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## 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.: 260-8283  
SRP Section: 18 – Human Factors Engineering  
Application Section: 18.6 Task Analysis  
Date of RAI Issue: 10/19/2015

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### **Question No. 18-31**

Section 5.4 (1), “Review Criteria,” of NUREG-0711 states that the applicant should select tasks for analysis that represent the “full range of plant operating modes...The chosen tasks should cover...tasks related to monitoring of automated systems that are important to plant safety,...”

Section 4, “Implementation, APR1400-E-I-NR-14004-P, “Task Analysis Implementation Plan” (TA IP), Revision 0, includes wording which differs from the NUREG-0711 wording above.

1. Describe how “tasks related to the monitoring of automated systems that are important to plant safety” are included in the task analysis scope.
2. Revise the submittal as necessary.

### **Response**

Item 4 in Section 4.1, “Task Selection,” in the TA IP will be revised to indicate that the TA task selection methodology ensures that tasks related to the monitoring of automated systems that are important to plant safety and power production are encompassed, as indicated in the attachment associated with this response.

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### **Impact on DCD**

There is no impact on the DCD.

### **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**

Technical report APR1400-E-I-NR-14004-P/NP, Rev.0, "Task Analysis Implementation Plan," will be revised, as indicated in the Attachment associated with this response.

**4. IMPLEMENTATION**

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4.1. Task Selection

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### **Question No. 18-35**

Table 5-1, “TA Implementation Summary,” in the TA IP identifies the applicable IP subsection and SME for specific implementation activities.

Table 4-1, “Responsibilities for the Human Factors Engineering Design Team,” in APR1400-E-I-NR-14001-P, “Human Factors Engineering Program Plan” (HFEP), Revision 0, provides a matrix of responsibilities for various design groups during the defined stages of HFE design.

Section 4.3.3, “Human Factors Engineering Organizational Composition,” in the HFEP identifies the members of various design groups, but does not list plant operations SMEs as members.

1. Align the information in the TA IP with the information in the HFEP.
2. Revise the documentation as necessary.

### **Response**

The task analysis (TA) is performed entirely by the Operating Group. The A/E Group and NSSS Group are to perform reviews of the Operating Group’s TA work, but those groups do not contain members who are plant operations SMEs.

Subsection 4.3.3, “Human Factors Engineering Organizational Composition,” in “Human Factors Engineering Program Plan (HFEP) Implementation Plan (IP),” APR1400-E-I-NR-14001-P, Rev 0, states that the plant operations experts (i.e., plant operations SMEs) are included in the operating group. Therefore, the plant operations SMEs are already listed in the HFEP IP.

Table 4-1, “Responsibilities for the Human Factors Engineering Design Team,” in HFEP IP will be revised to clarify the division of responsibilities.

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**Impact on DCD**

There is no impact on the DCD.

**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**

Technical report APR1400-E-I-NR-14001-P/NP, Rev.0, "Human Factors Engineering Program Plan Implementation Plan," Table 4-1 will be revised, as indicated in the Attachment associated with this response.

Table 4-1

Responsibilities for the Human Factors Engineering Design Team

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### **Question No. 18-36**

Section 5.4(3), "Review Criteria," of NUREG-0711 states in part that, "The detailed task descriptions should address (as applicable to the task) the topics listed in Table 5-1." Table 5-1, "Task Considerations," of NUREG-0711 states in part that the task descriptions should address information about the accuracy of parameters.

Subsection 3.2.4, "Display Update, Freeze and Data Quality," of APR1400-E-I-NR-14012-P, "Style Guide," Revision 0, states that "each variable should be displayed with an accuracy sufficient for the users to perform their tasks." Additionally, Subsection 3.1.2, "Human-System Interface Inventory," in the TA IP includes a similar statement; however, accuracy for instrumentation used to monitor and/or control plant parameters is not listed as a field in the HSI database in Subsection 4.2.2, "Human-System Interface Inventory," of the TA IP. (There may have been an attempt to include this information in Item #10 in Section 4.2.2.1, "Process Monitoring," but the information in this item is not clearly worded and the identified parameter is not the same as 'accuracy'.)

1. Describe how task analysis addresses information about the accuracy of parameters monitored and/or controlled by operators.
2. Revise the submittal as necessary.

### **Response**

A description of 'accuracy' will be added to Subsection 4.2.2.1, "Human-System Interface Inventory," of the TA IP.

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**Impact on DCD**

There is no impact on the DCD.

**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**

Technical report APR1400-E-I-NR-14004-P/NP, Rev.0, "Task Analysis Implementation Plan," Subsection 4.2.2.1 will be revised, as indicated in the attachment associated with this response.



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4.2.2.1. Process Monitoring

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4.2.2.2. Component Control

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### **Question No. 18-37**

Section 5.4(3), “Review Criteria,” of NUREG-0711 states in part that “the detailed task descriptions should address (as applicable to the task) the topics listed in Table 5-1.” Table 5-1 of NUREG-0711 states in part that the task descriptions should address information about the situational and performance shaping factors.

