



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

SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO REQUEST FOR ALTERNATIVE:

ELIMINATION OF EXTERNAL SURFACE DEFECTS ON CLASS 1, 2, AND 3 PIPING, PUMPS,

OR VALVES AFTER COMPONENT STAMPING AND PRIOR TO COMPLETION OF THE N-3

DATA REPORT (VEGP 3&4-PSI/ISI-ALT-09)

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MEAG POWER SPVM, LLC

MEAG POWER SPVJ, LLC

MEAG POWER SPVP, LLC

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 October 24, 2017 (Agencywide Documents Access and Management Systems (ADAMS) Accession No. ML17297B863), Southern Nuclear Operating Company, Inc., (SNC or licensee) submitted Vogtle Electric Generating Plant (VEGP) Units 3 and 4 – Request for Alternative: Elimination of External Surface Defects on Class 1, 2, and 3 Piping, Pumps, or Valves After Component Stamping and Prior to Completion of the N-3 Data Report (VEGP 3&4-PSI/ISI-ALT-09) to the U.S. Nuclear Regulatory Commission (NRC) for review and approval. In the letter, the licensee requested authorization to use an alternative, pursuant to Title 10 of the *Code of Federal Regulation* (10 CFR) 50.55a(z)(1), to the requirements of the 1998 Edition, including the 2000 Addenda, of American Society of Mechanical Engineers (ASME) Section III. Specifically, the licensee's request would allow an N or NA Certificate holder to remove external surface defects from previously stamped piping, pumps, or valves prior to the completion of the N-3 Data report.

Enclosure

2.0 REGULATORY EVALUATION

In accordance with 10 CFR 50.55a(z), alternatives to the requirements of 10 CFR 50.55a may be used when authorized by the Commission. In proposing alternatives, the licensee must demonstrate that: (1) the proposed alternative would provide an acceptable level of quality and safety; or (2) compliance would result in hardship or unusual difficulty without a compensating increase in quality and safety.

In its letter dated October 24, 2017, the licensee determined that the 1998 Edition, including the 2000 Addenda, of ASME Section III only included requirements on removing external defects prior to component stamping. To address this issue, pursuant to 10 CFR 50.55a(z)(1), the licensee proposes to document the removal of surface defects prior to completion of the N-3 Data report and 10 CFR 52.103(g) finding, which coincide with the start of the licensee's ASME Section XI repair and replacement program.

3.0 TECHNICAL EVALUATION

3.1 LICENSEE'S ALTERNATIVE REQUEST

Item applicability

The components affected by this request are Class 1, 2, and 3 piping, pumps, and valves that have already been stamped. This request does not cover other components, such as vessels, that have already been stamped.

Applicable Code Requirements

The ASME Code of Record for VEGP Units 3 and 4 is the 1998 Edition, including the 2000 Addenda, of ASME Section III. ASME Section III NB/NC/ND-2000 and NB/NC/ND-4000 contain the requirements for the elimination of surface defects. These requirements are applicable to ASME Class 1, 2, and 3 components (piping, pumps, and valves) prior the component receiving an N stamp. The licensee's ASME Section XI repair and replacement program encompasses these ASME Class 1, 2, and 3 components. However, the licensee's Section XI repair and replacement program will not go into effect until after the 10 CFR 52.103(g) finding. Therefore, ASME Section III does not have explicit requirements related to the removal of external defects after stamping, but before the completing of the N-3 data report.

Proposed Alternative

The licensee proposed to allow an N or NA Certificate Holder at a location authorized by their certificate in accordance with their Quality Assurance Program to remove external surface defects on previously stamped piping, pumps, or valves without repeating the component or system pressure tests required by Article NB/NC/ND-6000 after elimination of the defect.

The N or NA Certificate Holder shall also adhere to the following requirements:

- (a) The defect is eliminated via mechanical means only (e.g., buffing and grinding).
- (b) The depth of the surface defect elimination does not exceed 3/8 inch (10 mm) or 10 percent of the thickness, whichever is less.

- (c) It is verified that elimination of the defect has not reduced the thickness of the section below that required by Article NB/NC/ND-3000, and that Design Specification requirements were satisfied.
- (d) Except for castings, the elimination of the surface defect is performed in accordance with the requirements of ASME Section III NB/NC/ND-2538, NB/NC/ND-2548, NB/NC/ND-2558, NB/NC/ND-2568 for the applicable product form, or NB/NC/ND-4452 for weld metal defects, except that repair by welding is not permitted.
- (e) For castings, surface defects shall be removed by grinding or machining provided the requirements of (1) and (2) below are met:
 - (1) The depression, after defect elimination, is blended uniformly into the surrounding surface.
 - (2) After defect elimination, the area is examined by the magnetic particle method in accordance with ASME Section III NB/NC/ND-2577 or the liquid penetrant method in accordance with ASME Section III NB/NC/ND-2576 to assure that the defect has been removed or reduced to an imperfection of acceptable size.
- (f) The elimination is documented by the N or NA Certificate Holder within the Remarks section of the N-5 Data Report for the assembly or installation that included the component.
- (g) The N-5 Data Report shall identify this code alternative. Revision of completed N-5 Data Reports to identify this code alternative is permitted.

Basis for the Alternative

The licensee stated that each requirement above follows what is already established in ASME Section III. Paragraph NB/NC/ND-6115 states that a post repair pressure test is not required following removal of less than 3/8 inch (10 mm) or 10 percent of the thickness, whichever is less. The alternative also states that the amount of material removed cannot violate the design requirements in Article NB/NC/ND-3000 or the Design Specification.

