

## KHNPDCDRAIsPEm Resource

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**Sent:** Wednesday, July 15, 2015 2:05 PM  
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**Subject:** APR1400 Design Certification Application RAI 73-8025 (03.09.01 - Special Topics for Mechanical Components)  
**Attachments:** APR1400 DC RAI 73 MEB 8025.pdf; image001.jpg

KHNP,

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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## REQUEST FOR ADDITIONAL INFORMATION 73-8025

Issue Date: 07/15/2015

Application Title: APR1400 Design Certification Review – 52-046

Operating Company: Korea Hydro & Nuclear Power Co. Ltd.

Docket No. 52-046

Review Section: 03.09.01 - Special Topics for Mechanical Components

Application Section:

### QUESTIONS

#### 03.09.01-1

DCD Tier 2, Table 3.9-1, presents the APR1400 design basis initiating events and frequencies used in the stress analysis of ASME *Boiler and Pressure Vessel Code* (BPV Code) Class 1 and Class CS components of the primary system. The staff noticed that the number of event occurrences listed in this table is either higher or lower than the number of event occurrences for similar events listed in the NRC staff's final safety evaluation report for the System 80+ design certification (NUREG-1462, Section 3.9.1). Standard Review Plan (SRP) 3.9.1, Section III.1, states that the list of transients, the number of events estimated for each transient presented in the applicant's SAR, and the method for determining this number are compared to the same information on similar and previously licensed applications and to the acceptance criteria outlined in Subsection II of this SRP section. Any deviations from previous accepted practice are to be noted and the applicant should justify them. Given that APR 1400 DCD, Table 3.9-1 has significantly different values for number of design transient occurrences compared to the design transients of a similar certified design application, in accordance with the SRP 3.9.1, Section III.1, the applicant is requested to provide the bases for these variations (higher/lower occurrences), as compared to previous licensed or certified applications.

#### 03.09.01-2

In DCD Tier 2, Table 3.9-1 note (1), the applicant states that the design life for RCS main components and Class 1 piping is 60 years, and the design life for Class 2 and 3 piping and other components except RCS main components is 40 years. SRP Section 3.9.1, Section III.1, states that the list of transients, the number of events estimated for each transient presented in the applicant's SAR, and the method for determining this number are compared to the same information on similar and previously licensed applications and to the acceptance criteria outlined in Subsection II of this SRP section. Any deviations from previous accepted practice are to be noted and the applicant should justify them. To support the staff's finding associated with SRP Section 3.9.1, Section III.1, the applicant is requested to provide the basis for designing Class 1 piping and components for 60 years and Class 2/3 piping and components for 40 years, as well as to provide the basis for the number of transient cycles in DCD Tier 2, Table 3.9-1 when the 40-year and 60-year columns are identical.

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03.09.01-3

DCD Tier 2, Table 3.9-1 presents the APR1400 design basis initiating events and frequencies used in the stress analysis of ASME *Boiler and Pressure Vessel Code* (BPV Code) Class 1 and Class CS components of the primary system. The staff noticed that the design transient of steam generator tube rupture (SGTR) is included in Level D Service Conditions. In ANSI/ANS-51.1, SGTR is classified as a plant condition 3 event, which appears to be equivalent to the severity of Level B or C events in the APR1400 design. GDC 15 requires that the reactor coolant system and associated auxiliary, control and protection systems be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences. The applicant is requested to provide the justification for why the SGTR is included as a Level D event in the list of transients in DCD Tier 2, Section 3.9.1 versus a Level B or C event.

03.09.01-4

During an audit related to DCD Tier 2, Section 3.9.2, "Dynamic Testing and Analysis of Systems, Structures, and Components," the staff observed that one of the audited reports indicated that the computer code DPVIB was used in the design of the nuclear steam supply system. However, DCD Tier 2, Section 3.9.1 has no description of this computer code. SRP Section 3.9.1 indicates that the DCD should include a list of computer programs to be used in dynamic and static analyses to determine the structural and functional integrity of seismic Category I Code and non-Code items and the analyses to determine stresses. To support the staff's finding associated with this SRP section, the applicant is requested to provide the staff with a DCD markup to include the description of computer code DPVIB in DCD Tier 2, Section 3.9.1.

