UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 21, 2025

Mr. David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – ALTERNATIVE REQUEST RV-04 (EPID L-2024-LLR-0076)

Dear Mr. Rhoades:

By letter dated November 25, 2024 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML24331A109), Constellation Energy Generation, LLC (Constellation, the licensee) submitted to the U.S. Nuclear Regulatory Commission (NRC) Alternative Request RV-04 with respect to specific inservice testing (IST) requirements in the 2004 Edition through 2006 Addenda of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants, Section IST, Rules for Inservice Testing of Light-Water Reactor Power Plants (OM Code) for the Fourth Interval IST Program at LaSalle County Station (LaSalle), Units 1 and 2.

Specifically, pursuant to subparagraph (1) in paragraph (z), "Alternatives to codes and standards requirements," of Section 55a, "Codes and standards," in Part 50, "Domestic Licensing of Production and Utilization Facilities," in Title 10 of the Code of *Federal Regulations* (10 CFR) 50.55a(z)(1)), the licensee requested to implement proposed Alternative Request RV-04 for the main steam safety/relief valves at LaSalle, Units 1 and 2, on the basis that the proposed alternatives will provide an acceptable level of quality and safety.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the proposed Alternative Request RV-04 to change the minimum number of safety relief valves from each group to be tested from 20 percent within any 24-month interval to 40 percent within any 48-month interval at LaSalle, Units 1 and 2, as described in the licensee's submittal dated November 25, 2024, provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes Alternative Request RV-04 for the Fourth Interval IST Program at LaSalle, Units 1 and 2, which started on October 12, 2017, and is scheduled to end on October 11, 2027.

All other ASME OM Code requirements as incorporated by reference in 10 CFR 50.55a for which relief or an alternative was not specifically requested, and granted or authorized (as appropriate), in the subject request remain applicable.

If you have any questions, please contact the Project Manager, Robert Kuntz at 301-415-3733 or via e-mail at Robert.Kuntz@nrc.gov.

Sincerely,

ILKA BERRIOS

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Date: 2025.07.21 13:32:02 -04'00'

Ilka Berrios, Acting Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosure:
Safety Evaluation

cc: Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUEST RV-04

FOURTH INSERVICE TESTING PROGRAM INTERVAL

CONSTELLATION ENERGY GENERATION, LLC

LASALLE COUNTY STATION, UNITS 1 AND 2

DOCKET NOS. 50-373 AND 50-374

EPID L-2024-LLR-0076

1.0 INTRODUCTION

By letter dated November 25, 2024 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML24331A109), Constellation Energy Generation, LLC (the licensee, Constellation) submitted to the U.S. Nuclear Regulatory Commission (NRC) Alternative Request RV-04 with respect to specific inservice testing (IST) requirements in the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants, Section IST, Rules for Inservice Testing of Light-Water Reactor Power Plants (OM Code) for the Fourth Interval IST Program at LaSalle County Station (LaSalle), Units 1 and 2.

Specifically, pursuant to subparagraph (1) in paragraph (z), "Alternatives to codes and standards requirements," of Section 55a, "Codes and standards," in Part 50, "Domestic Licensing of Production and Utilization Facilities," in Title 10 of the Code of *Federal Regulations* (10 CFR) 50.55a(z)(1)), the licensee requested to implement proposed Alternative Request RV-04 for the main steam safety/relief valves at LaSalle, Units 1 and 2, on the basis that the proposed alternatives will provide an acceptable level of quality and safety.

The Fourth Interval IST Program at LaSalle, Units 1 and 2, started on October 12, 2017, and is scheduled to end on October 11, 2027.

2.0 REGULATORY EVALUATION

The NRC regulations in 10 CFR 50.55a(f)(4), "Inservice testing standards requirement for operating units," require, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the IST requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in 10 CFR 50.55a(f)(2) and (3) and that are incorporated by reference in 10 CFR

50.55a(a)(1)(iv), to the extent practical within the limitations of design, geometry, and materials of construction of the components.

