

KHNPDCDRAIsPEm Resource

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Sent: Friday, August 07, 2015 7:19 PM
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Cc: Ciocco, Jeff; Lee, Samuel; Wunder, George; Vettori, Robert; Dias, Antonio
Subject: APR1400 Design Certification Application RAI 140-8139 (9.5.1 - Fire Protection Program)
Attachments: APR1400 DC RAI 140 SPSB 8139.pdf

KHNP,

The attachment contains the subject request for additional information (RAI). This RAI was sent to you in draft form. Your licensing review schedule assumes technically correct and complete responses within 30 days of receipt of RAIs.

Please submit your RAI response to the NRC Document Control Desk.

Thank you,

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United States Nuclear Regulatory Commission

Protecting People and the Environment

REQUEST FOR ADDITIONAL INFORMATION 140-8139

Issue Date: 08/07/2015
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 09.05.01 - Fire Protection Program
Application Section:

QUESTIONS

09.05.01-32

GDC3, "Fire Protection," states, in part, that "[s]tructures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions.

Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Section 7.4, "Diesel Fuel Oil Storage Areas," states that diesel fuel oil tanks with a capacity greater than 4,164 L (1,100 gal) should not be located inside buildings containing equipment important to safety.

DCD Tier 2, Table 9.5.1-1, "Fire Protection Program Conformance with NRC RG 1.189," sheet (31 of 34) item 7.4, "Diesel Fuel Oil Storage Areas," states that the APR1400 design conforms with the requirement that "diesel fuel oil tanks with a capacity greater than 4,164 L (1,100 gal) should not be located inside buildings containing equipment important to safety."

DCD Tier 2, Table 9.5.1-2, "APR1400 Fire Protection Program Conformance with NFPA 804," sheet (66 of 70) item 10.10, "Diesel Fuel Storage and Transfer Areas," states that the APR1400 design conforms with the NFPA 804 requirement that "diesel fuel oil storage tanks shall not be located inside buildings containing other nuclear safety-related equipment."

However, in DCD Tier 2, Section 9.5.4, "Emergency Diesel Engine Fuel Oil System (EDEFOS)," the applicant states that "[t]he emergency diesel engine fuel oil system EDEFOS has four diesel fuel storage structures, two in the auxiliary building (AB) ..." DCD Tier 2, Table 9.5.4-1, "Emergency Diesel Engine Fuel Oil System Component Data," indicates that each emergency diesel fuel oil storage tank has a capacity of 96,000 gallons.

The staff finds the above assertions contradictory since the auxiliary building houses safety-related equipment required to provide safe shutdown capability.

The applicant is requested to reconcile the above noted discrepancies. If applicable, the applicant is requested to provide justification for having two emergency diesel fuel oil system storage tanks, each with a capacity greater than 1100 gallons, located inside a building that houses safety-related equipment required to provide safe shutdown capability.

09.05.01-33

10 CFR 52.47(b)(1) requires, in part, a DC application to contain "{t}he proposed inspections, tests, analyses, and acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a facility that incorporates the design certification has been constructed and will be

REQUEST FOR ADDITIONAL INFORMATION 140-8139

operated in conformity with the design certification, the provisions of the Act, and the Commission's rules and regulations; ..."

Regulatory Guide 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants," Section A-1.o, "Auxiliary and Miscellaneous Systems," lists the fire protection systems, including manual and automatic operation of fire detection, alarm, suppression and smoke control systems as well as the types of systems for which performance should be demonstrated by testing.

In DCD Tier 2 Section 9.5.1.4, "Inspection and Testing Requirements," the applicant states:

"Preoperational testing is described in Section 14.2."

The staff reviewed DCD Tier 2, Section 14.2.12.1.85, "Fire Protection System Test," Item 1.0, "OBJECTIVES," and finds that the only objective is to demonstrate the ability of the fire protection system to provide water at acceptable flows and pressure to protected areas. The staff also finds that the items listed under Section 14.2.12.1.85, Item 3.0, "TEST METHOD," do not refer to any method of testing. These items refer to demonstration and verification of different fire protection systems.

The applicant is requested to:

1. Move the 7 items listed under DCD Tier 2 Section 14.2.12.1.85, "Fire Protection System Test," Item 3.0, "TEST METHOD," to Item 1.0, "OBJECTIVES."
2. Under Item 3.0, "TEST METHOD," state that the initial fire protection systems' testing will be in accordance with the criteria in the codes and standards referenced in DCD Tier 2 Section 9.5.1, "Fire Protection Program."

09.05.01-34

GDC3, "Fire Protection," states, in part, that "[s]tructures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions.

Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," Section 4.2, "Passive Fire-Resistive Features," states that fire barriers are those components of construction (walls, floors, and their supports), including beams, joists, columns, penetration seals or closures, fire doors, and fire dampers that are rated by approving laboratories in hours of resistance to fire and are used to prevent the spread of fire.

In DCD Tier 2, Section 9.5.4, "Emergency Diesel Engine Fuel Oil System," the applicant states

"The oil storage bay is separated from the equipment area by 3-hour rated fire barriers to the height of oil spill upon tank rupture. The oil storage bay contains a diesel fuel oil storage tank and necessary piping."

The applicant is requested to justify how a 3-hour rated fire barrier to the height of oil spill will prevent the spread of fire.