and appropriate reports prepared in accordance with plant procedures to identify any adverse indications.

- IST Programs and Technical Specifications: Nuclear power plant licensees are required to meet the NRC regulations in both 10 CFR 50.36, "Technical specifications," and 10 CFR 50.55a for IST programs. Following the criteria in 10 CFR 50.59(c)(1), licensees must prepare a license amendment to revise its technical specifications when making changes to POV parameters (such as main steam isolation valve accumulator pressure) as part of its IST program.

- IST Programs and 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors": The ASME OM Code, as incorporated by reference in 10 CFR 50.55a, allows licensees to follow leak testing intervals for valves in accordance with 10 CFR Part 50, Appendix J, in certain instances. Licensees might perform POV static testing to meet the containment leakage testing requirements in 10 CFR Part 50, Appendix J. In addition, the NRC regulations in 10 CFR 50.55a(b)(3)(ii)

require that MOV design-basis capability be justified periodically. POV leakage requirements might be specified in final safety analysis as part of the IST program description, in addition to the 10 CFR Part 50, Appendix J, requirements.

The NRC staff discussed the above issues in detail with the applicable licensees during the POV inspections. The licensees took action to address any immediate concerns related to these issues identified by the NRC inspectors. In many instances, the issues were determined to be minor because of the capability margin available for the specific POVs being evaluated at the applicable nuclear power plant. The issues might have been more significant where less capability margin was available for POVs at other nuclear power plants. Some licensees initiated long-term activities as appropriate to address specific issues as part of their corrective action programs. The NRC staff suggests that licensees review this information for applicability to their facilities and consider actions, as appropriate, to identify and address similar issues.

**CONTACTS**

This IN requires no specific action or written response. Please direct any questions about this matter to the technical contacts listed below or to the appropriate Office of Nuclear Reactor Regulation (NRR) project manager.

**/RA/**

Russell Felts, Director
Division of Reactor Oversight
Office of Nuclear Reactor Regulation

Technical Contacts:

| | | |
|---|---|---|
| Douglas Bollock, NRR | Kenneth Kolaczyk, NRR | Thomas Scarbrough, NRR |
| 301-415-6609 | 585-773-8917 | 301-415-2794 |
| Douglas.Bollock@nrc.gov | Kenneth.Kolaczyk@nrc.gov | Thomas.Scarbrough@nrc.gov |

Note: NRC generic communications may be found on the NRC public website, http://www.nrc.gov, under Electronic Reading Room/Document Collections.

NRC INFORMATION NOTICE 2021-01, SUPPLEMENT 1, "LESSONS LEARNED FROM NRC INSPECTIONS OF DESIGN-BASIS CAPABILITY OF POWER-OPERATED VALVES AT NUCLEAR POWER PLANTS," DATED: July 24, 2023

**ADAMS Accession No.: ML23129A014** **EPIDS No.**

| **OFFICE** | Author | QTE | NRR/DEX/EMIB/BC | OE | NRR/DRO/IOEB/PM |
|---|---|---|---|---|---|
| **NAME** | TScarbrough | Jay Dougherty | SBailey | JPeralta | PClark |
| **DATE** | 5/22/23 | 5/15/2023 | 5/18/23 | 5/19/23 | 5/22/23 |
| **OFFICE** | NRR/DRO/LA | NRR/DRO/IOEB/PM | NRR/DRO/IOEB/PM | NRR/DRO/IOEB/BC | NRR/DRO/D |
| **NAME** | IBetts | BBenny | PClark | LRegner | RFelts |
| **DATE** | 7/13/2023 | 5/22/23 | 5/22/23 | 7/20/23 | 7/24/23 |

**OFFICIAL RECORD COPY**