SAFETY EVALUATION BY THE OFFICE OF NEW REACTORS

RELATED TO REQUEST FOR AN ALTERNATIVE
TO THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
NPT CODE SYMBOL STAMP

SOUTH CAROLINA ELECTRIC AND GAS COMPANY

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

VIRGIL C. SUMMER NUCLEAR STATION UNITS 2 AND 3

DOCKET NOS. 52-027 AND 52-028

## 1.0 INTRODUCTION

By letter dated May 11, 2015, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15131A514), and supplemented by a letter dated November 11, 2015 (ADAMS Accession No. ML15315A026), South Carolina Electric & Gas Company (SCE&G or "the licensee"), submitted a request to use an alternative to the regulations for Virgil C. Summer Nuclear Station (VCSNS), Units 2 and 3 pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), that would allow the licensee to accept all American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section III, Division 1, Classes 1, 2, and 3 parts, appurtenances, piping subassemblies, and tubular products welded with filler metal to which either the "N over PT" ASME NPT Code Symbol Stamp which is currently specified in Section III of the ASME Code, or the "horizontal" ASME NPT Symbol Stamp that is currently not specified in the code, have been applied. The requested time period for which the "horizontal" ASME NPT Code Symbol Stamp would be applied to the nameplates or parts, appurtenances, piping subassemblies, and tubular products welded with filler metal is from February 2012 through December 2016. The proposed alternative is needed so that the licensee and its vendors, fabricators, and installers that had the "horizontal" ASME NPT Code Symbol Stamp can apply this stamp in lieu of the "N over PT" ASME NPT Code Symbol Stamp to parts, appurtenances, piping subassemblies, and tubular products welded with filler metal for the stated time period. The licensee requests that application of the "horizontal" ASME NPT Code Symbol Stamp be considered equivalent to the "N over PT" ASME NPT Code Symbol Stamp in regards to editions and addenda of the ASME Code which are incorporated by reference in 10 CFR 50.55a(a)(1)(i). The licensee and its vendors, fabricators, and installers that apply the "N over PT" ASME NPT Code Symbol Stamp, which is specified in the ASME Code, would continue to meet the regulations in Section 50.55a(a)(1)(i) of Title 10 of the *Code of Federal Regulations* (10 CFR).

The regulations in Section 50.55a(a)(1)(i) of 10 CFR currently incorporate by reference the ASME Code, Section III up to and including 2008 Addenda to the 2007 Edition. The ASME NPT Code Symbol Stamp is specified up to the 2008 Addenda to the 2007 Edition of the ASME Code, Section III as an "N over PT" ASME NPT Code Symbol Stamp. The proposed alternative would also allow the acceptance of either the "horizontal" ASME NPT Code Symbol Stamp, or the "N over PT" ASME NPT Code Symbol Stamp that have been applied during the time period between February 2012 through December 2016, to all ASME Code, Section III, Division 1, Classes 1, 2, and 3 parts, appurtenances, piping subassemblies, and tubular products welded with filler metal. The proposed alternative would be applicable for the service life on any item stamped with the "horizontal" ASME NPT Code Symbol Stamp during the construction of VCSNS Units 2 and 3.

## 2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a requires that components of nuclear power plants must meet the requirements of the ASME Code, except where alternatives to the requirements of paragraphs (c), (d), (e), (f), (g) and (h) of 10 CFR 50.55a have been authorized by the Commission pursuant to paragraphs (a)(z)(i) or (a)(z)(ii) of 10 CFR 50.55a. In proposing alternatives, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety, or (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. 10 CFR 50.55a allows the Commission to authorize alternatives upon making the necessary findings.

In its letter dated May 11, 2015, and supplemented by a letter dated November 11, 2015, SCE&G has determined that the application of the "horizontal" ASME NPT Code Symbol Stamp will not be in compliance with paragraphs (c), (d), and (e) of 10 CFR 50.55a, because the "horizontal" ASME NPT Code Symbol Stamp is not specified in the editions and addenda of the ASME Code currently incorporated by reference in 10 CFR 50.55a(a)(1)(i). Pursuant to 10 CFR 50.55a(z)(1), the licensee requested the U.S. Nuclear Regulatory Commission (NRC) to authorize acceptance of the application of either the "horizontal" ASME NPT Code Symbol Stamp or the "N over PT" ASME NPT Code Symbol Stamp, which are considered equivalent by the ASME.

## 3.0 EVALUATION OF THE ALTERNATIVE

### 3.1 Items for Which an Alternative is Requested

The scope of the alternative includes all ASME Code, Section III, Division 1, Classes 1, 2, and 3 parts, appurtenances, piping subassemblies, and tubular products welded with filler metal for the service life of these items stamped with the "horizontal" ASME NPT Code Symbol Stamp during the construction of VCSNS Units 2 and 3.

