

Request for Additional Information No. 9, Revision 0

06/12/2008

U. S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 08.01 - Electric Power - Introduction

SRP Section: 08.02 - Offsite Power System

Application Section: FSAR Ch 8

EE Branch

QUESTIONS

08.01-1

Page 8.1-3 (8.1.3) of the FSAR states that “a COL applicant will identify site-specific loading differences that raise EDG or Class 1E battery loading, and demonstrate the electrical distribution system is adequately sized for the additional load.” Regulatory Issue Summary (RIS)-2006-06 encourages the agency’s design-centered review approach (DCRA) regarding DC and COL applications and describes the level of standardization of a particular design needed in order to make the DCRA effective. The RIS promotes the standardization of COL applications to facilitate the establishment of a predictable and consistent method for reviewing applications. The staff notes that only approximate sizing information for the main generator, EDG, and SBODG is given. It appears that the exact size for the above equipment is left for the Combined Operating License (COL) applicants to decide based on site specific information. COL applicants proposing different sizes for electrical equipment will require additional time which will impact their review schedules. The staff believes that all sizing information for the US-EPR certified design (CD) should be standardized. The staff has reviewed other standardized FSARs and found all adhering to the DCRA concept. All electrical equipment (main generator, EDG, battery and SBODG) sizes should be specified in EPR DC documentation (FSAR) and the decision should not be left to the COL applicants. In addition, all statements including the phrase “a COL applicant will identify site-specific loading differences....” should be amended to reflect this approach. Please fully delineate Areva’s position on the standardized equipment sizing issue.

08.01-2

As stated in RAI 8.1-1, RIS-2006-06 encourages the agency’s design-centered review approach (DCRA) regarding DC and COL applications and describes the level of standardization of a particular design needed in order to make the DCRA effective. For evaluation of this standardization effort,

provide the list of major electrical equipment and its pertinent electrical information (e.g., RCPs, main feedwater pumps, and condensate pumps; nominal ratings of output, load factor, efficiency, power factors, etc) that will be installed on the onsite electrical distribution system in US-EPR design. The above information is requested by the staff in fulfilling necessary interface review activities as identified by 10 CFR Part 52.47 (a) 24 and/or 25. Guidance for this information request (i.e., failure of non-safety-related electrical equipment that could directly affect safety-related equipment operation) can be found in Regulatory Guide C.I.8.3.1.1 where it states that “the applicant should describe the onsite ac power systems, emphasizing those portions that are that are safety-related. Those portions that are not related to safety should be described only in sufficient detail to permit an understanding of their interactions with the safety-related portions.” The above design information is considered necessary to provide the staff with the understanding necessary to support their safety determination.

08.01-3

Table 1.8-2 of the FSAR (Chapter 1) addresses information that is required to be submitted by COL applicants. In addition to the COL applicant’s degraded grid set points (that will be determined by the detailed analysis performed in the U. S. EPR design certification (8.3.1.3.1)) and the expected worst grid voltages, site-specific degraded grid voltage set points for EPSS (Class 1E 6.9 kV buses) are not reflected in the aforementioned table. Additionally, the two additional items identified in RAIs 08.02-3 and 4 are COL items and need to be reflected in the table. AREVA is expected to ensure that all such coordination points are included in Table 1.8-2 to ensure data integrity.

08.01-4

Page 8.1-5 (8.1.4.2) of the FSAR states that “Class 1E electrical isolation devices are provided where non-Class 1E circuits connect to Class 1E systems. The isolation devices prevent, to the extent practical, faults or other failures in the non-Class 1E circuits from degrading the Class 1E circuits below acceptable levels.” RG 1.75 of IEEE Std 384-1992 requires that the isolation devices be properly coordinated and periodically tested to ensure the overall coordination remains. The FSAR is not clear that the isolation devices used will be periodically tested. Confirm whether periodic testing per RG 1.75 is to be performed for those isolation devices considered in EPR electrical design.

08.02-1

Page 8.2-2 (8.2.1.1) of the FSAR states that “The U.S. EPR does not use an automatic load dispatch system, which eliminates any interference with safety-related actions that may be required of the

protection system described in Section 7.1.1.3.1.” Explain whether the above sentence is relevant in this section or consider revising if necessary.

08.02-2

Page 8.2-6 (8.2.2.4) of the FSAR states that “the transmission system will not subject the reactor coolant pumps to a sustained frequency decay of greater than 3.5 Hz/sec as bounded by the decrease in reactor coolant system flow rate transient and accident analysis described in Section 15.3.2.” The staff is familiar with frequency and voltage limits for RCP trip in the technical specification (TS). Explain the significance of RCP frequency decay rate (3.5 HZ/sec) protection scheme that is related to the transmission system operability and how this decay rate works with the RCP operation in Chapter 15.

08.02-3

If COL applicant plans to add as a new EPR unit at the existing site, the SRP section 8.2 states that the COL applicants should discuss the past grid availability history, including the frequency, duration, and causes of outages over the past 20 years for both the transmission system accepting the unit’s output and the transmission system providing the preferred power for the unit’s loads. Revise the EPR FSAR to include a requirement for the above information.

08.02-4

Section C.I.8.2.2 (Analysis) of RG 1.206 states that “for all designs, the COL applicant should provide an analysis of the stability of the grid. This analysis should include the worst-case disturbances for which the grid has been analyzed and considered to remain stable and should describe how the stability of the grid is continuously studied as the loads grow and more transmission lines and generators are added. It should also provide the assumptions and conclusions that demonstrate that the applicant has addressed the acceptance criteria required for the continued safe operation of the nuclear unit and the stability of the grid.” Revise Section 8.2 of EPR FSAR so that the COL applicant is required to address the above RG guidance information.

08.02-5

FSAR Item 20 of Table 8.2-3 states that “respective division EDG will start but will not energize the faulted bus due to the EDG output breaker lock out.” Describe how the EDG output breaker lock out scheme will prevent energizing the faulted bus.

08.02-6

EPR is designed to accept a 100% load rejection without a turbine trip and continue to supply plant loads without interruption. The initial test program (test #109) described in Chapter 14 (14.2.12.10.2) appears to be demonstrating that the unit main power system (i.e., main generator) can supply power to designated house loads. Confirm whether this test is the load rejection test from full power. In addition, the staff is concerned that the transient voltage spike during the above test could trip the onsite safety-related equipment including battery charges and UPS system. Include in EPR FSAR that the COL applicant should provide the transient load-flow analysis that simulates the above test and demonstrates that transient voltage spike causes no problem to plant safety system.