DRAFT

Request for Additional Information No. 19, Revision 0

6/13/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 09.05.03 - Lighting Systems
Application Section: 9.5.3
EE Branch

QUESTIONS

09.05.03-1

The staff finds that the applicant did not address the features related to effectiveness of control room lighting systems to support reliable human performance including evaluation with respect to the criteria specified in NUREG-0700. Address the staff's concern.

09.05.03-2

Discuss special feature to be included in areas containing rotating equipment to eliminate the risk of stroboscopic effect caused by flicker.

09.05.03-3

Provide typical luminance ranges for normal lighting in all areas/ rooms of the plant that are required for control and maintenance of eqipment and plant access routes during normal plant operations.

09.05.03-4

FSAR, Rev. 0, Section 9.5.3.2.2 states that the emergency lighting system provides lighting in plant areas primarily containing safety-related equipment. Identify the areas besides MCR and RSS where the emergency lighting will be utilized.

09.05.03-5

FSAR, Rev. 0, Section 9.5.3.3 states that lighting fixtures located in the MCR and RSS are Seismic Category Criteria II. The staff finds that the lighting fixtures located in the vicinity of safety-related equipment in other areas may not be supported adequately so that they may adversely impact the safety-related equipment when subjected to seismic loading of a safe shutdown earthquake. Address the staff's concern.

09.05.03-6

Discuss the mounting (Seismic Category Criteria) requirements of battery pack emergency lighting fixtures.

09.05.03-7

FSAR, Tier 2, Revision 0, Section 9.5.3.3 states that lighting fixtures in the MCR and RSS are Seismic Category Criteria II. Provide basis for Seismic Category Criteria II instead of Seismic Category Criteria I.

09.05.03-8

Adequate lighting is needed in areas requiring manual actions during an SBO event where emergency lighting is not installed. Provide a description of the available lighting to be provided (i.e. portable lighting) for this situation.

09.05.03-9

Section 9.5.3.5, “References” is incomplete. Illuminating Engineering Society of North America (IESNA) and IEEE Std. 384 should be included in Section 9.5.3.5

09.05.03-10

FSAR, Tier 2, Section 9.5.3.1 states that isolation is provided for lighting systems powered from Class 1E sources by a Class 1E isolation device located at the MCC feed to the distribution panel. It is not clear to the staff whether a series of circuit breakers/fuses or single circuit breaker/fuse will be used. Provide clarification. Address how the requirements of RG 1.75 will be met. This should be included as an ITAAC item.

09.05.03-11

FSAR, Tier 2, Section 9.5.3.2.2 states that EPSS Division 2 and Division 3 power the emergency lighting system to provide approximately 67 percent of the MCR and RSS lighting. Section 9.5.3.2.3 states that EUPS Division 2 and division 3 power special emergency lighting to provide approximately 33 percent of the illumination in the MCR and RSS. Section 9.5.3.3 states that MCR and RSS workstations are illuminated to at least 50 foot-candles during normal operation when lighting is provided by the emergency lighting and special emergency lighting systems. The special emergency lighting system provides at least 10 foot-candles illumination in the MCR and RSS workstations for two hours when powered from the EUPS.

(a) Is normal lighting (supplied by non-Class 1E power system) provided in the MCR and RSS?

(b) What is the total illumination level in MCR and RSS?

(c) Confirm that MCR and RSS workstations (seated operator station, reading, writing and data recording) are illuminated to 100 foot-candles (NUREG-0700) .

(d) Explain the relationship of percentages and actual foot-candles (Explain how 67 percent and 33 percent corresponds to 50 foot-candles and 10 foot-candles respectively).

09.05.03-12

FSAR Tier 2, Revision 0, Section 9.5.3 contains no design description of panel lighting in the MCR (Refer to NUREG-0700) at the safety-related panels. Provide a design description of panel lighting in the MCR or provide a technical basis for not doing so.

09.05.03-13

Include the following in FSAR, Tier 1, Section 2.5.9 and revise Table 2.5.9-1 or provide a justification for not including the following: (1) The control room emergency and special emergency lighting system is electrically independent and physically separated, (2) Isolation devices are provided between the Class 1E power supplies and non-Class 1E circuits, (3) DC self-contained sealed-beam units provides illumination levels equal to or greater than those recommended by the IESNS in those areas of the plant required for power restoration and/or recovery from fire, for at least 8 hours.

09.05.03-14

FSAR, Tier 1, Section 2.5.9, Subsection 2.1 states that lighting fixtures in the MCR are Seismic Category II and can withstand seismic design basis loads without affecting plant safety function. Section 9.5.3.3 states that lighting fixtures in the MCR and RSS are Seismic category criteria II. Modify Tier 1, Section 2.5.9, Subsection 2.1 and Table 2.5.9-1 to address lighting system in the MCR and RSS instead of lighting fixtures in the MCR only.

09.05.03-15

FSAR, Tier 1, Table 2.5.9-1, Item 3.2, under Acceptance Criteria, RSS appears twice. First RSS should be changed to MCR.

09.05.03-16

From Section 9.5.3.2.2, it is not clear to the staff where eight hour battery pack emergency lighting units are used. RG 1.189 recommends 8-hour battery pack emergency lighting should be provided in areas needed for operation of safe shutdown equipment and access and egress routes thereto. Explain how you meet above recommendation or provide justification for not meeting RG 1.189 recommendation. Your explanation should include the areas where 8-hour battery pack emergency lighting will be provided.

09.05.03-17

Section 9.5.3.4 states that the escape route lighting and battery pack emergency lighting units are inspected and tested periodically. Identify the program which will address inspection and testing requirements.