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.:	**497-8622**
SRP Section:	**09.01.03 – Spent Fuel Pool Cooling and Cleanup System**
Application Section:	**9.1.3**
Date of RAI Issue:	**06/17/2016**

Question No. 09.01.03-7

Regulatory Guide 4.21 describes a method acceptable to the U.S. Nuclear Regulatory Commission (NRC) for use in the implementation of Title 10, Section 20.1406, “Minimization of Contamination and Radioactive Waste Generation: Life-Cycle Planning”.

DCD Tier 2 Section 9.1.3 includes COL Item 9.1(1) requiring the COL applicant to provide operational procedures and maintenance program as related to leak detection and contamination control.

As discussed in RAI 246-8307, Question 09.02.02-3, the staff finds that radiological programs should be addressed in Chapters 11 and/or 12 of the DCD. The staff questions the need for such repetitive approach when identifying almost identical COL Items throughout the application. Instead, there should be a singular, encompassing COL item addressing the whole plant operation. The existence of multiple (and almost identical) COL items can become a burden to any COL applicant and the staff.

The staff requests the applicant to remove COL 9.1(1) to ensure that the concerns expressed by COL 9.1(1) are addressed in Chapter 11 and/or 12 of the DCD.

Response

The intent of this RAI Question, to request the change to singular COL items for the radiological programs for the systems described in Chapter 9, has also been addressed in RAI 246-8307 Question 9.2.8-3.

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.

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Question No. 09.01.03-8

10 CFR 52.47(a)(2) requires that a standard design certification applicant provide a description and analysis of the structures, systems, and components (SSCs) of the facility, with emphasis upon performance requirements, the bases, with technical justification therefore, upon which these requirements have been established, and the evaluations required to show that safety functions will be accomplished.

SRP 9.1.3, Section III, Item 8, indicates that the reviewer should also consider the appropriateness of identified COL action items.

COL item 9.1(2) requires the COL applicant to maintain complete documentation of system design, construction, design modifications, field changes, and operations. The items addressed by this COL item, with the exception of the system design and design modifications, are post licensing actions that cannot be completed prior to the issuance of a COL license. Since the SFPCCS is part of the design being certified, when referenced by a COL application, it will become part of the licensing basis for the COL. Design modification to the SFPCCS in the COL application would be considered a departure and would be required to be identified as such in a COL application, and the NRC will review the change if required. Once a COL is issued, changes to the COL must be in accordance with 10CFR 52.98, “Finality of combined license; information requests,” which provides information on what is required for changes to or departures from information within the scope of the reference design.

The staff finds unclear as to what post licensing commitments are being sought.

The applicant is requested to provide the basis for the COL item and to discuss why post licensing aspects such field changes and operations are included, or to remove the COL item.

NOTE: This RAI echoes the staff concerns and reasoning already presented in RAI 246-8307 Question 09.02.02-2.

Response

DCD Tier 2, COL Item 9.1(2) will be revised as indicated in the attachment to clarify what is required of the COL applicant. The COL Item is clarified to include only the system design and design modifications and to exclude construction, field changes, and operations. This COL item expressively provides the commitment to the regulatory requirement in RG 4.21, Appendix A-3, item (a), to maintain system design information for the life-cycle of the facility to insure the availability of documentation for decommissioning.

This approach is similar and consistent with the response to RAI 246-8307 Question 9.2.2-2. This COL item is specific to the SFPCCS, while RAI 236-8307, Question 9.2.2-2 is specific to TGBCCW.

Impact on DCD

DCD Tier 2, Subsections 9.1.3.2.3, 9.1.6, and Table 1.8-2 (11 of 29) will be revised as indicated in the Attachment.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on Technical Specifications.

Impact on Technical/Topical/Environmental Reports

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

Table 1.8-2 (11 of 29)