The NRC regulations in 10 CFR 50.55a(z), "Alternatives to codes and standards requirements," state that:

> Alternatives to the requirements of paragraphs (b) through (h) of [10 CFR 50.55a] or portions thereof may be used when authorized by the Director, Office of Nuclear Reactor Regulation. A proposed alternative must be submitted and authorized prior to implementation. The applicant or licensee must demonstrate that:
>
> (1) *Acceptable level of quality and safety*. The proposed alternative would provide an acceptable level of quality and safety; or
>
> (2) *Hardship without a compensating increase in quality and safety*. Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Alternative Request RV-04

Applicable ASME OM Code Edition

The applicable Code of Record for the Fourth Interval IST Program at LaSalle, Units 1 and 2, is the 2004 Edition through 2006 Addenda of ASME OM Code as incorporated by reference in 10 CFR 50.55a.

Applicable ASME OM Code Components

In its submittal, the licensee proposed alternative testing for the main steam safety relief valves (SRVs).

Table 1: Applicable ASME OM Code Components for Alternative Request RV-04

Component	Description	ASME Class	OM Category
1B21-F013C	Main Steam Line Safety/Relief Valve	1	C
1B21-F013D	Main Steam Line Safety/Relief Valve	1	C
1B21-F013E	Main Steam Line Safety/Relief Valve	1	C
1B21-F013F	Main Steam Line Safety/Relief Valve	1	C
1B21-F013H	Main Steam Line Safety/Relief Valve	1	C
1B21-F013K	Main Steam Line Safety/Relief Valve	1	C
1B21-F013L	Main Steam Line Safety/Relief Valve	1	C
1B21-F013M	Main Steam Line Safety/Relief Valve	1	C
1B21-F013P	Main Steam Line Safety/Relief Valve	1	C
1B21-F013R	Main Steam Line Safety/Relief Valve	1	C

Component	Description	ASME Class	OM Category
1B21-F013S	Main Steam Line Safety/Relief Valve	1	C
1B21-F013U	Main Steam Line Safety/Relief Valve	1	C
1B21-F013V	Main Steam Line Safety/Relief Valve	1	C
2B21-F013C	Main Steam Line Safety/Relief Valve	1	C
2B21-F013D	Main Steam Line Safety/Relief Valve	1	C
2B21-F013E	Main Steam Line Safety/Relief Valve	1	C
2B21-F013F	Main Steam Line Safety/Relief Valve	1	C
2B21-F013H	Main Steam Line Safety/Relief Valve	1	C
2B21-F013K	Main Steam Line Safety/Relief Valve	1	C
2B21-F013L	Main Steam Line Safety/Relief Valve	1	C
2B21-F013M	Main Steam Line Safety/Relief Valve	1	C
2B21-F013P	Main Steam Line Safety/Relief Valve	1	C
2B21-F013R	Main Steam Line Safety/Relief Valve	1	C
2B21-F013S	Main Steam Line Safety/Relief Valve	1	C
2B21-F013U	Main Steam Line Safety/Relief Valve	1	C
2B21-F013V	Main Steam Line Safety/Relief Valve	1	C

Applicable ASME OM Code Requirements

ASME OM Code, Section IST, Mandatory Appendix I, “Inservice Testing of Pressure Relief Devices in Water-Cooled Reactor Nuclear Power Plants,” paragraph I-1320, “Test Frequencies, Class 1 Pressure Relief Valves,” subparagraph (a), “5-Year Test Interval,” states:

> Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 5-year interval, if they exist. The test interval for any individual valve shall not exceed 5 years.

ASME OM Code Case OMN-17, Revision 1, “Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves,” Section 1, “Test Frequencies, Class 1 Pressure Relief Valves,” paragraph (a), “72-Month Test Interval,” states:

> Class 1 pressure relief valves and PWR [pressurized-water reactor] Main Steam Safety Valves shall be tested at least once every 72 months (6 yr), starting with initial electric power generation. A minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve that is in service shall not exceed 72 months except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods for ASME OM Code 2015 Edition and prior. For ASME OM Code 2017 Edition and later ISTA-3170 may be utilized to accommodate extended shutdown periods.

