

## 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.: 127-8010  
SRP Section: 09.05.08 – Emergency Diesel Engine Combustion Air Intake and Exhaust System  
Application Section: 9.5.8  
Date of RAI Issue: 08/05/2015

### **Question No. 09.05.08-1**

10 CFR 52.47(a)(2) requires that a standard design certification applicant provide a description and analysis of the structures, systems, and components (SSCs) of the facility, with emphasis upon performance requirements, the bases, with technical justification therefore, upon which these requirements have been established, and the evaluations required to show that safety functions will be accomplished.

DCD Tier 2, Section 9.5.8.4 indicates that “[s]ystem components and piping are tested to pressures designated by ASME Section III Class 3.” However, DCD Tier 1, Table 2.6.2-1 and Table 3.2-1 indicate that ASME Section III Class is not applicable to the emergency diesel engine combustion air intake and exhaust system (EDECAIES).

The applicant is requested to clarify the classification applied to the EDECAIES.

### **Response**

EDECAIES is designed as Safety Class 3 and Quality Group G.

Quality Group G is defined in DCD Tier 2, Subsection 3.2.2 as follows:

“Quality Group G pertains to safety-related fluid systems and components that are designed to codes other than ASME Section III.”

The EDECAIES is designed in accordance with Diesel Engine Manufacturers Association (DEMA) code, not ASME Section III.

Therefore, Subsection 9.5.8.4 will be revised as follows:

Current description : System components and piping are tested to pressures designated by ASME Section III Class 3 (Reference 49).

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Revised description : System components and piping are tested to pressures designated by manufacturer's standard for safety-related items.

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**Impact on DCD**

DCD Tier 2, Subsection 9.5.8.4 will be revised as indicated on the attached markup.

**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 2**

under accident conditions, assuming a single active component failure. The four trains of the EDG provide reasonable assurance that a single active failure in an EDECAIES does not lead to a loss of more than one EDG and therefore, independence and redundancy requirements of onsite ac power supplies are met. The duct for room ventilation air is separate from that for the EDECAIES. The system provides combustion air directly from the outside to the diesel engine. The combustion intake opening is located at a minimum of 6.10 m (20 ft) above grade level to minimize the intake of dust in the EDG room. The diesel exhaust gases are discharged to the atmosphere in a direction away from the outside air inlet with sufficient separation to minimize the effects of exhaust gas drift to the outside air inlet.

The safety-related portion of the EDECAIES provides an adequate quantity of combustion air and an exhaust path for the diesel engine during engine operation condition.

The quality and properties of the intake air are monitored to provide reasonable assurance that the engine will function in all ambient conditions.

The EDECAIES is initially tested prior to initial operation. Periodic inspection and functional testing are also performed along with the complete EDG system in accordance with the Technical Specifications.

Hydrogen and nitrogen gases are stored at a sufficient distance from the EDG room so that there is no threat to the proper operation of the diesel engines under an accidental release of hydrogen or nitrogen gases.

manufacturer's standard for safety-related items.



#### 9.5.8.4 Inspection and Testing Requirements

System components and piping are tested to pressures designated by ~~ASME Section III Class 3 (Reference 49)~~. Inspection and functional testing are performed prior to initial operation as described in Section 14.2; thereafter, the system is periodically tested along with the complete EDG system in accordance with the Technical Specifications as described in Chapter 16. This testing demonstrates the performance of leaktightness, operability, and the capability of the system to function as intended under accident condition.

Piping is inservice inspected in accordance with the requirements of ASME Section XI (Reference 50).

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### **Question No. 09.05.08-3**

In accordance with SRP 9.5.8, the essential EDECAIES portions are classified Quality Group C and seismic Category I. Components and system descriptions in the SAR that identify mechanical and performance characteristics are reviewed to verify whether the seismic and quality classifications have been included and whether the piping and instrumentation diagrams (P&IDs) indicate any points of change at system or system component interfaces. SRP 9.5.8 also states that failures of any non-seismic Category 1 structure, system, or component (SSC) (or failures of other non-seismic components or systems) will not affect the safety functions of the system adversely.

Although Table 3.2-1 indicates all components of EDECAIES are Quality Class G, DCD Tier 2, Figure 9.5.8-1 does not define seismic and quality group designation for emergency diesel generator (EDG) piping located upstream of designation flag/classification on the Exhaust Gas Outlet line.

The applicant is requested to provide description and designation of this piping to ensure they are designed so that they will not degrade the operability of Seismic I SSCs during a design basis accident event and update DCD and figure accordingly.

### **Response**

The essential EDECAIES portions including the exhaust pipe spool are designed as Safety Class 3, seismic Category I, and Quality Group G. Since the configuration of the exhaust pipe spool is dependent on the engine model and type, the exhaust pipe spool is not covered in DCD Tier 2, Section 9.5.8.

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**Impact on DCD**

There is no impact on the DCD.

**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.