Item No.	Description
COL 8.3(1)	The COL applicant is to provide and to design a mobile generator and its support equipment.
COL 8.3(2)	The COL applicant is to describe and provide detailed ground grid and lightning protection.
COL 8.3(3)	The COL applicant is to provide testing, inspection, and monitoring programs for detecting insulation degradation of underground and inaccessible power cables within the scope of 10 CFR 50.65.
COL 8.3(4)	The COL applicant is to provide protective device coordination.
COL 8.3(5)	The COL applicant is to provide insulation coordination of surge and lightning protection.
COL 8.3(6)	The COL applicant is to develop the maintenance program to optimize the life and performance of the batteries.
COL 8.3(7)	The COL applicant is to provide short circuit analysis of onsite dc power system with actual data.
COL 8.3(8)	The COL applicant is to describe any special features of the design that would permit online replacement of an individual cell, group of cells, or entire battery.
COL 8.4(1)	The COL applicant is to identify local power sources and transmission paths that could be made available to resupply power to the plant following the loss of a grid or the SBO.
COL 8.4(2)	The COL applicant is to develop detailed procedures for manually aligning the alternate AC power supply when two (Trains A and B) of the four diesel generators are unavailable during a loss of offsite power event.
COL 9.1(1)	The COL applicant is to provide operational procedures and maintenance program as related to leak detection and contamination control.
COL 9.1(2)	The COL applicant is to maintain complete documentation of system design~~, construction,~~ design modifications~~, field changes, and operations.~~
COL 9.1(3)	The COL applicant is to address the load-handling procedures. Load-handling procedures are established for component handling procedures and plant operating procedures in accordance with ASME B30.2. ASME B30.2 requires establishing component handling procedures that include (1) a safe load path for lifting heavy loads to perform special handling component inspections, (2) acceptance criteria prior to lift, and (3) use of steps and proper sequence in handling the load. ASME B30.2 requires plant operating procedure guidelines that include appropriate crane operator training and crane inspections. ASME B30.2 also requires that the load-handling procedures include preparing operating procedures for preoperational load testing and checkouts of interlocks, brakes, hoisting cables, control circuitry, and lubrication of OHLHS equipment.

and system

Decommissioning Planning

a. The SSCs are designed for the full service life and are fabricated as individual assemblies for easy removal, with the exception of the liner plates.

b. The SSCs are designed to facilitate decontamination. Design features, such as the welding techniques that are used and surface finishes, are included to minimize the need for decontamination and the resultant waste generation.

c. The SFPCCS is designed with minimum embedded or buried piping. Piping between buildings is equipped with piping sleeves or tunnel, as applicable, with leak detection features, thus preventing unintended contamination to the environment.

Operations and Documentation

The COL applicant is to maintain complete documentation of system design and system design modifications (COL 9.1(2)).

a. The removal and packaging of spent filter elements and spent resin is designed for remote manual operation. Adequate space is provided around the equipment to enable prompt assessment and responses when required.

b. The combined license (COL) applicant is to provide operational procedures and maintenance programs as related to leak detection and contamination control (COL 9.1(1)). Procedures and maintenance programs are to be completed before fuel is loaded.

c. ~~The COL applicant is to maintain complete documentation of system design, construction, design modifications, field changes, and operations (COL 9.1(2)). Documentation requirements are included as a COL information item.~~

Site Radiological Environmental Monitoring

The SFPCCS is designed to manage radioactive contamination through the storage of spent fuel. The integrity of the SFPCCS is maintained through monitoring, in-service inspection, and the implementation of lessons learned from industry experience. Maintaining the SFPCCS results in a low level of contamination in the facility. Because the SFPCCS is located at higher plant elevations, the potential for environmental contamination of soil and

The two mechanical holding brakes and their controls that are automatically activated when electric power is off or mechanically tripped by over speed or overload devices in the hoisting system are operable for emergency lowering after a single brake failure to stop and hold the hoisting drums.

Both bridge and trolley drives are provided with control and holding braking systems that are automatically applied when the power is shut off or if an overspeed or overload condition occurred because of malfunction or failure in the drive system. Inching control is provided for bridge and trolley motion of 6.35 mm (0.25 in). Limiting devices, mechanical and/or electrical, are provided to control or prevent overtravel and overspeed of the trolley and bridge. Safety devices such as limit-type switches provided for malfunction, inadvertent operator action, or failure are in addition to and separate from the limiting means or control devices provided for operation.

9.1.6 Combined License Information

COL 9.1(1) The COL applicant is to provide operational procedures and maintenance program as related to leak detection and contamination control.

COL 9.1(2) The COL applicant is to maintain complete documentation of system design, ~~construction,~~ design modifications, ~~field changes, and operations~~ and system.

COL 9.1(3) The COL applicant is to address the load-handling procedures. Load-handling procedures are established for component handling procedures and plant operating procedures in accordance with ASME B30.2. ASME B30.2 requires establishing component handling procedures that include (1) a safe load path for lifting heavy loads to perform special handling component inspections, (2) acceptance criteria prior to lift, and (3) use of steps and proper sequence in handling the load. ASME B30.2 requires plant operating procedure guidelines that include appropriate crane operator training and crane inspections. ASME B30.2 also requires that the load-handling procedures include preparing operating procedures for preoperational load testing and checkouts of interlocks, brakes, hoisting cables, control circuitry, and lubrication of OHLHS equipment.