



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO REQUEST FOR ALTERNATE REQUIREMENTS FOR PRESERVICE

TESTING OF CLASS 1 SAFETY VALVES (VEGP 3&4-PST-ALT-02)

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MEAG POWER SPVM, LLC

MEAG POWER SPVJ, LLC

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CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4

DOCKET NOS. 52-025 AND 52-026

1.0 INTRODUCTION

By letter dated March 5, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19064B385), Southern Nuclear Operating Company, Inc. (SNC/licensee), requested the U.S. Nuclear Regulatory Commission's (NRC) approval of an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Operation and Maintenance of Nuclear Power Plants (OM Code), Division 1, OM Code: Section IST associated with preservice testing (PST) of ASME Class 1 Safety Valves at the Vogtle Electric Generating Plant (VEGP) Units 3 and 4. In particular, SNC requested to implement a proposed alternative to specific provisions of the ASME OM Code as incorporated by reference in Section 50.55a, "Codes and standards," in Title 10, "Energy," of the *Code of Federal Regulations* (10 CFR) in alternative request PST-ALT-02 on the basis that the alternative provides an acceptable level of quality and safety pursuant to subparagraph (1), "Acceptable level of quality and safety," in paragraph (z), "Alternatives to codes and standards requirements," of 10 CFR 50.55a.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f)(4), "Inservice testing standards requirement for operating plants," state, 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 inservice testing (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 paragraphs (f)(2) and (3) of 10 CFR 50.55a and that are incorporated by reference in paragraph (a)(1)(iv) of 10 CFR 50.55a, 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) state, in part, that alternatives to the requirements of paragraphs (b) through (h) of 10 CFR 50.55a may be used, when authorized by the NRC, if SNC demonstrates (1) the proposed alternative would provide an acceptable level of quality and safety; or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

In alternative request PST-ALT-02, SNC indicates that the 2012 Edition of the ASME OM Code is the Code of record for its IST program for VEGP Units 3 and 4. As of this date, the 2012 Edition of the ASME OM Code is the most recent OM Code edition incorporated by reference in 10 CFR 50.55a.

Based on the above, and subject to the following technical evaluation, the staff finds that regulatory authority exists for SNC to request and the Commission to authorize the alternative requested by SNC to specific provisions of the ASME OM Code as incorporated by reference in 10 CFR 50.55a.

3.0 TECHNICAL EVALUATION

3.1 SNC's Alternative

SNC requested an alternative to the PST requirements for ASME Class 1 Safety Valves in the 2012 Edition of the ASME OM Code.

Paragraph I-7210, "Class 1 Safety Valves," in Section I-7200, "Testing Before Initial Electric Power Generation," of Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," in the ASME OM Code specifies the following:

Within 6 mo [months] before initial reactor criticality, each valve shall have its set-pressure verified. Set-pressure verification shall be determined by pressurizing the system up to the valve set-pressure and opening the valve, or the valve may be tested at or below normal system operating pressures with an assist device.

SNC proposes an alternative to paragraph I-7210 in the ASME OM Code, Appendix I, for the PST period for VEGP Units 3 and 4.

SNC provided the following reason for the alternative request:

The existing Code requirement implies that the safety valves be tested in place. The valves are located on top of the pressurizer. Due to the temperature environment of this location, testing of the safety valves presents a personnel safety issue to personnel performing the testing as it involves activities such as use of an assist device and installation of a gag on the valve not being tested.

Also, the timing requirement of within 6 months before initial criticality provides potential scheduling issues. If the 6 months expires just before initial criticality, the plant would be in a hot, pressurized condition and would have to be cooled down and depressurized to replace the valves. Tying testing to the fuel load milestone is favorable since, for potential

delays that push the fuel load date outside of the proposed 3 month test requirement, the plant would be in a cold and depressurized condition, and the valves could be removed and replaced without having to put a thermal cycle on the plant with the associated time delays of cooling down/depressurizing and subsequent return to normal operating temperature and pressure.

SNC submitted the following proposed alternative to paragraph I-7210 in the ASME OM Code, Appendix I:

In lieu of performing setpoint testing with the valve installed in the system within 6 months before initial criticality in accordance with I-7210, Class 1 Safety Valves shall be replaced with pretested valves. The set-pressure test of the valves shall not be more than 3 months prior to the commencement of Initial Fuel loading. The initial testing per I-1320, shall be no longer than 24 months from the date of the set-pressure verification test.

SNC provided the following basis for the use of its proposed alternative:

The Class 1 safety relief valves are Crosby, model number HB-BP-86. This manufacturer and model have been commonly used in the nuclear industry in this application and have a history of acceptable performance with regards to setpoint drift.

The proposed alternative provides an equivalent level of safety as it ensures that the safety valves setpoints will be verified recently prior to beginning of fuel loading and subsequent initial startup activities, and that inservice valve testing is not extended past the normal frequency, even if the startup process prior to Initial Generation of Electricity by nuclear heat is prolonged. This alternative provides the additional benefit of improving personnel safety by not having personnel in a heat stress environment to perform in-place testing.

