

## **KHNPDCDRAIsPEm Resource**

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**From:** Ward, William  
**Sent:** Friday, August 07, 2015 4:37 PM  
**To:** 'apr1400rai@khnp.co.kr'; KHNPDCDRAIsPEm Resource; 'Chang, Harry'; 'Yunho Kim (yshh8226@gmail.com)'; jiyong.oh5@gmail.com; daegeun.ahn@gmail.com; Mannon, Steven (steven.mannon@aecom.com)  
**Cc:** Ciocco, Jeff; Lee, Samuel; Dias, Antonio; Umana, Jessica; Le, Hien  
**Subject:** APR1400 Design Certification Application RAI 133-7978 (16 Technical Specifications)  
**Attachments:** APR1400 DC RAI 133 SPSB 7978.pdf

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. However, KHNP requests, and we grant, 60 days to respond to the RAI question. We may adjust the schedule accordingly.

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

Thank you,

**William R. Ward, P.E.**  
**Senior Project Manager**  
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**Washington, DC, 20555-0001**  
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**Received Date:** 8/7/2015 4:37:13 PM  
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**U.S.NRC**

United States Nuclear Regulatory Commission

*Protecting People and the Environment*

## REQUEST FOR ADDITIONAL INFORMATION 133-7978

Issue Date: 08/07/2015  
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 3.9 and Bases

### QUESTIONS

#### 16-31

10 CFR 50.36, "Technical Specifications" and 10 CFR 52.47(a)(11) provide 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."

Staff needs to evaluate all technical differences from standard TS (STS) NUREG-1432, STS Combustion Engineering Plants, Rev. 4, which is referenced by the DC applicant in DCD Tier 2 Section 16.1, and the docketed rationale for each difference because conformance to STS provisions is used in the safety review as the initial point of guidance for evaluating the adequacy of the generic TS to ensure adequate protection of public health and safety, and the completeness and accuracy of the generic TS Bases.

1. TS 3.9.2 provisions are identical to NUREG-1432, Revision 4. However, for consistency, Action A.2 should be revised similar to Action C.1 in TS 3.9.4 and TS 3.9.5.
2. LCO 3.9.3.a states "The equipment hatch closed and held in place by four bolts." In NUREG-1432, the term "four" is enclosed in brackets to indicate the need for detailed information on the bolt material and size, and associated calculations which support their capability to at least carry the equipment hatch dead weight. The applicant is requested to provide a reference to the document that contains these details or place the term "four" within brackets and add a "Reviewer's Note" in the Bases to address this COL item.
3. New TS provisions are added to TS 3.9.3 for controls of CORE ALTERATION activities. This is inconsistent with implementation of TSTF-471 which removes them.
4. On Page 3.9.3-1, correct editorial error as follows: " 2. ~~Is~~Capable of being closed ..."
5. The LCO 3.9.4 Note and hence Action A.1, are stated differently from those presented in NUREG-1432. As a result, the discussion of these items in the generic TS Bases are not consistent with the stated requirements. The applicant is requested to provide the basis for the difference and to address the inconsistency between the generic TS operability and action requirements and the associated Bases.

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6. On Page 3.9.4-1, correct editorial error as follows: " A.3 Initiate action to ~~satisfy~~ restore one SCS train ..."
7. On Page 3.9.4-2, correct indentation of "OR" to the second logic level.
8. On Page 3.9.5-1, correct editorial error as follows: For Required Actions A.1 and A.2, replace "AND" with "OR" to match STS 3.9.5 Required Actions A.1 and A.2.
9. Action B.1 is stated differently from the one presented in NUREG-1432. As a result, the discussion of this item in the Bases are not consistent with the stated requirement. The applicant is requested to provide the basis for the difference and to address the inconsistency between the generic TS action requirement and the associated Bases.
10. In generic TS 3.9.5, "Shutdown Cooling System (SCS) and Coolant Circulation – Low Water Level," LCO 3.9.5.b states, "The heat removal system shall be in the following status: ...  
b. With REDUCED RCS INVENTORY, the containment spray pump in the same train as an operating SCS train shall be OPERABLE." This containment spray pump operability requirement, which is not in STS LCO 3.9.5, is specified to address safety concerns during Mid-Loop operation as identified in GL 88-07. The STS NUREG-1432 Condition B (No [SCS train] OPERABLE or in operation) and the associated Required Actions are presented as two different Conditions in generic TS 3.9.5; Conditions B and E. In addition, since a containment spray pump may be substituted for an SCS pump, Conditions C and D are provided to address when a required containment spray pump is inoperable with the unit in Mode 6 with reduced RCS inventory. The applicant is requested to revise Condition E to reflect better coordination between LCO 3.9.5 ACTION E and LCO 3.6.7 when the plant is in a "REDUCED RCS INVENTORY" condition.
11. On Pages 3.9.4-2, 3.9.5-2, correct indentation of "OR" to the second logic level.
12. SR 3.9.5.1 does not state the minimum reactor coolant circulating flow of 4150 gpm as in SR 3.9.4.1. The applicant is requested to add this acceptance criterion to SR 3.9.5.1.
13. New TS provisions are added to TS 3.9.6 for controls of CORE ALTERATION activities. This is inconsistent with implementation of TSTF-471, which removed them.
14. On Page B 3.9.6-1, correct format error as follows: Relocate the sentence "Refueling water level satisfies LCO SELECTION CRITERION 4" to the end of the "Applicable Safety Analyses" section of the Bases for generic TS 3.9.6.
15. Consistent with AP1000 GTS and ESBWR GTS, request that applicant add an LCO to preclude irradiated fuel movement in MODE 6 before expiration of the fission product decay time assumed in the limiting fuel handling accident (72 hours; see Applicable Safety Analyses section of Bases for generic TS 3.9.3). As an initial condition of the fuel handling accident analysis, decay time satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

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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.

Staff needs to evaluate all technical differences from standard TS (STS) NUREG-1432, STS Combustion Engineering Plants, Rev. 4, which is referenced by the DC applicant in DCD Tier 2 Section 16.1, and the docketed rationale for each difference because conformance to STS provisions is used in the safety review as the initial point of guidance for evaluating the adequacy of the generic TS to ensure adequate protection of public health and safety, and the completeness and accuracy of the generic TS Bases.

Using consistent phrasing of similar provisions is an important human factors consideration employed in STS. In keeping with adherence to this consideration, the applicant is requested to correct the grammar of the Frequency of generic TS SR 3.9.3.1, and use the phrase "within containment" instead of "in the containment building" so that it states: "Within 72 hours prior to the start of movement of irradiated fuel within containment AND Once per 7 days during CORE ALTERATIONS or movement of irradiated fuel within containment"