

KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Tuesday, April 19, 2016 7:24 AM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Jung-ho Kim (jhokim082@gmail.com); Andy Jiyong Oh; Christopher Tyree
Cc: Nolan, Ryan; Dias, Antonio; Wunder, George; Williams, Donna
Subject: APR1400 Design Certification Application RAI 463-8570 (10.03 - Main Steam Supply System)
Attachments: APR1400 DC RAI 463 SPSB 8570.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. However, KHNP requests, and we grant, 60 days to respond to this RAI. We may adjust the schedule accordingly.

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

Thank you,

Jeff Ciocco
New Nuclear Reactor Licensing
301.415.6391
jeff.ciocco@nrc.gov



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Subject: APR1400 Design Certification Application RAI 463-8570 (10.03 - Main Steam Supply System)
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From: Ciocco, Jeff
Created By: Jeff.Ciocco@nrc.gov

Recipients:

"Nolan, Ryan" <Ryan.Nolan@nrc.gov>
Tracking Status: None
"Dias, Antonio" <Antonio.Dias@nrc.gov>
Tracking Status: None
"Wunder, George" <George.Wunder@nrc.gov>
Tracking Status: None
"Williams, Donna" <Donna.Williams@nrc.gov>
Tracking Status: None
"apr1400rai@khnp.co.kr" <apr1400rai@khnp.co.kr>
Tracking Status: None
"KHNPDCDRAIsPEm Resource" <KHNPDCDRAIsPEm.Resource@nrc.gov>
Tracking Status: None
"Junggho Kim (jhokim082@gmail.com)" <jhokim082@gmail.com>
Tracking Status: None
"Andy Jiyong Oh" <jiyong.oh5@gmail.com>
Tracking Status: None
"Christopher Tyree" <Christopher.tyree@aecom.com>
Tracking Status: None

Post Office: HQPWMSMRS07.nrc.gov

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REQUEST FOR ADDITIONAL INFORMATION 463-8570

Issue Date: 04/19/2016
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 10.03 - Main Steam Supply System
Application Section: 10.3

QUESTIONS

10.03-4

GDC 2 requires that SSCs important to safety are designed to withstand the effects of natural phenomena, such as earthquakes, without loss of the capability to perform their safety function. In addition, SRP 10.3, Section III, item 3 specifies that essential portions of the main steam supply system are designed to quality group B and/or seismic category I requirements.

DCD Tier 1, Section 2.7.1.2, and DCD Tier 2, Section 10.3 state that the safety-related functions of the main steam system (MSS) include overpressure protection of the steam generators and pressure boundary components, and cooldown of the reactor coolant system (RCS) through discharge of steam to the atmosphere. DCD Tier 1, Table 2.7.1.2-1; DCD Tier 2, Table 3.2-1; and DCD Tier 2, Figure 10.3.2-1 identify the discharge piping from the outlet of the main steam atmospheric dump valves (MSADVs) and the main steam safety valves (MSSVs) as seismic category II, quality group D. However, DCD Tier 2, Section 3.2.1 defines seismic category II as an SSC that does not perform a safety-related function and whose continued function is not required.

Designing a piping system to seismic category II precludes a gross structural failure due to seismic activity from interacting with adjacent safety-related SSCs, but does not ensure the piping system itself will remain leak-tight, nor ensures it can continue to accomplish its intended safety function. Because the discharge piping of the MSADVs and MSSVs located in the main steam valve houses (MSVHs) perform the safety-related function of dissipating heat from the RCS and discharging the steam to atmosphere, the staff requests the applicant to revise the classification of this section of piping located in the MSVHs to seismic category I or provide an analysis demonstrating the ability of the MSVH structures to adequately handle the discharged steam from the MSADVs and MSSVs during the most limiting Chapter 15 accident or AOO.

10.03-5

GDC 4 requires that SSCs important to safety are designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. GDC 34 requires the portions of the main steam system (MSS) associated with residual heat removal function to transfer heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded. SRP 10.3 provides guidance and acceptance criteria to meet relevant requirements associated with the MSS.

The staff reviewed DCD Tier 2, Section 10.3, for a description of all flowpaths that branch off the main steamlines between the main steam isolation valves (MSIVs) and turbine stop valves as specified in SRP 10.3, Section III.5.E. The staff determined that this information is either incomplete or missing from the application.

REQUEST FOR ADDITIONAL INFORMATION 463-8570

The applicant is requested to include in the DCD a complete tabulation and description of all flowpaths between the MSIVs and turbine stop valves, including shutoff valves in connected piping, and bypass valves. The type of information and level of detail needed for the staff to complete its review is listed in item i through ix of SRP 10.3, Section III.5.E.



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