
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.: 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. 14.02-63

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.

Response – Rev. 1

As a result of the upgrade effort described in the original response (ref. KHNP submittal MKD/NW-16-0156L “Submittal of Revised DCD Section 14.2 Initial Plant Test Program” dated February 24, 2016; ML16056A003), the contents of Section 14.2.14.1.103 of DCD Tier 2 on the Liquid Radwaste System (LRS) Test has been generally enhanced.

Since the LRS discharge radiation monitor is considered as a part of the Process and Effluent Radiological Monitoring System (PERMS), the test for the radiation monitor, including the functionality of the detector, alarms, status lights, etc., will be performed in accordance with Section 14.2.12.1.106. The DCD Section 14.2.12.1.103 pertains to the verification that the LRS discharge valve closes and pump operation stops upon receipt of a high radiation signal from the radiation monitors. One of the changes proposed in the referenced upgrade of 14.2.12.1.103 was to include a reference to Section 14.2.12.1.106 in the ITP related to the test method of the radiation monitor.

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

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

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.: 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. 14.02-64

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 components 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.

Response – Rev. 1

As a result of the upgrade effort described in the original response (ref. KHNP submittal MKD/NW-16-0156L “Submittal of Revised DCD Section 14.2 Initial Plant Test Program” dated February 24, 2016; ML16056A003), the contents of Section 14.2.12.1.105 of DCD Tier 2 on the Gaseous Radwaste System (GRS) Test has been generally enhanced.

Since the GRS discharge radiation monitor is considered a part of the Process and Effluent Radiological Monitoring System (PERMS), the test for the radiation monitor, including the functionality of the detector, alarms, status lights, etc., will be performed in accordance with Section 14.2.12.1.106. DCD Section 14.2.12.1.105 pertains to the verification that the GRS discharge valve closes upon receipt of a high radiation signal from the radiation monitors. One of the changes proposed in the referenced upgrade of 14.2.12.1.105 was to include a reference to Section 14.2.12.1.106 in the ITP related to the test method of the radiation monitor.

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

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