Item 22 in Section 4.2.1, “Task Narrative,” in the TA IP discusses performance shaping factors (PSFs). The TA IP lists examples of PSFs; however, some of the examples from Table 5-1 of NUREG-0711 are not listed (e.g., stress, time pressure, and reduced staffing).

1. Describe how the examples of performance shaping factors (PSFs) listed in Table 5-1 of NUREG-0711 are included in the task narrative.
2. Revise the documentation as necessary.

### **Response**

Item 22 in Section 4.2.1, “Task Narrative,” in the TA IP will be revised to include the situational and performance shaping factors listed in Table 5-1 of NUREG-0711, as indicated in the attachment associated with this response.

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### **Impact on DCD**

There is no impact on the DCD.

### **Impact on PRA**

There is no impact on the PRA.

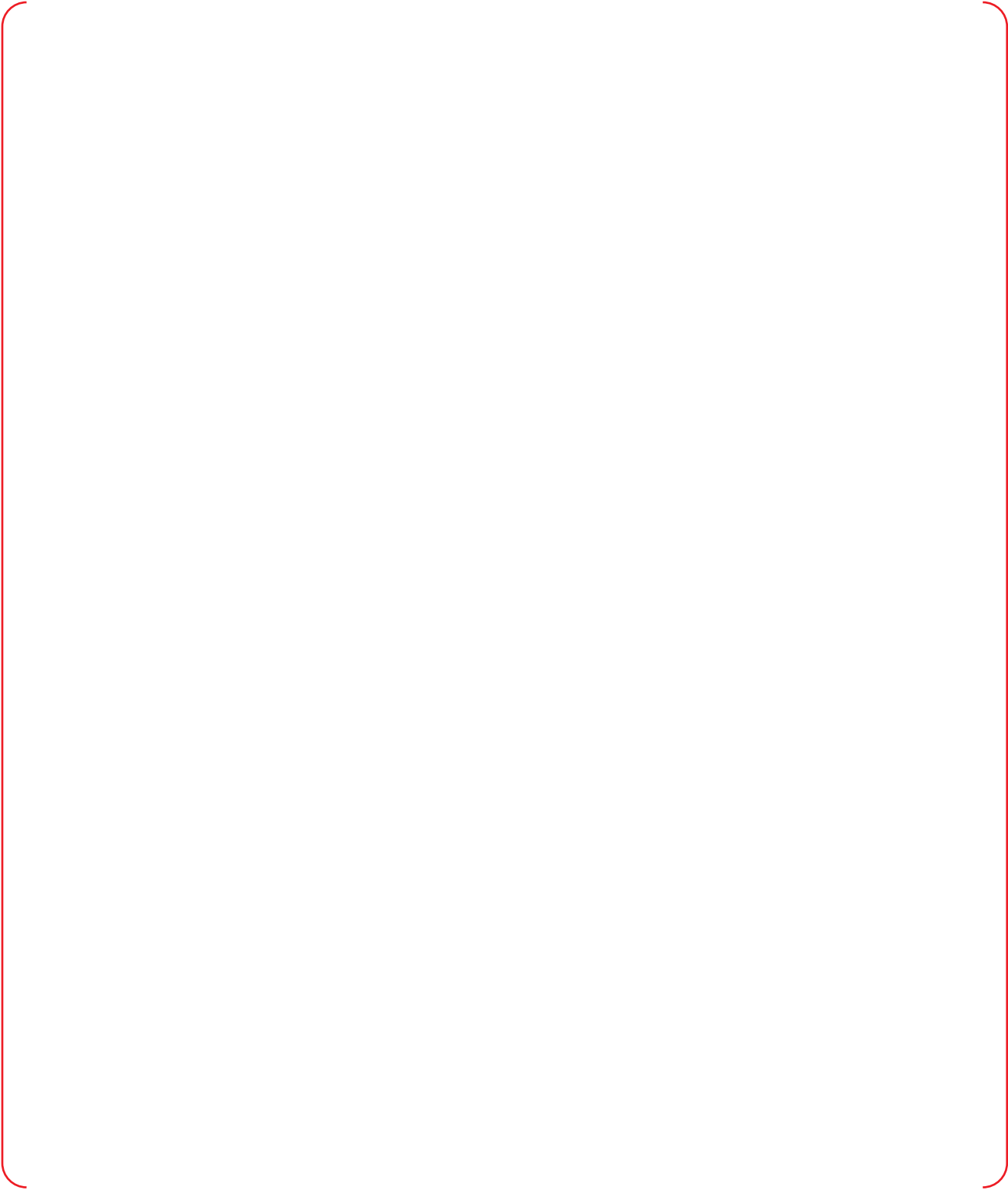
**Impact on Technical Specifications**

There is no impact on the Technical Specifications.

**Impact on Technical/Topical/Environmental Reports**

Technical report APR1400-E-I-NR-14004-P/NP, Rev.0, "Task Analysis Implementation Plan," will be revised, as indicated in the Attachment associated with this response.

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4.2.2. Human-System Interface Inventory

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