If the schedule of startup activities begins to challenge a testing frequency of 24 months following the preservice test, SNC will evaluate additional setpoint testing prior to startup or performance of a mid-cycle shutdown to ensure inservice testing is performed at the required inservice testing interval. A review was performed of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) 2.1.02. 08a.ii for testing and analysis of safety relief valves in accordance with ASME Section III. This proposed Code alternative does not have any impact on the ITAAC.

Since the proposed alternative is consistent with inservice testing requirements for replacing with pretested valves in accordance with I-1320(b) and the frequency of the first inservice test limits the amount of time between set-pressure verification tests, this proposed alternative provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1).

SNC stated that the PST alternative for the ASME Class 1 Safety Valves would be conducted prior to commercial operation of VEGP Units 3 and 4.

3.2 Staff Evaluation

The staff reviewed alternative request PST-ALT-02 submitted by SNC to the ASME OM Code requirements as incorporated by reference in 10 CFR 50.55a for testing ASME Class 1 Safety Valves prior to initial operation of VEGP Units 3 and 4. In particular, SNC proposed to replace the ASME Class 1 Safety Valves with pretested valves in lieu of satisfying the requirements in

paragraph I-7210 of the ASME OM Code, Appendix I, to perform setpoint testing with the valves installed in the system within 6 months before initial criticality. The alternative request indicated that the set-pressure test for the ASME Class 1 Safety Valves to be installed for initial operation of VEGP Units 3 and 4 will be performed not more than 3 months prior to the commencement of initial fuel loading. Further, the alternative request specifies that the initial valve IST interval for the ASME Class 1 Safety Valves to satisfy paragraph I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," in Appendix I to the ASME OM Code will be no longer than 24 months from the date of the set-pressure verification test of the pretested valves.

In preparing nuclear power plants for initial electric power generation, Section I-7200 of Appendix I to the ASME OM Code in paragraph I-7210 requires that within 6 months before initial reactor criticality, ASME Class 1 Safety Valves shall have their set-pressure verified. This requirement establishes a short time period between set-pressure testing of the ASME Class 1 Safety Valves and initial plant operation. Paragraph I-7210 also requires that the set-pressure verification of the ASME Class 1 Safety Valves before initial reactor criticality be determined by pressurizing the system up to the valve set-pressure and opening the valve, or the valve may be tested at or below normal system operating pressures with an assist device. The staff considers the reference to "system" in paragraph I-7210 to specify that the test will be performed with the ASME Class 1 Safety Valves installed in the nuclear power plant. Therefore, the staff finds that it is appropriate for SNC to submit an alternative to paragraph I-7210 to pretest the ASME Class 1 Safety Valves prior to initial electric power generation of VEGP Units 3 and 4. In the request, SNC also proposes to adjust the time period for initial set-pressure verification.

The staff evaluated the request by SNC to pretest the ASME Class 1 Safety Valves prior to initial plant operation in PST-ALT-02. The staff notes that paragraph I-1320 in the ASME OM Code, Appendix I, allows licensees of operating nuclear power plants to satisfy the testing requirements for ASME Class 1 Safety Valves by installing pretested valves to replace valves that have been in service. Experience at operating nuclear power plants has not revealed performance concerns with the use of pretested ASME Class 1 Safety Valves in accordance with paragraph I-1320. Based on this experience, the staff considers the use of pretested ASME Class 1 Safety Valves for initial operation of a nuclear power plant to be an acceptable alternative to the requirement in paragraph I-7210 of the ASME OM Code, Appendix I, to perform testing of the valves as installed in the plant. Therefore, the staff finds that the request by SNC in PST-ALT-02 to use pretested ASME Class 1 Safety Valves for the initial operation of VEGP Units 3 and 4 to be acceptable.

In alternative request PST-ALT-02, SNC specifies that the pretested ASME Class 1 Safety Valves will be installed within 3 months of initial fuel loading while paragraph I-7210 in the ASME OM Code, Appendix I, specifies testing within 6 months of initial criticality. The time period between initial fuel loading and initial criticality might vary depending on the final preparations for criticality and plant operation. Considering this variable time period, the alternative request specifies that the ASME Class 1 Safety Valves will satisfy the provisions of paragraph I-1320 in the ASME OM Code, Appendix I, to retest the valves within 24 months of the set-pressure verification test. With the 3-month time period prior to initial fuel loading, SNC asserts that the proposed alternative provides an equivalent level of safety as it ensures that the ASME Class 1 Safety Valve setpoints will be verified shortly before initial fuel loading and startup activities. With the 24-month time period for the initial valve IST interval for the ASME Class 1 Safety Valves, SNC indicates that the valve IST interval will not be extended past the normal frequency, even if the startup process is prolonged. Based on the specified 24-month time period for the initial valve IST interval, the staff finds the substitution of the 6-month time

period prior to initial criticality with the 3-month time period prior to initial fuel loading to be acceptable.

