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.:	**283-8229**
SRP Section:	**14.02 - Initial Plant Test Program - Design Certification and New License Applicants**
Application Section:	**14.2**
Date of RAI Issue:	**11/02/2015**

Question No. 14.02-62

General Design Criterion (GDC) 1, “Quality standards and records” of Appendix A, “General Design Criteria for Nuclear Power Plants” to 10 CFR Part 50 states, in part, that structures, systems, and components important to safety shall be tested to quality standards commensurate with the importance of the safety functions to be performed.

RG 1.68 also states that the ITP should include testing the performance of non-safety related risk significant systems. These items are identified in DCD Table 17.4-1.

In review of DCD Table 17.4-1 NRC staff observes the description of SSCs that are non-safety but risk significant as seen in index numbers 183, 184, and 375 of table 17.4-1. Staff review of 14.2.12.1.103 and 14.2.12.1.105 does not identify specific test methods or acceptance criteria to test the described SSC.

Staff requests the following information:

1. Provide a description of what key SSCs would be identified by the Expert Panel for index numbers 184 and 375.
2. Provide a description of the testing method to verify the operation of the Gaseous Radwaste System – Containment Isolation Valve in section 14.2.12.1.105 or wherever applicable.
3. Provide a description of the testing method to verify the operation of ‘key SSCs’ in the Gaseous Waste Management System in 14.2.12.1.105 or wherever applicable.
4. Provide a description of the testing method to verify the operation of ‘key SSCs’ in the Liquid Waste Management System in section 14.2.12.1.103 or wherever applicable.

Please address these items and provide a markup for the proposed DCD changes.

Response

KHNP has reviewed the subject question and understands the staff's request. KHNP is in the process of upgrading the test plans presented in Section 14.2 of the DCD. This effort is focused on adding additional SSCs that are important to safety and risk significant as well as increasing the level of detail described in the DCD for test prerequisites, test methods and acceptance criteria for the various tests. It has been determined that the actions to be taken as a result of this question is within the scope of the upgrade effort. Therefore, KHNP will address the noted items in the upgrade effort, which is scheduled to be completed by February 1, 2016. A revised response to this question that incorporates the results of the upgrade effort will be submitted to the NRC after completion.

Impact on DCD

Section 14.2 of the DCD Tier 2 will be revised by February 1, 2016.

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 Environment Report.

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Question No. 14.02-63

In DCD section 14.2.12.1.103 the applicant describes test methods used to test the features of the LWMS. In the test methods the applicant describes the following:

> "Demonstrate that discharge isolation features and other system controls function properly. Simulate a high-radiation signal to the LWMS discharge radiation monitor."
>
> "Verify alarms, indicating instruments, and status lights are functional. Simulate a high- radiation signal to the LWMS discharge radiation monitor and verify alarm actuation."

In review of "simulate a high-radiation test signal," NRC staff believes that this implies that an electric signal will be used in place of a radiation source. NRC staff finds that this method does not test the system as a whole as it does not functionally test the radiation detector which is an essential component. Testing of this component is essential in verifying information that would be used to justify compliance with 10 CFR 50 Appendix I Dose Objectives, 10 CFR 20 Appendix B Table 2 limits, and 10 CFR 20.1301 and 1302 dose limits to a member of the public.

NRC staff requests that the applicant address the use of a radiation source in testing the system features, controls alarms, indicating instrumentation, and status lights are functional for the LWMS.

Please address these items and provide a markup for the proposed DCD changes.

Response

KHNP has reviewed the subject question and understands the staff's request. KHNP is in the process of upgrading the test plans presented in Section 14.2 of the DCD. This effort is focused on adding additional SSCs that are important to safety and risk significant as well as increasing the level of detail described in the DCD for test prerequisites, test methods and acceptance criteria for the various tests. It has been determined that the actions to be taken as a result of this question is within the scope of the upgrade effort. Therefore, KHNP will address the noted items in the upgrade effort, which is scheduled to be completed by February 1, 2016. A revised response to this question that incorporates the results of the upgrade effort will be submitted to the NRC after completion.

Impact on DCD

Section 14.2 of the DCD Tier 2 will be revised by February 1, 2016.

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 Environment Report.

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Question No. 14.02-64

In DCD section 14.2.12.1.105 the applicant describes test methods used to test the features of the GWMS. In the test methods the applicant describes the following:

> "Demonstrate that discharge isolation features and other system controls function properly. Simulate a high-radiation signal to the GWMS discharge radiation monitor."
>
> "Verify alarms, indicating instruments, and status lights are functional. Simulate a high- radiation signal to the GWMS discharge radiation monitor and verify alarm actuation in the main control room."

In review of "simulate a high-radiation test signal," NRC staff believes that this implies that an electric signal will be used in place of a radiation source. NRC staff finds that this method does not test the system as a whole as it does not functionally test the radiation detector which is an essential component. Testing of this component is essential in verifying information that would be used to justify compliance with 10 CFR 50 Appendix I Dose Objectives, 10 CFR 20 Appendix B Table 2 limits, and 10 CFR 20.1301 and 1302 dose limits to a member of the public.

NRC staff requests that the applicant address the use of a radiation source in testing the system features, controls alarms, indicating instrumentation, and status lights are functional for the GWMS.

Please address these items and provide a markup for the proposed DCD changes.

Response

KHNP has reviewed the subject question and understands the staff's request. KHNP is in the process of upgrading the test plans presented in Section 14.2 of the DCD. This effort is focused on adding additional SSCs that are important to safety and risk significant as well as increasing the level of detail described in the DCD for test prerequisites, test methods and acceptance criteria for the various tests. It has been determined that the actions to be taken as a result of this question is within the scope of the upgrade effort. Therefore, KHNP will address the noted items in the upgrade effort, which is scheduled to be completed by February 1, 2016. A revised response to this question that incorporates the results of the upgrade effort will be submitted to the NRC after completion.

Impact on DCD

Section 14.2 of the DCD Tier 2 will be revised by February 1, 2016.

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 Environment Report.