
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.: 501-8635
SRP Section: 09.05.04 – Emergency Diesel Engine Fuel Oil Storage and Transfer System
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Question No. 09.05.04-16

As discussed in RAI 8635, Question 9.5.4-15, RIS 2008-05 discusses the “functional arrangement” of a system as the physical arrangement of structures, systems and components.

As shown in DCD Tier 1, Table 2.6.6-1, “Alternate AC Source ITAAC, “design commitment 1 contains a requirement to perform inspection of the as-built alternate AC (AAC) source in order to verify that the functional arrangement of the AAC source is as described in DCD Tier 1, Subsection 2.6.6.1. Acceptance criteria for design commitment 1 ITTAC requires that the as-built AAC source conforms with the functional arrangements as described in Subsection 2.6.6.1. However, DCD Tier 1, Subsection 2.6.6.1 does not contain any functional arrangement information.

The applicant is requested to update DCD Tier 1 with the appropriate AAC source functional arrangement information and/or the corresponding figures to allow for the design review and verification of the ITAAC design commitment.

Response

Supporting systems such as lubrication, cooling, ventilation, and starting are located in the AAC gas turbine generator (GTG) enclosure. Therefore, they have no specific functional arrangement information. The fuel oil supply system for AAC GTG including the diesel fuel oil storage tank, fuel oil day tank, and fuel oil transfer pumps are located outside of AAC GTG enclosure. The functional arrangement information for the fuel oil supply system of AAC GTG will be added in DCD Tier 1, Subsection 2.6.6.1.

Impact on DCD

DCD Tier 1, Subsection 2.6.6.1 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 no impact on any Technical, Topical, or Environmental Report.

APR1400 DCD TIER 12.6.6 Alternate AC Source2.6.6.1 Design Description

The alternate ac (AAC) source supplies power to safety-related loads to maintain the plant in a safe shutdown condition during station blackout (SBO). The AAC source also provides power to the permanent non-safety (PNS) buses during a loss of offsite power (LOOP) condition. The AAC source can be connected to Class 1E trains and PNS trains as shown on Figure 2.6.1-1. The AAC source is a gas turbine generator (GTG) that is independent from the EDGs and the offsite power sources. 

The AAC source is designed as follows:

1. The functional arrangement of the AAC source is as described in the Design Description of Subsection 2.6.6.1.
2. The AAC source is sized with sufficient capacity to accommodate SBO or LOOP conditions.
3. The AAC source is connected to the Class 1E train A or train B bus through two in series (one Class 1E circuit breaker at the Class 1E bus and the other non-Class 1E circuit breaker at the non-Class 1E AAC bus) circuit breakers during SBO condition.
4. The AAC source is started and connected manually to the Class 1E train A or train B bus within 10 minutes in the event of SBO.
5. The AAC source is installed in the separate building.
6. The GTG has sufficient fuel oil storage capacity to supply power to the required SBO loads for 24 hours.
7. The GTG fuel oil system is non safety-related and independent from that of the Class 1E EDGs.

The AAC GTG is provided with dedicated fuel oil storage tank, fuel oil day tank, fuel oil transfer pumps, which are designed as non safety-related.