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.:	**306-8240**
SRP Section:	**06.02.06 – Containment Leakage Testing**
Application Section:	**6.2.6**
Date of RAI Issue:	**11/16/2015**

Question No. 06.02.06-6

10 CFR Part 50, Appendix J, requires preoperational and periodical containment leakage testing in accordance with the prescriptive requirements in Option A or the performance-based requirements in Option B. DCD Tier 2, Section 6.2.6, specifies the use of Option B for Type A, B, and C containment leakage rate testing. Standard Review Plan (SRP) Section 6.2.6, Regulatory Guide (RG) 1.163 and Section 3.3.1 of ANSI/ANS 58.6 provide 3 cases where Type C tests are not required. DCD Tier 2, Section 6.2.6.3 states that Appendix J, Option B, Type C leakage tests are conducted for all containment isolation valves (CIVs) as specified in DCD Tier 2, Table 6.2.4-1. Section 6.2.6.3 also provides 3 criteria which are used by the applicant to determine which CIV will be Type C tested. However, these 3 criteria are different than the 3 cases specified in the NRC staff's guidance. In addition, DCD Tier 2, Table 6.2.4-1 lists all of the CIVs along with a column indicating whether or not Type C leakage testing will be performed and a separate column listing the justification for not testing. Many of the CIVs listed in the table will not have Type C tests performed and many of those do not provide a justification.

Either revise the 3 criteria in the DCD to be consistent with the 3 cases in the NRC staff's guidance, or provide justification for using different criteria. Also, revise DCD Tier 2, Table 6.2.4-1 to apply the new correct criteria and to include a justification for each valve that is proposed to be excluded from the Type C leak rate test program.

Response

The three criteria for Type C testing of valves in DCD Tier 2, Subsection 6.2.6.3 will be revised to be consistent with the NRC staff's guidance, as indicated in the attachment associated with this response. The Type C valves which are excluded from Type C leak rate testing in Table 6.2.4-1 were selected in accordance with the NRC staff's guidance. Also, the justifications for each of the valves excluded from Type C testing will be revised in Table 6.2.4-1 on the applicants markups associated with the response to RAI 306-8240, Question 06.02.06-9.

Impact on DCD

DCD Tier 2, Subsection 6.2.6.3 will be revised as indicated in the attached markup. Also, refer to the attachment associated with RAI 306-8240, Question 06.02.06-9.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Reports

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

c. Seal on the fuel transfer tube flange (containment end)

d. Electrical penetrations

The test pressure for Type B tests is the calculated peak pressure for the containment, P_a. The test equipment utilized to perform the Type B tests is the same equipment used for Type C tests. The combined leakage rate for all Type B and C tests is less than 0.6 L_a. The individual allowable leakage rates and testing performed on the Type B penetrations are described in the Technical Specifications, Chapter 16.

are performed in accordance with NEI 94-01 and ANSI/ANS-56.8,

6.2.6.3 Containment Isolation Valve Leakage Rate Test (Type C)

of

Type C tests ~~are conducted for~~ containment isolation valves as specified in Table 6.2.4-1. ~~The following criteria are used to determine which containment isolation valves will be subjected to the Type C test.~~

~~a. The penetrating system provides a direct connection between the inside and outside atmospheres of the containment under normal operation.~~

~~b. The system is isolated by containment isolation valves, which close automatically to effect containment isolation in response to a CIAS or CSAS.~~

~~c. The system is not connected to the secondary side of the steam generators.~~

The test equipment to be used during the Type B and C tests consist of a connection to an air supply source, a pressure regulator, an absolute pressure gauge, a flow indicator, and associated valves, or equivalent. Isolation valves are positioned to their post-accident position by the normal method with no accompanying adjustments. Fluid systems are properly drained and vented with the valves aligned to provide a test volume on the isolation valves being tested. For valves that are Type C leak tested, the Type C tests are performed by local pressurization. The pressure is applied in the same direction as that when the valve would be required to perform its safety function, unless it can be determined that a pressure applied in a different direction provides an equivalent or more conservative results.

The appropriate vent and drain connections for testing the containment isolation valves are illustrated in Figure 6.2.4-1 and applicable system piping and instrumentation diagrams (P&IDs).