

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

APR1400 Design Certification

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. 52-046

RAI No.: 31-7931

SRP Section: 05.02.01.01 - Compliance With the Codes and Standards Rule, 10 CFR 50.55a

Application Section: 5.2.1.1

Date of RAI Issued: 6/16/2015

Question No. 05.02.01.01-1

The requirement in 10CFR50.55a(b)(1)(iii) states that applicants or licensees may use Subarticles NB-3600, NC-3600, and ND-3600 for the seismic design of piping in the 2006 Addenda through the 2008 Addenda, subject to two conditions listed in 10 CFR 50.55a(b)(1)(iii)(A) and (B). DCD Section 3.12.2.1 states that the safety related piping system design and analysis for the APR1400 are performed in accordance with the 2007 edition with 2008 addenda of the ASME Section III. However, in DCD Section 3.12.2.1, only the second provision of 10CFR50.55a(b)(1)(iii) is discussed, regarding the requirements of NB-3656(b). The staff requests the applicant revise the DCD to address both sub-provisions in and discuss in its response to this question how these provisions have been applied in the design and analysis of safety-related piping.

Response

DCD Section 3.12.2.1 will be revised to address the first provision of 10CFR50.55a(b)(1)(iii).

Impact on DCD

DCD Section 3.12.2.1 will be revised as indicated in Attachment.

Impact on PRA

There is no impact on the PRA.

Impact on Technical/Topical/Environmental Reports

There is no impact on any Technical, Topical or Environmental Reports.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

APR1400 DCD TIER 2**3.12.2.1 ASME Boiler and Pressure Vessel Code**

The safety-related piping system design and analysis for the APR1400 are performed in accordance with the 2007 Edition with 2008 addenda of the ASME Section III (Reference 1).

However, for socket weld leg dimensions, ASME Section III, Footnote 11 to Figure NC/ND-3673.2(b)-1 in the 1989 Edition is used for socket weld with leg size less than $1.09 t_n$ instead of Footnote 13 from 2007 Edition and 2008 Addenda to Figures NC/ND-3673.2(b)-1.

When applying Note (1) of Figure NB-3222-1 for Level B service limits, the calculation of P_b stresses includes reversing dynamic loads (including inertia earthquake effects) if evaluation of these loads is required by NB-3223(b).

For ASME Class 1 piping service limits when service limits include reversing dynamic loads, and alternative rules for reversing dynamic loads are used. ←

The non-safety-related piping system design and analysis for the APR1400 are performed in accordance with the 2010 Edition of ASME B31.1 (Reference 2) and the 2010 Edition of ASME B31.3 (Reference 3).

As described in Subsection 3.12.6, all pipe supports are designed in accordance with Subsection NF of the 2007 Edition with 2008 addenda of the ASME Section III.

3.12.2.2 ASME Code Cases

ASME Code cases applicable for the piping systems and pipe supports of the APR1400 are Code Cases N-122-2, N-71-18, and N-249-14 (Reference 4).

Other ASME Code cases may be used if they are conditionally or unconditionally approved in NRC RG 1.84 (Reference 5).

3.12.2.3 Piping System Design Specification and Design Report

The design specification for all ASME Class 1, 2, and 3 piping systems including loading combinations, design data, and other design inputs is to be developed in accordance with ASME Section III. The design specification defines the code and the edition to be applied