Licensee's Proposed Alternative and Basis for Use

In Alternative Request RV-04, the licensee requested authorization that the SRVs listed Table 1 be tested at least once every 6 years, as specified in ASME OM Code Case OMN-17, Revision 1, without the requirement of testing 20 percent of the valves in a 24-month interval. The licensee proposed to replace the minimum requirement of 20 percent of the valves in the group being tested within a 24-month interval with a minimum requirement of 40 percent of the valves in the group being tested with a 48-month interval. Due to primary containment layout limitations, the licensee must sequentially access the valves in a strategic manner. The north side has seven SRVs, while the south side has six SRVs. When removing the valves, the licensee must commence removal activities with the valves closer to the entrance in order to reach the valves further from the entrance. Reducing or eliminating the scope of valves being removed solely to support other valve testing decreases the radiological exposure at LaSalle, Units 1 and 2, by approximately 1.6 rem on average including the supporting scaffold and ductwork activities in the drywell. This proposed alternative will enable Constellation to perform a single refueling outage within a 6-year interval at LaSalle, Units 1 and 2, without being required to test any of the SRVs. The additional requirements stipulated within ASME OM Code Case OMN-17, Revision 1 will be retained.

The licensee states that following the revised guidance of SRV Best Practices Maintenance Program and the implementation of these practices throughout the Constellation fleet, SRV reliability has increased, resulting in decreased SRV test failures. The valve performance at LaSalle, Units 1 and 2, has consistently improved since 2018, when the SRV Best Practices Maintenance Program was implemented. As a part of the Best Practices implementation in March of 2018 at LaSalle, Units 1 and 2, a 6-point spindle runout measurement was incorporated in order to minimize setpoint drift. Valves installed beginning with LaSalle, Unit 2 Refueling Outage 17 in 2019 were the first valves to incorporate the 6-point spindle runout measurement. These valves were then removed and tested during LaSalle, Unit 2 Refueling Outage 19 (2023) and LaSalle, Unit 1 Refueling Outage 20 (2024).

The alternative request states that the improved valve performance can be attributed to the implementation of the licensee SRV Best Practices Maintenance Program. This program is comprised of methods and philosophies concerning maintenance, inspection and techniques which uses the SRV manufacturer's recommended maintenance practices and enhancements identified by the licensee that are termed "Best Practices." This includes as-left testing for setpoint and seat leakage, and are described in more detail in the Exelon Generation response to request for additional information for another plant dated June 12, 2020 (ML20164A188). The licensee's SRV Best Practices are developed from the application of the Electric Power Research Institute/Nuclear Maintenance Applications (EPRI/NMAC) Safety and Relief Valve Testing and Maintenance Guide and from the Constellation fleet operational experience. The licensee's SRV Best Practices have been implemented through its oversight of the valve vendor's test and rebuild processes.

Code Case OMN-17, Revision 1, includes a requirement that at least 20 percent of the SRVs be tested every 24 months, with the 20 percent scope made up of SRVs that have not been tested during the previous 72-month interval, if they exist. Testing of a minimum number of SRVs from each valve group within any 24-month interval is intended to have some SRVs tested throughout the 6-year interval that would allow for more timely discovery of performance issues than would happen if all the testing was scheduled at the end of the 6-year interval. This alternative request proposes to modify the 20 percent and 24-month testing requirement and instead test 40 percent of the valves in a 48-month interval. When considering the same valves

are installed in both LaSalle, Units 1 and 2, and refueling outages are staggered, as-found test results for the SRVs will be obtained a minimum of 12 months to a maximum of 36 months after previous testing was performed. Any test or material condition findings that could impact the valves at both units will be evaluated in the Corrective Action Program for the unsatisfactory valves as well as the other valves in the group to mitigate further potential issues.

The licensee will continue to implement all other requirements contained within Code Case OMN-17, Revision 1. During outages when a partial complement of SRVs is replaced, those SRVs removed shall be as-found tested prior to resumption of electrical generation. To support identification of common cause issues, two additional SRVs shall be tested for each SRV that fails to meet the set +3/-5 percent tolerance acceptance criteria. If either of these two additional SRVs are found to not meet their set pressure acceptance criteria, then all remaining SRVs within the same group shall be tested. The licensee shall also continue to disassemble and inspect each subject SRV following as-found set pressure testing to verify that valve parts are free of defects resulting from time-related degradation or service-induced wear. Each valve shall also be disassembled and inspected prior to as-left testing and installation to the licensee's Best Practices Maintenance Program requirements provided above as well as all other requirements stipulated in Code Case OMN-17, Revision 1.