## 3.2 Code Requirement

The regulations in 10 CFR 50.55a paragraphs (c), (d), and (e) require that Quality Group A, B and C components must meet the requirements in Section III of the ASME Code for components classified as ASME Code Classes 1, 2 and 3, respectively. As indicated in Section 5.2 of the VCSNS Final Safety Analysis Report, the baseline used for evaluations to support the safety analysis report and the Design Certification is the ASME Code, Section III, 1998 Edition, 2000 Addenda. This edition and addenda of the ASME Code requires the use of a Code Symbol Stamp to certify compliance with the ASME Code as specified in Article NCA-8000. However, the "horizontal" ASME NPT Code Symbol Stamp is not specified in the 1998 Edition, 2000 Addenda of the ASME Code, Section III. The "N over PT" ASME NPT Code Symbol Stamp is currently specified up to the 2010 Edition of the ASME Code, Section III.

Because the ASME Code Symbol Stamps are the property of ASME, a letter from ASME dated June 17, 2015, provided in Enclosure 4 to SCE&G's November 11, 2015 letter, was sent to all ASME Certificate Holders requesting "horizontal" ASME NPT Code Symbol Stamps be returned to ASME and documenting ASME's plan to issue "N over PT" ASME NPT Code Symbol Stamps to the Certificate Holders. The NRC notes that ASME expects this Code Symbol Stamp replacement to be completed by the end of calendar year 2015.

## 3.3 Proposed Alternative

The licensee proposes to accept either the "horizontal" ASME NPT Code Symbol Stamp that is currently not specified in the ASME Code, applied during the time period from February 2012 through December 2016, or the "N over PT" ASME NPT Code Symbol Stamp currently specified in the 2008 Addenda to the 2007 Edition of the ASME Code, Section III. This alternative can be used along with the alternative previously authorized by the NRC by letter dated December 3, 2012 (ADAMS Accession No. ML12335A330), for applying either the ASME Certification Mark or the ASME Code Symbol Stamp to ASME Code Classes 1, 2, and 3 components, parts, appurtenances, piping subassemblies, and tubular products welded with filler metal.

## 3.4 Basis for the Alternative

The ASME NPT Code Symbol Stamp is specified up to the 2008 Addenda to the 2007 Edition of the ASME Code, Section III as an "N over PT" ASME NPT Code Symbol Stamp. The ASME issued some ASME NPT Stamps with a "horizontal" NPT designation starting in September 2005. The "horizontal" NPT Code Symbol Stamp is not specified in the ASME Code, Section III. In a letter dated August 27, 2014 (ADAMS Accession No. ML14309A266), the ASME informed the NRC that the ASME has reviewed the issue regarding these NPT Code Symbol Stamps, and considers these two NPT Code Symbol Stamps to be equivalent. Although these NPT Code Symbol Stamps differ slightly in appearance, they serve the same purpose of certifying code compliance by the ASME Certificate Holder with confirmation by the Authorized Nuclear Inspector and provide the same level of quality assurance.

Therefore, the "horizontal" NPT Code Symbol Stamp contains the same information and is equivalent to the "N over PT" ASME NPT Code Symbol Stamp. This change in the NPT ASME Code Symbol Stamp applies only to the graphic image that is stamped on a component

nameplate to indicate that construction is in accordance with ASME Code rules. There are no changes to any technical or quality requirements in the ASME Code resulting in the application of the "horizontal" ASME NPT Code Symbol Stamp.

### 3.5 Staff Evaluation

Paragraphs (c), (d), and (e) of 10 CFR 50.55a states that Quality Group A (reactor coolant pressure boundary), B and C components must meet the requirements specified for Classes 1, 2 and 3 components, respectively, in Section III of the ASME Code. Subsections NB, NC and ND in ASME Code, Section III provide requirements for the design and construction of Classes 1, 2 and 3 components, respectively. Subsection NCA in ASME Code, Section III, provides general requirements that are applicable to these three classes of components.

10 CFR 50.55a(a)(1)(i) currently incorporates by reference the use of Section III of the ASME Code, which includes the 1963 Edition through 1973 Winter Addenda, and the 1974 Edition (Division 1) through the 2008 Addenda (Division 1). The editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(a)(1)(i) provide requirements in Article NCA-8000 of Section III to the ASME Code for applying a "N over PT" ASME NPT Code Symbol Stamp directly on nameplates for parts, appurtenances, piping subassemblies, and tubular products welded with filler metal once the ASME Code requirements are met and authorized by the Authorized Nuclear Inspector. However, the ASME issued some "horizontal" ASME NPT Code Symbol Stamps to ASME Certificate Holders, which are not in Section III of the ASME Code and, therefore, are not authorized under 10 CFR 50.55a(a).

