KHNPDCDRAIsPEm Resource

From:	Ciocco, Jeff
Sent:	Monday, March 14, 2016 8:30 AM
To:	apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Jungho Kim (jhokim082 @gmail.com); Andy Jiyong Oh; Steven Mannon
Cc:	Som, Swagata; Zimmerman, Jacob; Steckel, James; Wunder, George; Williams, Donna
Subject:	APR1400 Design Certification Application RAI 442-8550 (08.03.01 - AC Power Systems (Onsite))
Attachments:	APR1400 DC RAI 442 EEB 8550.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, 45 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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From: Ciocco, Jeff

Created By: Jeff.Ciocco@nrc.gov

Recipients:
"Som, Swagata" <Swagata.Som@nrc.gov>
Tracking Status: None
"Zimmerman, Jacob" <Jacob.Zimmerman@nrc.gov>
Tracking Status: None
"Steckel, James" <James.Steckel@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
"Jungho Kim (jhokim082@gmail.com)" <jhokim082@gmail.com>
Tracking Status: None
"Andy Jiyong Oh" <jiyong.oh5@gmail.com>
Tracking Status: None
"Steven Mannon" <steven.mannon@aecom.com>
Tracking Status: None

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REQUEST FOR ADDITIONAL INFORMATION 442-8550

Issue Date: 03/14/2016
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 08.03.01 - AC Power Systems (Onsite)
Application Section: 8.3.1

QUESTIONS

08.03.01-25

This is a follow-up questionnaire to Applicant's response to RAI 8104, Question 08.03.01 – 17, on Failure Mode Effects Analysis (FMEA), for the Onsite AC Power System.

1. In the Failure Mode Effects Analysis (FMEA) table, the Unit Aux Transformer (UAT) and Standby Aux Transformer (SAT) are included but the Main Step-up Transformer (MSUT) is not listed as equipment under the "Component" column in the table. Please provide the MSU transformer failure mode and detection details, when the MSUT has internal or external fault.

2. Item No. 6 in the FMEA Table, related to UAT, indicates that the loss of one of the cooler banks does not have any immediate consequences. Can the UAT run on its self-cooled rating and still power its normal loads at full load? Would this loss of cooling cause high temperature and consequently produce any Hi-Temp alarm? What happens if one entire cooler bank of one UAT is lost?

3. Item No. 7 in the FMEA Table, related to MSUT cooling, indicates that for the "Loss of one failure of the cooler banks", the applicant indicated that there are no immediate consequences with main transformer at full load in the "Failure Effect" column. Also it is indicated in the second bullet of the "Failure Effect" that the continued transformer and unit operation is dependent upon its rated capacities with and without cooling. Please explain how the MSUT will function at its full load with its loss of cooler bank(s). Please clarify if there is a margin in the cooling system, and whether the MSUT can run at full load at its self-cooled rating.

4. Items 15 and 16 in the FMEA Table, indicates Undervoltage Alarm OR Breaker Inoperable Alarm as "Detection." Please explain what the Breaker Inoperable Alarm means.

5. The power cables from UAT and SAT to respective 4.16 kV Class 1E Switchgear are not found listed as a component for FMEA. Please provide the interconnecting cable FMEA.

6. Please include the FMEA Tables in the DCD.


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