A total of 82 valves have been tested since 2014, with all valves having passed their as-found lift test. A table in Alternative Request RV-04 shows the total number of tested valves per outage and that they passed the as-found lift test.

The licensee states that based on the application of the Best Practices Maintenance Program at LaSalle, Units 1 and 2, the past performance of the SRVs at LaSalle, Units 1 and 2, demonstrates reasonable assurance that the SRVs will remain within the set point tolerance with the proposed modified test scoping of 40 percent of valves over a 48-month period. The licensee asserts that this proposal provides an alternative which would maintain an acceptable level of valve operational readiness, provide an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1) and provide for reduced occupational radiological exposure.

Licensee's Reason for Request

The licensee submitted Alternative Request RV-04 under 10 CFR 50.55a because an SRV set pressure performance assessment supports its conclusion that the proposed alternative would provide an acceptable level of quality and safety.

The alternative request states that the LaSalle, Units 1 and 2, nuclear pressure relief system consists of SRVs located on the main steam lines between the reactor vessel and the first isolation valve within the drywell. These valves protect against overpressure of the reactor coolant system. The SRVs provide three main protection functions:

a. Overpressure relief operation - The valves open automatically to limit a pressure rise.
b. Overpressure safety operation - The valves function as safety valves and open (self-actuated operation if not already automatically opened for relief operation) to prevent nuclear system overpressurization.
c. Depressurization operation - The automatic depressurization system (ADS) valves open automatically as part of the emergency core cooling system (ECCS) for events involving small breaks in the nuclear system process barrier (reactor coolant pressure boundary).

The “as-found” test of SRVs in the safety mode tests the valves’ ability to open when steam pressure at the valve inlet overcomes the spring force holding the valve closed. This test satisfies the ASME OM Code requirements. SRVs at LaSalle, Units 1 and 2, are Crosby style 6xRx10 HB-65-BP. Each unit has 13 SRVs installed. These valves are classified into the same IST program group. Mandatory Appendix I, paragraph I-1320, requires the installed SRVs to be tested at least once every 5 years starting with initial electric power generation, while ASME OM Code Case OMN-17, Revision 1, allows the SRVs to be tested at least once every 72 months (6 years), starting with initial electric power generation. LaSalle, Units 1 and 2, are currently operating on a 24-month refueling cycle.

A performance assessment of the LaSalle, Units 1 and 2, Crosby style 6xRx10 HB-65-BP SRVs as-found and as-left test results concluded that there is reasonable assurance that each SRV will retain the set pressure within the required drift tolerances on a 6-year interval with the proposed modification to the required testing of 20 percent of the relief valves within a 24-month interval. Modifying the SRV testing scope to 40 percent of the relief valves within a 48-month interval will allow LaSalle, Units 1 and 2, the scheduling flexibility to contribute to the principal of maintaining radiation dose as low as reasonably achievable by allowing LaSalle, Units 1 and 2, to reduce radiological exposure incurred during SRV removal, testing, and re-installation by approximately 5 rem for the station over a 10-year IST interval.

