REVISED 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.:	**125-7975**
SRP Section:	**16 - Technical Specifications**
Application Section:	**TS Section 3.6 and Base**
Date of RAI Issue:	**08/04/2015**

Question No. 16-25

10 CFR 50.36, “Technical Specifications” and 10 CFR 52.47(a)(11) provides the regulatory basis for the following questions. 10 CFR 50.36 sets forth requirements for technical specifications to be included as part of the operating license for a nuclear power facility. Subsection 52.47(a)(11) requires that technical specifications be provided in the application for a design certification.

NUREG-1432, “Standard Technical Specifications-Combustion Engineering Plants,” provides NRC guidance on format and content of technical specifications as one acceptable means to meet 10 CFR 50.36 requirements.

SPR 16, Part III.2.A states, in part, “when reviewing a difference between the proposed TS provision and the reference TS provision, verify that the applicant’s written technical or administrative reasoning in support of the difference is logical, complete, and clearly written."

1. On Page B 3.6.1-2, in the “ASA” section of the bases, the fourth paragraph states, in part, “… an allowable leakage rate of 0.1% of the containment volume per day …” The term “volume” should be replaced with “air weight” to be consistent with key assumptions in the containment pressure response analysis described in DCD Section 6.2. Similar correction should be made on Page B 3.6.2-2, in the “ASA” section of the bases for TS 3.6.2.

2. On Page B 3.6.1-5, in the discussion of SR 3.6.1.1, the redundant paragraph at the end should be removed.

3. The discussion of SR 3.6.6.1 in the bases does not include the basis for the 31-day frequency. The applicant is requested to provide the basis for the stated frequency.

4. The TS 3.6.7 Bases do not provide sufficient supporting information with regard to the need for LCO 3.6.7 requirements. The LCO 3.6.7 statement reads almost the same as the one for LCO 3.9.3. Since the scope of "Applicability" for LCO 3.6.7 is different from

the one for LCO 3.9.3, the staff expects to see a change to LCO 3.6.7.c.1 with respect to the term "equivalent " used in LCO 3.9.3 to mean "a HVAC or vapor barrier" which is not capable to support a pressurized containment condition as shown in the low-power-and-shutdown (LPSD) analysis. The applicant is requested to address the above staff's concerns and revise TS 3.6.7 and its associated bases accordingly.

5. In the discussions of Actions A.1 and A.2, and SR 3.6.7.1 in the Bases, the applicant did not provide the basis for the specified completion times and frequency. Also, for each bracketed information, provide a "Reviewer's Note" to address these COL items.

Response – (Rev. 1)

1. The term “volume” will be replaced with “air weight” on Pages B 3.6.1-2 and B 3.6.2-2 in DCD Tier 2 to be consistent with key assumptions in the containment pressure response analysis described in Section 6.2 as indicated in Attachment 1.

2. The redundant paragraph, “SR frequencies are as required by the Containment Leakage Rate Testing Program. These periodic testing requirements verify that the containment leakage rate does not exceed the leakage rate assumed in the safety analysis” in the Bases for SR 3.6.1.1 will be removed in DCD Tier 2 as indicated in Attachment 2.

3. The basis for the 31-day frequency in SR 3.6.6.1 will be added consistent with the STS as indicated in Attachment 3.

4. In the revised response to RAI 481-8546 for Question 16-149, dated November 7, 2016 (ADAMS Accession No. ML16312A528), Sub-question 1 presents the revised Background section of the Bases for TS 3.6.7 including the operating experiences of currently operating PWR plants during mid-loop operations. Omitted markups for TS 3.6.7 will be incorporated to the DCD by this revision of the response.

5. The basis for the Completion Times for LCO 3.6.7 Required Action A.1 is analogous to the Completion Time stated in NUREG-1432 for LCO 3.9.5 Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level in the condition of no shutdown cooling loops operable or in operation. For that condition, containment penetrations (equipment hatch, airlock and penetrations directly to the outside) are to be closed and secured by various means within four hours. To be consistent with NUREG-1432, the current Completion Time of six hours will be revised to four hours for Required Action A.1 as indicated in Attachment 5.

   LCO 3.6.7 for the APR1400 does not have a Required Action for A.2. Should the penetrations not be closed and secured within four hours, sufficient coolant inventory must be maintained to preclude the impacts on core cooling should a postulated event occur. Also, the Completion Time for B.1 is similar to the Completion Time for LCO 3.9.5 Required Action D.1, since restoring water level to the stated value can be accomplished within six hours and the Completion Time of six hours is included in single brackets. In addition, the RCS Level stated in Required Action B.1 will be revised

to be consistent with the definition of Reduced RCS Inventory in TS Section 1.1 as indicated in Attachment 5.

Verification that the penetrations are in the required status every 12 hours as specified in SR 3.6.7.1 is conservative. This check every shift while in a reduced inventory condition is much more frequent than the 72 hours during core alterations specified in SR 3.9.3.1 or the seven days in SR 3.9.3.1 during core alterations specified in NUREG-1432. The frequency of 12 hours is included in single brackets and can be changed based upon plant specific information.

Impact on DCD

Same as changes described in impact on Technical Specification section.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

The original response indicated future incorporation of Technical Specification changes; these proposed changes have already been incorporated into Revision 1 of the Technical Specifications. Therefore, only the applicable change to Revision 1 of the DCD for this revision is included in the Attachment.

Impact on Technical/Topical/Environmental Reports

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

3.6 CONTAINMENT SYSTEMS

3.6.7 Containment Penetrations - Shutdown Operations

LCO 3.6.7 The containment building penetrations shall be in the following status:

a. The equipment hatch closed and held in place by [a minimum of four bolts,]

b. One door in each airlock closed,

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:

1. Closed by a manual or automatic isolation valve, blind flange, or

equivalent, or

2. Exhausting through OPERABLE Containment Purge System air cleaning units (ACUs), and is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.

APPLICABILITY: MODE 5 with Reactor Coolant System (RCS) loops not filled,
MODE 6 with the water level < 7.0 m (23 ft) above the top of reactor vessel flange

----------NOTE----------
The equipment hatch is closed before the manway of pressurizer (PZR) opens in MODE 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	A.1 Restore containment penetration to required status.	[4 hours]
B. Required Action and Completion Time not met.	B.1 Restore RCS level to > [38.72 m (127 ft 1/4 in)].	[6 hours]