

Request for Additional Information No. 23, Revision 0

6/24/2008

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 12.03-12.04 - Radiation Protection Design Features

Application Section: 12.3 Radiation Protection Design Features

CHPB Branch

QUESTIONS

12.03-12.04-1

Background

The staff developed Regulatory Guide 4.21 (issued in draft as DG-4012) in order to provide guidance to the industry on how to meet the requirements of 10 CFR 20.1406 with respect to minimizing, to the extent practicable, contamination of the facility and the environment, facilitating eventual decommissioning, and minimizing, to the extent practicable, the generation of radioactive waste.

The following 9 design and operational objectives summarize the objectives contained in the Regulatory Position section of RG 4.21. Appendix A of RG 4.21 contains examples of measures that might be taken to address the requirements of 10 CFR 20.1406.

- 1) Minimize leaks and spills and provide containment in areas where such events may occur,
- 2) Provide for adequate leak detection capability to provide prompt detection of leakage for any structure, system, or component which has the potential for leakage,
- 3) Use leak detection methods (e.g., instrumentation, automated samplers) capable of early detection of leaks in areas where it is difficult or impossible to conduct regular inspections (such as for spent fuel pools, tanks that are in contact with the ground, and buried, embedded, or subterranean piping) to avoid release of contamination from undetected leaks and to minimize contamination of the environment,
- 4) Reduce the need to decontaminate equipment and structures by decreasing the probability of any release, reducing any amounts released, and decreasing the spread of the contaminant from the source,
- 5) Periodically review operational practices to ensure that, operating procedures are revised to reflect the installation of new or modified equipment, personnel qualification and training are kept current, and facility personnel are following the operating procedures,
- 6) Facilitate decommissioning by a) maintenance of records relating to facility design and construction, facility design changes, site conditions before and after construction, onsite waste disposal and contamination

and results of radiological surveys, b) minimizing embedded and buried piping, and c) designing the facility to facilitate the removal of any equipment and/or components that may require removal and/or replacement during facility operation or decommissioning,

- 7) Minimize the generation and volume of radioactive waste both during operation and during decommissioning (by minimizing the volume of components and structures that become contaminated during plant operation)
- 8) Develop a conceptual site model (based on site characterization and facility design and construction) which will aid in the understanding of the interface with environmental systems and the features that will control the movement of contamination in the environment,
- 9) Evaluate the final site configuration after construction to assist in preventing the migration of radio-nuclides offsite via unmonitored pathways,

The above list contains a mixture of design and operational objectives. Since Chapter 12 deals with radiation protection related issues, some of these objectives are partially addressed in various Sections of Chapter 12 of the DCD. The subject matter of others (e.g., item number 8 on the conceptual site model) dictates that they be addressed in detail in other sections of the DCD.

A) For those objectives which are more operational or procedural in nature, provide COL action items in the appropriate section of the DCD where the system or concept is described and include a reference to these sections in Chapter 12.3 of the DCD.

B) The information presented in Chapter 12 of DCD Tier 2, Rev. 0 identifies EPR general design features that would minimize the contamination of the facility and environment and would minimize the generation of radioactive waste. However, this information does not address design features that are unique to system designs or their locations in the plant warranting more technical details, and does not identify issues that should be addressed as COL action items. For each of the systems listed below (and for any other plant systems which may generate radioactive waste or could result in the contamination of non-radioactive systems), describe specific design features which are incorporated into the EPR design to comply with the requirements of 10 CFR 20.1406.

1. Fuel Storage and Handling, including fuel transfer tube
2. Process Sampling System
3. Coolant Storage and Transfer System
4. Radioactive Waste Management Systems
5. Equipment, Floor, Chemical, and Detergent Drain Systems
6. Building heating, ventilating and air conditioning systems used to process radioactive process and effluent streams

List these specific design features and/or COL action items in the appropriate section of the DCD where the system is described and include a reference to these sections in Chapter 12.3 of the DCD.