

KHNPDCDRAIsPEm Resource

From: Ciocco, Jeff
Sent: Monday, March 28, 2016 8:22 AM
To: apr1400rai@khnp.co.kr; KHNPDCDRAIsPEm Resource; Junggho Kim (jhokim082@gmail.com); Andy Jiyong Oh; Christopher Tyree
Cc: Yeshnik, Andrew; Mitchell, Matthew; Wunder, George; Williams, Donna
Subject: APR1400 Design Certification Application RAI 452-8545 (10.03.06 - Steam and Feedwater System Materials)
Attachments: APR1400 DC RAI 452 MCB 8545.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, the following RAI question response times. We may adjust the schedule accordingly.

10.03.06-18: 30 days
10.03.06-19: 60 days
10.03.06-20: 30 days
10.03.06-21: 45 days
10.03.06-22: 45 days

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:

"Yeshnik, Andrew" <Andrew.Yeshnik@nrc.gov>
Tracking Status: None
"Mitchell, Matthew" <Matthew.Mitchell@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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U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

REQUEST FOR ADDITIONAL INFORMATION 452-8545

Issue Date: 03/28/2016
Application Title: APR1400 Design Certification Review – 52-046
Operating Company: Korea Hydro & Nuclear Power Co. Ltd.
Docket No. 52-046
Review Section: 10.03.06 - Steam and Feedwater System Materials
Application Section:

QUESTIONS

10.03.06-18

In RAI 314-8378, Question 28626 (10.03.06-10) the staff asked the following question:

2. Would a COL applicant using the APR1400 design have a FAC program that is consistent with the KHNP FAC program or the EPRI program without modifications?

In response to this RAI the applicant deleted the following phrase from Section 10.3.6.3:

"using knowledge acquired from experience in pipe wall thinning management of operating nuclear power plants in Korea."

The staff believes that a COL licensee referencing the APR-1400 DCD would not be required to implement a FAC program be based upon the KHNP FAC program.

It would require a FAC program based upon an EPRI NSAC-202L and GL 89-08 program.

In RAI 314-8378, Question 28614 (Question 10.03.06-04) the applicant describes the differences between the KHNP FAC program and the EPRI NSAC-202L program. Based upon the staff understanding to Question 10.03.06-10 the staff believes that a COL licensee referencing the APR1400 FAC program would not be impacted by the differences between the KHNP and EPRI FAC program because a COL licensee would be required to use the EPRI FAC program.

The staff asks for confirmation: would the differences between the KHNP and EPRI FAC programs discussed in Question 10.03.06-04 apply to the an COL licensee that would reference the APR-1400 DCD?

10.03.06-19

In response to RAI 314-8378, Question 28615 (Question 10.03.06-5) the applicant deleted information from the FSAR. The deleted information described the material specifications for components between 1) the high pressure turbine and the moisture separator reheater and 2) the moisture separator reheater and the low pressure turbine.

The rationale provided by the applicant was that the systems were not safety related and therefore should be deleted from the FSAR.

GL 89-08 does not differentiate between safety related and non-safety related components; it applies to both systems. 10 CFR 50.65 requires licensees to implement maintenance programs that account for operating experience. FAC has and continues to cause failure of moisture separator reheaters (LER 2015-02 from Davis-Besse <http://pbadupws.nrc.gov/docs/ML1519/ML15194A013.pdf>).

The FSAR no longer contains sufficient information for staff review.

The applicant should revoke the response to RAI 314-8378 Question 28615 and provide the staff with an answer to Question 28615.

Additionally, the applicant should evaluate the current response to RAI 314-8378, Question 28621 (10.03.06-7).

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10.03.06-20

In response to RAI 314-8378, Question 28625 (Q 10.03.06-9) the applicant revised FSAR Tables 10.3.2-4. In response to RAI 314-8378 Questions 28613, 28615, and 28621 (10.03.06-3, 10.03.06-5, and 10.03.06-7) the applicant revised FSAR Tables 10.3.2-2 and 10.3.2-3.

The staff noted three changes there were beyond the scope of the RAI: 1) Removal of fittings, valves, and flanges from the table, 2) Changes to pipe sizes, and 3) changes to the millimeter nominal OD of piping.

The applicant needs to address these items:

1) Provide a justification for removing fittings, valves, and flanges removed from the table?

2) Provide an explanation for the changes in pipe sizes as a result of the cited RAIs. If the changes are intentional - update the P&IDs, transient analysis, and other impacted sections of the FSAR. If the changes were not intentional - update the Tables 10.3.2-3 and 10.3.2-4 with the correct information.

The following items were changed:

- Changing the "Main steam piping to MSSV" from 8 inches to 6 inches (Table 10.3.2-3)
- Changing the "Feedwater pump discharge header to Feedwater heaters 5/6/7" from 30 inches to 32 inches (Table 10.3.2-4 [1 of 2])
- Removing the 26 inch and 30 inch piping from the "Feedwater heaters 7 outlet header - Fittings" (Table 10.3.2-4 [1 of 2])
- Removing the 26 inch and 30 inch piping from the "Feedwater heaters 7 outlet header to MFVCs" (Table 10.3.2-4 [1 of 2])
- Removing the 26 inch and 30 inch piping from the "Feedwater heaters 7 outlet header to MFVCs - Fittings" (Table 10.3.2-4 [1 of 2])

3) The staff noted that the "Feedwater pump discharge header to Feedwater heaters 5/6/7" pipe diameter was changed from 660.44 (26) to 650(26). The staff reviewed tables 10.3.2-2, 10.3.2-3, and 10.3.2-4 and found that the applicant inconsistently and erroneously identifies pipe sizes.

Pipe sizing should be based upon ASME B36.10. In ASME B36.10 the NPS and outside diameter (inches) are the number same but, the DN and outside diameter (mm) are different numbers.

For a 24 NPS pipe: the outside diameter would be 24.000 inches, the DN would be 600, and the outside diameter would be 610 mm

For a 30 NPS pipe: the outside diameter would be 30.000 inches, the DN would be 750, and the outside diameter would be 762 mm

In table 10.3.2-4 (1 of 2) the first two entries confuse DN with outside diameter (mm):

REQUEST FOR ADDITIONAL INFORMATION 452-8545

Segment	Material Specification	Nominal OD (mm/in)	ASME Class
Feedwater pump to feedwater pump discharge header	A-106 Gr. B (seamless)	600 (24)	B31.1
Feedwater pump discharge header	A-672 Gr. B60 (welded)	762 (30)	

The staff has seen this confusion in multiple parts of Tables 10.3.2-2, 10.3.2-3, and 10.3.2-4.

Revise Tables 10.3.2-2, 10.3.2-3, and 10.3.2-4 to consistently use either: NPS/DN or OD(inch)/OD(mm).

10.03.06-21

In response to RAI 314-8378, Question 10.03.06-12 the applicant stated the following:

“Welding material specifications for ASME Class 2 and 3 components will be decided by the manufacturer or constructor in accordance with the ASME Section III NC-2400(Class 2) and ND-2400(Class 3).”

Subsequently the applicant stated that there was no change to the DCD. As written, the DCD would not require this information to be provided by a COL applicant.

Add a new COL item to have a COL applicant provide material specifications that will be utilized for ASME Section III components.

10.03.06-22

In response to RAI 314-8378, Question 10.03.06-15 the applicant provided 4 answers related to the connection between the AFW system and the main feedwater system.

The staff finds the answers 1, 2, and 4 acceptable.

Answer 3 provided process controls for a dissimilar metal weld. The process controls are sufficient but the applicant has indicated that the DCD would not be updated.

Add the information contained in answer 3 to the FSAR.