ASME Section III paragraphs NB/NC/ND-2538, NB/NC/ND-2548, NB/NC/ND-2558, and NB/NC/ND-2568 state the surface defect removal requirements and follow-up inspection requirements on various product forms. ASME Section III NB/NC/ND-4452 states these requirements for weld metal surface defects. The requirements for the elimination of surface defects for castings are in accordance with ASME Section III NB/NC/ND-2573.7. Since ASME Section III NB/NC/ND-2573 is titled "Provisions for Repair of Base Material by Welding," castings are discussed separately as this alternative only allows removal by mechanical means (e.g., buffing and grinding) not welding. Following these requirements would provide the same assurance that a defect was removed if performed prior to the stamping of a component.

The alternative requires that the N-5 Data Report document that the surface defect was removed. The alternative also allows the N-5 Data Report to be revised if a defect was removed after the completion of the N-5 Data Report. Documentation of the removal and alternative on the N-5 Data Report can be used during ASME Section XI repair and replacement activities.

The alternative only allows N or NA Certificate Holders to remove external defects at a location that is authorized by their certificate. They also must adhere to their Quality Assurance Program.

3.2 NRC Staff Evaluation

The AP1000 component design and Design Certification use the ASME Boiler and Pressure Vessel Code (B&PV Code), 1998 Edition through the 2000 Addenda (code of record). The Combined License Certification uses ASME B&PV Code, 2007 Edition through 2008 Addenda (code of record) for VEGP Units 3 and 4. The staff finds that the use of ASME B&PV Code, 1998 Edition through the 2000 Addenda and ASME B&PV Code, 2007 Edition through 2008 Addenda acceptable, since these codes and additions were incorporated by reference into 10 CFR 50.55a. The staff notices that ASME Section XI, IWA-1200 Code, 2007 Edition through 2008 Addenda (code of record), "Jurisdiction," states:

The jurisdiction of this Division covers individual components and complete plants that have met all the requirements of the Construction Code, commencing when the Construction Code requirements have been met, irrespective of physical location. When portions of systems or plants are completed at different times, jurisdiction of this Division shall cover only those portions for which all of the construction requirements have been met. Prior to installation, an item that has met all requirements of the Construction Code may be corrected using the rules of either the Construction Code or this Division, as determined by the Owner.

In summary, ASME Section XI states that the rules of either Section III or Section XI may be used to repair items that have met all requirements of the Section III (stamping) prior to installation. However, the licensee's Section XI repair and replacement program is not in effect during construction. The ASME Section XI repair and replacement program will be implemented after the 10 CFR 52.103(g) finding.

ASME Section III does not clearly state rules for the repair of a component after stamping but before commercial operation. For example, ASME Section III does not discuss what organization will do the work, what work is allowed, or where the work should be documented. Therefore, the staff believes that it is appropriate for the licensee to pursue alternative requirements to clarify the scope of work allowed on specific components in accordance with existing ASME Section III requirements.

The licensee proposed that defects on external surfaces of previously stamped Class 1, 2, and 3 piping, pumps, and valves may be eliminated by an N or NA Certificate Holder. This work must be done at a location that is authorized by their certificate in accordance with their Quality Assurance Program. An N or NA Certificate gives confidence that the holder can perform work in accordance with the ASME Code. Since the N or NA Certificate holder who initially stamped the component may not have jurisdiction at the construction site, the staff finds that allowing a different Certificate holder to make the repair acceptable.

The staff reviewed the additional requirements that the N or NA certificate holder removing the defect must follow. The staff finds that the proposed alternative of removal of external surface defects in the request for alternative (VEGP 3&4-PSI/ISI-ALT-09) acceptable because the proposed alternative meets the ASME Section III Subsections NB/NC/ND-2000 and NB/NC/ND-4000 requirements. The staff notices that not repeating the component or system pressure tests using the basis of ASME Section III NB/NC/ND-6115 acceptable, as limiting the depth of the surface defect elimination to not exceed 3/8 inch (10 mm) or 10 percent of the thickness,

whichever is less, is consistent with the ASME Code, Section III requirements if the removal were done prior to ASME Code stamping.

The alternative recognizes that either Article NB/NC/ND-3000 or the Design Specification may have more stringent requirements than removal of 3/8 inch (10 mm) or 10 percent of the thickness. The staff finds that verifying that the elimination of the defect has not reduced the thickness below the design requirements of Article NB/NC/ND-3000 and the Design Specification acceptable, because it ensures the structural integrity of the component is maintained and it is consistent with the ASME Code, Section III requirements if the removal were done prior to ASME Code stamping.

The staff reviewed the specifically cited paragraphs in ASME Section III Subarticles NB/NC/ND-2500 and NB/NC/ND-4500 and found that the alternative requirements are consistent with the ASME Section III requirements for the removal of surface defects. The alternative is also clear that only mechanical means are allowed to be used and welding is prohibited. Finally, the staff finds that the documentation of the removal and alternative on the N-5 Data Report to inform Section XI repair and replacement activities acceptable as this maintains a record of removal and it is consistent with the ASME Code, Section XI requirements if the repair were done after the ASME Code Section XI program was in effect.

Based on the review described above, the staff finds that the licensee has demonstrated that the proposed alternative provides an acceptable level of quality and safety. This finding is based on the fact that the alternative is based on existing ASME Code requirements and clearly bounds the scope of applicability. This information provides reasonable assurance that the removal of surface defects will not impact the structural integrity of the component and will be documented for future reference.

4.0 CONCLUSION

As set forth above, the NRC staff determines that the proposed alternative provides an acceptable level of quality and safety. All other ASME Code requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1), and is in compliance with the ASME Code's requirements. Therefore, the NRC staff authorizes VEGP 3&4-PSI/ISI-ALT-09 at VEGP Units 3 and 4 until the ASME Section XI program takes effect.