The NRC has accepted ASME OM Code Case OMN-20, "Inservice Test Frequency," in NRC Regulatory Guide (RG) 1.192 (Revision 2), "Operation and Maintenance Code Case Acceptability, ASME OM Code," for all ASME OM Code editions and addenda incorporated by reference in 10 CFR 50.55a. The staff considers the IST grace periods described in Code Case OMN-20 may also be applied to paragraph I-1320 in the ASME OM Code, Appendix I, for the 24-month period between the initial set-pressure verification test and subsequent retest for the alternative time period requested by SNC in PST-ALT-02 for the ASME Class 1 Safety Valves at VEGP Units 3 and 4.

SNC specifies that the ASME Class 1 Safety Valves to be used at VEGP Units 3 and 4 are Crosby HB-BP-86 valves. SNC notes that this valve manufacturer and model have been commonly used in the nuclear industry and have a history of acceptable performance regarding setpoint drift. Further, SNC indicates that, if the schedule of startup activities begins to challenge a testing frequency of 24 months following the preservice test, it will evaluate additional setpoint testing prior to startup or performance of a mid-cycle shutdown to ensure that the valve IST activity is performed within the required IST interval. The staff considers SNC's plans to provide reasonable assurance of valve performance.

In alternative request PST-ALT-02, SNC indicates that the ASME OM Code of record for its IST program for VEGP Units 3 and 4 is the 2012 Edition of the ASME OM Code, which is the most recent edition (as of this date) incorporated by reference in 10 CFR 50.55a. In accordance with 10 CFR 50.55a(f)(4)(i), "Applicable IST Code: Initial 120-month interval," SNC is required to update the ASME OM Code of record to the most recent edition of the ASME OM Code incorporated by reference in 10 CFR 50.55a at a specified time period prior to initial fuel load at VEGP Units 3 and 4. This safety evaluation assumes that the ASME OM Code of record for VEGP Units 3 and 4 is the 2012 Edition of the ASME OM Code. SNC will need to address the update requirement in 10 CFR 50.55a(f)(4)(i) regarding the ASME OM Code of record for the initial 120-month IST program interval prior to initial fuel load for VEGP Units 3 and 4. The NRC has issued a proposed rule to incorporate by reference the 2015 and 2017 Editions of the ASME OM Code in 10 CFR 50.55a. The staff notes that the applicable requirements in paragraph I-7210 in Section I-7200 in Appendix I to the 2012 Edition of the ASME OM Code have been moved to paragraph I-3220, "Class 1 Safety Valves," in Section I-3200, "Testing Before Initial Electric Power Generation," in Appendix I to the 2015 and 2017 Editions of the ASME OM Code. These requirements for testing of ASME Class 1 Safety Valves before initial electric power generation in the 2015 and 2017 Editions of the ASME OM Code are the same as specified in the 2012 Edition of the ASME OM Code. The provisions in paragraph I-1320 for the initial valve IST interval for ASME Class 1 Safety Valves are the same in the 2012, 2015, and 2017 Editions of the ASME OM Code. In addition, ASME has incorporated the IST grace periods into the 2017 Edition of the ASME OM Code. Assuming that the NRC completes the ongoing rulemaking to incorporate by reference the 2017 Edition of the ASME OM Code into 10 CFR 50.55a, there will be no impact on this safety evaluation if SNC updates its Code of record to the 2017 Edition of the ASME OM Code as the most recent edition of the ASME OM Code for its initial 120-month IST program interval as required by 10 CFR 50.55a(f)(4)(i) based on the initial fuel load date for VEGP Units 3 and 4.

The NRC regulations in 10 CFR 50.55a(z)(1) allow a proposed alternative to the ASME OM Code as incorporated by reference in 10 CFR 50.55a to be acceptable if the alternative would provide an acceptable level of quality and safety. Based on its review, the staff considers

SNC's request in PST-ALT-02 to use pretested ASME Class 1 Safety Valves for initial plant operation with a 24-month frequency for the initial valve IST interval as an alternative to the provisions of paragraph I-7210 in the ASME OM Code, Appendix I, to provide an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1). Therefore, the staff finds that the SNC's proposed alternative to the PST provisions for ASME Class 1 Safety Valves in paragraph I-7210 in Appendix I to the ASME OM Code, as incorporated by reference in 10 CFR 50.55a, will provide reasonable assurance of the operational readiness of the ASME Class 1 Safety Valves in VEGP Units 3 and 4.

4.0 CONCLUSION

Based on the above evaluation, the staff concludes that the SNC's proposed alternative, PST-ALT-02, to the ASME OM Code as incorporated by reference in 10 CFR 50.55a provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1). Therefore, the staff authorizes the use of alternative request PST-ALT-02 for the preservice testing of the ASME Class 1 Safety Valves at VEGP Units 3 and 4. All other ASME OM Code requirements as incorporated by reference in 10 CFR 50.55a for which relief from, or an alternative to, was not specifically requested and approved in this subject request remain applicable.

5.0 REFERENCES

1. VEGP 3&4-PST-ALT-02, "Request for Alternative Requirements for Preservice Testing of Class 1 Safety Valves," dated March 05, 2019 (ADAMS Accession No. ML19064B385).
2. Vogtle Electric Generating Plant, Units 3 and 4, Updated Final Safety Analysis Report, dated August 11, 2017 (ADAMS Accession No. ML17172A218).