In its letter dated May 11, 2015, and supplemented by a letter dated November 11, 2015, the licensee provided justification that the "horizontal" ASME NPT Code Symbol Stamp and the "N over PT" ASME NPT Code Symbol Stamp are equivalent. The licensee noted that the ASME procured these "horizontal" ASME NPT Code Symbol Stamp in September 2005. Only the arrangement of the graphic image stamped on a component nameplate was changed. No other changes to any technical or quality requirements in the ASME Code were changed. In addition, ASME submitted a letter to the NRC dated August 27, 2014 (ADAMS Accession No. ML14309A266), stating ASME's position that the "horizontal" ASME NPT Code Symbol Stamp is equivalent to the "N over PT" ASME NPT Code Symbol Stamp. The staff finds that the same administrative and technical requirements in the ASME Code still apply whether a "horizontal" ASME NPT Code Symbol Stamp or an "N over PT" ASME NPT Code Symbol Stamp is applied. Therefore, the NRC staff considers the "horizontal" ASME NPT Code Symbol Stamp and the "N over PT" ASME NPT Code Symbol Stamp are equivalent with respect to their certification of compliance with the ASME Code and no other administrative or technical requirements were made with respect to the "horizontal" ASME NPT Code Symbol Stamp.

Enclosure 4 to the licensee's letter dated November 11, 2015, is a letter from the ASME dated June 17, 2015, notifying all ASME NPT Code Symbol Stamp Holders of the issue, requesting "horizontal" ASME NPT Code Symbol Stamps be returned to ASME, and documenting ASME's plan to issue "N over PT" ASME NPT Code Symbol Stamps to the Certificate Holders to prevent further confusion in the industry. The NRC notes that ASME, per its June 17, 2015 letter, expects this Code Symbol Stamp replacement to be completed by the end of calendar year 2015, although SNC has no control with regard to ASME meeting its schedule for this action. At this time, use of ASME Code Symbol Stamps are, however, expected to be superseded by the

use of ASME Code Certification Marks after December 2016, hence explaining the requested duration of this alternative.

The staff finds that the licensee's proposed alternative to accept either a "horizontal" ASME NPT Code Symbol Stamp or an "N over PT" ASME NPT Code Symbol Stamp on all ASME Code, Section III, Division 1, Classes 1, 2, and 3 parts, appurtenances, piping subassemblies, and tubular products welded with filler metal, that were stamped during the time period from February 2012 through December 2016, provides an acceptable level of quality and safety. This finding is based on the fact that the application of the "horizontal" ASME NPT Code Symbol Stamp is equivalent to the "N over PT" ASME NPT Code Symbol Stamp in the editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(a)(1)(i). Therefore, the application of either the "horizontal" ASME NPT Code Symbol Stamp, or the "N over PT" ASME NPT Code Symbol Stamp may be used as part of this alternative.

## 4.0 CONCLUSION

The staff concludes that the proposed alternative to the requirements of paragraphs (c), (d), and (e) of 10 CFR 50.55a is authorized for the VCSNS, Units 2 and 3 on the basis that accepting either the "horizontal" ASME NPT Code Symbol Stamp, or the "N over PT" ASME NPT Code Symbol Stamp, that were applied during the time period from February 2012 through December 2016, to all ASME Code, Section III, Division 1, Classes 1, 2, and 3 parts, appurtenances, piping subassemblies, and tubular products welded with filler metal provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(i). The licensee's proposed alternative provides reasonable assurance that ASME Code components will meet the requirements of ASME Code, Section III, because the use of either the "horizontal" ASME NPT Code Symbol Stamp or the "N over PT" ASME NPT Code Symbol Stamp are considered equivalent. This alternative is authorized for the service life of any item stamped with the "horizontal" ASME NPT Code Symbol Stamp. In addition, this alternative does not preclude the use of ASME Code Symbol Stamps as currently required by the editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a or the alternative previously authorized by the NRC by letter dated December 3, 2012 (ADAMS Accession No. ML12335A330), for applying the Certification Mark to ASME Code Classes 1, 2, and 3 components, parts, appurtenances, piping subassemblies, and tubular products welded with filler metal. All other requirements of the ASME Code, Section III, for which an alternative has not been specifically requested and authorized, remain applicable, including third-party review by the Authorized Nuclear Inspector.