
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.: 213-8222

SRP Section: 12.01 – Assuring that Occupational Radiation Exposures Are As Low as is Reasonably Achievable

Application Section: 12.1

Date of RAI Issue: 09/14/2015

Question No. 12.01-1

10 CFR 20.1101(a) requires that each licensee develop, document, and implement a radiation protection program commensurate with the scope and extent sufficient to ensure compliance with 10 CFR Part 20.

10 CFR 20.1101(b) requires that each licensee use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA).

In FSAR Sections 12.1 and 12.5, the applicant indicates that the COL applicant will provide the radiation protection program. While it is acceptable for the COL applicant to provide this information, COL 12.1(2) only specifies that the program will ensure that occupational exposure will be ALARA and none of the other COL Information Items in 12.1 or 12.5 are clear on if the radiation protection program will ensure that public radiation exposure is ALARA.

In addition, NEI 07-03A, “Generic FSAR Template Guidance for Radiation Protection Program Description” discusses how the radiation protection program will also ensure that doses to members of the public are ALARA. NEI 07-03A is approved by the NRC staff.

Therefore, please update the COL information items in FSAR Section 12.1 and/or 12.5, as appropriate, to clarify that in addition to ensuring the occupational exposure will be ALARA, the radiation protection program described by the applicant will also ensure that public exposure will be ALARA.

Response

DCD Section 12.1.3 and 12.1.4 will be revised to clarify that the operating radiation protection program ensures that the occupational and public exposures will be ALARA.

DCD Section 12.5 includes the following statement with regards occupational and public doses and ALARA.

“To achieve the goal of maintaining occupational and public doses both below regulatory limits and as low as is reasonably achievable (ALARA), the operational radiation protection program shall be developed and implemented by the COL applicant in such a way that the program is clearly and sufficiently described in accordance with all applicable guidance”

Therefore, there is no need for a revision of Section 12.5.

Impact on DCD

DCD Table 1.8-2, Section 12.1.3 and 12.1.4 will be revised as shown in Attachment.

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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Table 1.8-2 (20 of 29)

Item No.	Description
COL 11.5(4)	The COL applicant is to prepare an ODCM that contains a description of the methodology and parameters for calculation of the offsite doses for the gaseous and liquid effluents. The COL applicant is to follow NEI 07-09A as an alternative to providing an offsite dose calculation manual.
COL 11.5(5)	The COL applicant is to provide analytical procedures and sensitivity for selected radioanalytical methods and types of sampling media for site-specific matter.
COL 11.5(6)	The COL applicant is to develop the calibration procedures in accordance with NRC RG 1.33 and 4.15.
COL 11.5(7)	The COL applicant is to develop detailed location and tubing installation and provide the sampling method including the sampling time to acquire representative sampling.
COL 11.5(8)	The COL applicant is to provide operational procedures and maintenance programs related to leak detection and contamination control.
COL 11.5(9)	The COL applicant is to develop a radiological and environmental monitoring program, taking into consideration local land use and census data in identifying all potential radiation exposure pathways. The COL applicant is to follow NEI 07-09A as an alternative to providing a radiological and environmental monitoring program.
COL 12.1(1)	The COL applicant is to provide the organizational structure to effectively implement the radiation protection policy, training, and reviews consistent with operational and maintenance requirements, while satisfying the applicable regulations and Regulatory Guides including NRC RGs 1.33, 1.8, 8.8, and 8.10.
COL 12.1(2)	The COL applicant is to describe the operational radiation protection program to provide reasonable assurance that occupational radiation exposures are ALARA.
COL 12.1(3)	The COL applicant is to describe how the plant follows the guidance provided in NRC RGs 8.2, 8.7, 8.9, 8.13, 8.15, 8.20, 8.25, 8.26, 8.27, 8.28, 8.29, 8.34, 8.35, 8.36, and 8.38.
COL 12.2(1)	The COL applicant is to provide any additional contained radiation sources, such as instrument calibration radiation sources, that are not identified in Subsection 12.2.1.
COL 12.3(1)	The COL applicant is to provide portable instruments and the associated training and procedures in accordance with 10 CFR 50.34(f)(2)(xxvii) and the criteria in Item III.D.3.3 of NUREG-0737.
COL 12.3(2)	The COL applicant is to determine the WARN and ALARM setpoints of the ARMS based on the site-specific conditions and operational requirements



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The COL applicant is to describe the operational radiation protection program to provide reasonable assurance that occupational radiation exposures are ALARA (COL 12.1(2)). The APR1400 radiation protection design is implemented in conjunction with operational procedures and programs. Radiological health and safety procedures are developed and are continually reviewed and updated as necessary to provide reasonable assurance that occupational radiation exposures are ALARA. These procedures incorporate experience gained from plant operations. Improvements suggested during design and operation are incorporated and implemented to continually update the program to maximize protection of the plant personnel, the public, the environment, and the equipment.

The general manager of the radiation protection team is responsible for developing and updating radiological health and safety procedures. The plant manager supervises activities governed by these procedures so that workers are properly protected at all times. All personnel receive the training required to perform their assigned tasks safely.

12.1.3.1 General Operational Considerations for Maintaining Exposures
ALARA

The COL applicant is to describe how the plant follows the guidance provided in NRC RGs 8.2 (Reference 7), 8.7 (Reference 8), 8.9 (Reference 9), 8.13 (Reference 10), 8.15 (Reference 11), 8.20 (Reference 12), 8.25 (Reference 13), 8.26 (Reference 14), 8.27 (Reference 15), 8.28 (Reference 16), 8.29 (Reference 17), 8.34 (Reference 18), 8.35 (Reference 19), 8.36 (Reference 20), and 8.38 (Reference 21) (COL 12.1(3)).

12.1.3.2 Design Features for ALARA During Maintenance and Inspection

The APR1400 design incorporates lessons learned from past designs, as well as the recommendations from NRC RGs 8.8 and 8.10. Design features to provide reasonable assurance that personnel exposure is maintained ALARA during maintenance and inspection activities are as follows:

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for systems and components that handle contaminated or potentially contaminated fluids. Decommissioning considerations are provided in Subsection 12.4.2.

12.1.4 Combined License Information

COL 12.1(1) The COL applicant is to provide the organizational structure to effectively implement the radiation protection policy, training, and reviews consistent with operational and maintenance requirements, while satisfying the applicable regulations and Regulatory Guides including NRC RGs 1.33, 1.8, 8.8, and 8.10.

COL 12.1(2) The COL applicant is to describe the operational radiation protection program to provide reasonable assurance that occupational radiation exposures are ALARA.



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COL 12.1(3) The COL applicant is to describe how the plant follows the guidance provided in NRC RGs 8.2, 8.7, 8.9, 8.13, 8.15, 8.20, 8.25, 8.26, 8.27, 8.28, 8.29, 8.34, 8.35, 8.36, and 8.38.

12.1.5 References

1. NEI 07-08A, "Generic FSAR Template Guidance for Ensuring that Occupational Radiation Exposures are as Low as is Reasonably Achievable (ALARA)," Nuclear Energy Institute, October 2009.
2. Regulatory Guide 1.8, "Qualification & Training of Personnel for Nuclear Power Plants," Rev. 3, U.S. Nuclear Regulatory Commission, May 2000.
3. Regulatory Guide 1.33, "Quality Assurance Program Requirements Operation," Rev. 3, U.S. Nuclear Regulatory Commission, June 2013.
4. Regulatory Guide 8.8, "Information Relevant to Ensuring the Occupational Radiation Exposures at Nuclear Power Stations will be ALARA," Rev. 3, U.S. Nuclear Regulatory Commission, June 1978.