3.2 NRC Staff Evaluation

In Alternative Request RV-04, the licensee requested authorization to test 40 percent of the SRVs listed in Table 1 within a 48-month interval as an alternative to the ASME OM Code (2004 Edition through 2006 Addenda) requirements in Mandatory Appendix I, paragraph I-1320, subparagraph (a) and Code Case OMN-17, Revision 1. ASME OM Code Case OMN-17, Revision 1, listed in Applicability Index dated February 10, 2025, is applicable from the 1995 Edition to 2017 Edition of the OM Code. ASME Code Case OMN-17, Revision 1, is approved for use without conditions in Regulatory Guide 1.192, “Operation and Maintenance Code Case Acceptability, ASME OM Code,” Revision 5 (ML23291A006), which was incorporated by reference in 10 CFR 50.55a published in the *Federal Register* on July 17, 2024 (89 FR 58039), and effective on August 16, 2024 . Therefore, the use of ASME OM Code Case OMN-17, Revision 1, is acceptable. As an alternative to the requirements in Appendix I, paragraph I-1320, of the ASME OM Code, Code Case OMN-17, Revision 1, allows licenses to extend the test interval for SRVs to 6 years. The NRC staff’s review of this alternative request focused on the proposed modification to ASME OM Code Case OMN-17, Revision 1.

The alternative request states that the Constellation SRV Best Practices are developed from the application of the EPRI/NMAC Safety and Relief Valve Testing and Maintenance Guide and from Constellation fleet operational experience. The Constellation SRV Best Practices Maintenance Program is comprised of methods and philosophies concerning maintenance, inspection and techniques which uses the SRV manufacturer’s recommended maintenance practices and enhancements identified by the licensee.

Reference 4 (ML20164A188) of Alternative Request RV-04 states that the elements of the program include spring testing, lapping techniques and tools, set pressure adjustment methodology precision, average delay trending, and internal component condition variations. The valve performance has consistently improved since 2018 at LaSalle, Units 1 and 2, when the SRV Best Practices Maintenance Program was implemented. Based on the performance assessment of the LaSalle, Units 1 and 2, SRV operating experience, there is reasonable

assurance that each SRV will retain the set pressure within the required drift tolerance on a 6-year interval with the proposed testing of 40 percent of the SRVs within a 48-month interval.

The NRC staff agrees with the licensee regarding the importance of evaluating operating and maintenance experience for the valves within the scope of this request and similar valves, including the application of updated guidance from EPRI for the Constellation SRV Best Practices Maintenance Program. Based on its review of Alternative Request RV-04, the NRC staff finds that the proposed alternative for LaSalle, Units 1 and 2, provides an acceptable level of quality and safety because:

1. The licensee will continue to meet the provisions of ASME OM Code Case OMN-17, Revision 1, except the 20 percent and 24-month requirement discussed in this SE;
2. Constellation SRV Best Practices Maintenance Program has been implemented for the SRVs within the scope of this proposed alternative;
3. LaSalle, Units 1 and 2, have the same Crosby SRVs, and test results from both units will be shared;
4. Acceptable results of the as-found lift test for all 82 tested SRVs at LaSalle, Units 1 and 2, since 2014.

Therefore, the NRC finds that the proposed Alternative Request RV-04 to change the minimum number of SRVs from each group to be tested from 20 percent within any 24-month interval to 40 percent within any 48-month interval, provides an acceptable level of quality and safety in providing reasonable assurance of the operational readiness of the SRVs within the scope of this request in accordance with 10 CFR 50.55a(z)(1) for the Fourth Interval IST Program at LaSalle, Units 1 and 2.

4.0 CONCLUSION

As described above, the NRC staff has determined that the proposed Alternative Request RV-04 to change the minimum number of SRVs from each group to be tested from 20 percent within any 24-month interval to 40 percent within any 48-month interval at LaSalle, Units 1 and 2, as described in the licensee's submittal dated November 25, 2024, provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes Alternative Request RV-04 for the Fourth Interval IST Program at LaSalle, Units 1 and 2, which started on October 12, 2017, and is scheduled to end on October 11, 2027.

All other ASME OM Code requirements as incorporated by reference in 10 CFR 50.55a for which relief or an alternative was not specifically requested, and granted or authorized (as appropriate), in the subject request remain applicable.

Principal Contributors: Yuken Wong, NRR
Thomas G. Scarbrough, NRR

Date: July 21, 2025

SUBJECT: LASALLE COUNTY STATION, UNITS 1 AND 2 – ALTERNATIVE REQUEST RV-04 (EPID L-2024-LLR-0076) DATED JULY 21, 2025

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OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DEX/EMIB/BC	NRR/DORL/LPL3/BC
NAME	RKuntz	SLent	SBailey	IBerrios
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