
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.: 499-8600
SRP Section: 09.05.03 – Lighting Systems
Application Section:
Date of RAI Issue: 07/01/2016

Question No. 09.05.03-17

NUREG-0800, Section 9.5.3 states: “The normal lighting system(s) is acceptable if the integrated design of the system(s) will provide adequate station lighting in all areas, from power sources described in Section 8.2 of the Standard Review Plan (SRP) that are required for control and maintenance of equipment and plant access routes during normal plant operations.”

In response to RAI 8466, Question 09.05.03-12, the applicant stated that the normal lighting fed from a non-Class 1E 480 volt alternating current (VAC) bus located in the alternate alternating current (AAC) gas turbine generator (GTG) building provides adequate lighting after the AAC source provides power during a station blackout (SBO). However, in Section 9.5.3 of the DCD Tier 2, the applicant stated that the normal lighting, which is energized from non-Class 1E 480 VAC buses and permanent non-safety (PNS) buses, is not available during loss of offsite power (LOOP), safe shutdown earthquake (SSE), and SBO events.

Since the AAC source provides backup power for the non-Class 1E bus located in the AAC GTG building during an SBO and the PNS buses during a LOOP, please revise the statement in Section 9.5.3 of the DCD Tier 2 to indicate that normal lighting will be available after the AAC/backup source provides power during LOOP, SBO, and SSE events.

Response

DCD Tier 2, Subsection 9.5.3.3 will be revised for clarity.

Impact on DCD

DCD Tier 2, Subsection 9.5.3.3 will be revised as shown in the 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 on impact on any Technical, Topical, or Environmental Report.

APR1400 DCD TIER 2

The self-contained battery lighting fixtures are equipped with sealed-beam, an 8-hour battery, and a battery charger. The power is automatically provided from the self-contained battery upon loss of normal or emergency ac lighting power.

The self-contained battery lighting provides more than 0.1 foot-candles of illumination at the areas where emergency ac lightings are provided.

c. Security lighting system

A minimum illumination level of 0.2 foot-candles is provided and measured horizontally at ground level in the isolation zones and appropriate exterior areas within the protected area. The security lighting is powered from offsite and backed up by the AAC source upon loss of offsite power.

The COL applicant is to provide offsite power for the security lighting system.

9.5.3.3 Safety Evaluation

The normal lighting is not available during LOOP, SSE, and SBO conditions.

- a. The emergency ac lighting is normally turned on and supplements the normal lighting. The emergency dc lighting is normally turned off.
- b. During LOOP, SSE, and SBO, the emergency ac lighting fed from the Class 1E 480 Vac bus is interrupted until the power supply to the Class 1E ac buses is restored. During this period, emergency dc lighting powered from the station battery or the individual self-contained battery provides adequate illumination for safe shutdown operations and for movement of personnel to the access and egress routes.
- c. Emergency ac or dc lighting provides a minimum illumination level of 10 foot-candles in the MCR and RSR. Emergency dc lighting provides illumination when emergency ac lighting is lost.

But the normal lighting located in AAC GTG building is available during an SBO after AAC source is provided to non-Class 1E 480 Vac bus located in the AAC GTG building.