KHNPDCDRAIsPEm Resource

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Sent: Monday, July 27, 2015 10:31 AM
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Subject: APR1400 Design Certification Application RAI 120-7977 (16 - Technical Specifications)
Attachments: APR1400 DC RAI 120 SPSB 7977.pdf; image001.jpg

KHNP

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

Thank you,

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REQUEST FOR ADDITIONAL INFORMATION 120-7977

Issue Date: 07/27/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 16 - Technical Specifications
Application Section: TS Section 3.7 and Bases

QUESTIONS

16-24

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. APR1400 TS Table 3.7.1-2 contains a Note that allows the "as-left" tolerance for the lift setting to be ±3%. In the NUREG-1432, this allowance is discussed in the TS Bases for SR 3.7.1.1, with the ±3% placed in brackets indicating further supporting information to meet ASME Code, Section III, NC 7000 requirements. ASME Code, Section III, NC 7512.2, “Set Pressure Tolerance,” states, in part, “ … The set pressure tolerance plus or minus shall not exceed the following: 2 psi (15 kPa) for pressures up to and including 70 psi (480 kPa), 3% for pressures from 70 psi (480 kPa) to 300 psi (2 MPa), 10 psi (70 kPa) for pressures over 300 psi (2 MPa) to 1,000 psi (7 MPa), and 1% for pressures over 1,000 psi (7 MPa). The set pressure tolerance shall apply unless a greater tolerance is established as permissible in the Overpressure Protection Report (NC-7200) and in the safety valve Design Specification (NCA-3250).” The applicant is requested to provide a reference to the applicable documents in the TS Bases.

2. APR1400 TS 3.7.5 provision are the same as NUREG-1432 with minor editorial changes to reflect the 4 AWF pumps versus 3 AFW pumps in the CE PWR design. However, because of the major differences in the arrangement of steam supply source to the turbine-driven pumps, the NUREG-1432 Condition A regarding the steam supply source is not applicable to the APR1400 design and should be removed. The applicant is requested to revise Condition A and the remaining Conditions accordingly, including adjustment to the TS Bases, as appropriate.
3. LCO 3.7.5 states "Four independent auxiliary feedwater (AFW) trains shall be OPERABLE." On Page B 3.7.5-1, in the "Background" section of the TS Bases, the 1st paragraph states, in part, " ... The auxiliary feedwater (AFW) pumps take suction through separate and independent suction lines from the auxiliary feedwater storage tanks (AFWSTs) (LCO 3.7.6) and pump to the steam generator secondary side via a separate and independent connection to the main feedwater (MFW) piping inside containment." DCD Subsection 10.4.9.2.1, "General Description" states, in part, " ... One motor-driven pump and one turbine-driven pump are configured into one mechanical division and joined together inside containment to feed their respective SG through a common auxiliary feedwater (AFW) header, which connects to the SG downcomer feedwater line." Also, DCD Subsection 10.4.9.1.1, "Functional Requirements," states, in part, " ... The AFWS has two 100 percent capacity auxiliary feedwater storage tanks (AFWSTs)," and in DCD Figure 10.4.9-1, a common suction header from each tank is shown to be shared by two pumps in one mechanical division as stated above. In addition., the staff noted that in DCD Table 10.4.9-2, the AFW flow modulating valve in the turbine-driven train is powered from a different

Class 1E division than the one for other controls for that train. The applicant is requested to clarify the inconsistency between the supporting information in the TS Bases and the system description in the DCD.

4. The SR 3.7.5.4 Note b. is not necessary, and should be removed. It is clearly implied by the SR description.

5. On Page B 3.7.5-2, in the "Background" section of the TS Bases, the 8th paragraph states, in part, " ... The AFAS logic is designed to feed its respective steam generators with low levels, but the AFW flow to the ruptured steam generator is terminated manually by operator action within 30 minutes after the secondary side pipe rupture event." In DCD Chapter 15, credits for "operator actions" are allowed only after 30 minutes from the start of the initial event. The applicant is requested to address this inconsistency.

6. On Page B 3.7.5-2, add "DCD" to "Subsection 10.4.9 (Reference 1)", use "AFWS" in place of "AF system."

7. On Page B 3.7.5-3, in the "LCO" section of the TS Bases, the applicant does not include a discussion on why four 100% capacity pumps are required to be OPERABLE for the AFWS. The applicant is requested to revise the TS Bases to include such information.

8. On Page 3.7.8-2, correct editorial error in SR 3.7.8.1: Replace "CCW" with "ESW" in the Note.

9. The applicant combines two LCOs in NUREG-1432 for Control Room Air Cleanup System (LCO 3.7.11) and Control Room Air Temperature Control System (LCO 3.7.12) into one APR1400 LCO 3.7.11, Control Room HVAC System (CRHS). Although the combined provisions are more conservative for a Condition with one Air Temperature Control train inoperable (e.g., specified CT of 7 days instead of 30 days), it is unclear how the provisions of Condition A with one division of CRHS inoperable are applied to case where one or two of the four 100% capacity air handling units (AHUs) are inoperable. The applicant is requested to use the format provided in NUREG-1432 so that inoperablity of individual AHU can be clearly addressed and required action can be implemented effectively.

10. The use of the term “division” in TS 3.7.11 is confusing and not consistent with its use throughout the APR1400 TS. In most cases, the term “subsystem” is the correct term that is consistent with terminology in the STS.

11. Modes 5 and 6 are listed in the scope of LCO 3.7.11 applicability. The staff could not find a discussion in the Bases that supports the need for LCO 3.7.11 in Modes 5 and 6.

12. APR1400 TS 3.7.11 does not have provision to address control room personnel protection against toxic gases release events.

13. SR 3.7.11.5 states "verify each CRSRS division has the capacity to remove design heat load" with 18-month Frequency. Each division has 2X100% AHUs. The applicant should provide further details on how all AHUs available in a division will be tested (e.g., using staggered-test-basis to test both AHUs).

14. LCO 3.7.16 states “The combination of initial enrichment and burnup of each spent fuel assembly stored in Region II shall be within the acceptable burnup domain of Figure 3.7.16-1 or in accordance with Specification 4.3.1.1.”

The equivalent STS LCO 3.7.18 states “The combination of initial enrichment and burnup of each fuel assembly stored in [Region 2] shall be within the acceptable [burnup domain] of Figure 3.7.18-1 [or in accordance with Specification 4.3.1.1].”

The APR1400 TS 3.7.16 provisions and their associated supporting information in the TS Bases are not consistent with guidance in the STS in that complete information regarding NRC-approved documents for the high-density (Region II) storage of the spent fuel assemblies is not provided in either the TS Bases or TS 4.3 provisions. The applicant is requested to address this missing information.

15. On Page 3.7.17-1, correct editorial error in LCO Note 1: Replace "103" with "10^3."


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