ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Friday, August 06, 2010 1:50 PM
To: 'usepr@areva.com'
Cc: Liang, Chu-Yu; Lu, Shanlai; Donoghue, Joseph; Carneal, Jason; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 432 (4958), FSAR Ch. 15, OPEN ITEM
Attachments: Draft RAI_432_SRSB_4958.doc

Attached please find draft RAI No. 432 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,
Getachew Tesfaye
Sr. Project Manager
NRO/DNRL/NARP
(301) 415-3361

Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 1792

Mail Envelope Properties (0A64B42AAA8FD4418CE1EB5240A6FED11BC4794E64)

Subject: Draft - U.S. EPR Design Certification Application RAI No. 432 (4958), FSAR Ch. 15, OPEN ITEM
Sent Date: 8/6/2010 1:50:23 PM
Received Date: 8/6/2010 1:50:24 PM
From: Tesfaye, Getachew

Created By: Getachew.Tesfaye@nrc.gov

Recipients:
"Liang, Chu-Yu" <Chu-Yu.Liang@nrc.gov>
Tracking Status: None
"Lu, Shanlai" <Shanlai.Lu@nrc.gov>
Tracking Status: None
"Donoghue, Joseph" <Joseph.Donoghue@nrc.gov>
Tracking Status: None
"Carneal, Jason" <Jason.Carneal@nrc.gov>
Tracking Status: None
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>
Tracking Status: None
"ArevaEPRDCPEm Resource" <ArevaEPRDCPEm.Resource@nrc.gov>
Tracking Status: None
"'usepr@areva.com'" <usepr@areva.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	737	8/6/2010 1:50:24 PM
Draft RAI_432_SRSB_4958.doc	33274	

Options
Priority: Standard
Return Notification: No
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Sensitivity: Normal
Expiration Date:
Recipients Received:

Draft

Request for Additional Information No. 432(4958), Revision 1

8/6/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 15.00.02 - Review of Transient and Accident Analysis Methods 01/2006
Application Section: 15.0.0.3.1

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

15.00.02-1

OPEN ITEM:

In EPR FSAR Tier 2, Revision 1, Section 15.0.0.3.1, ”Design Plant Conditions and Initial Conditions”, indicated that a heat balance measurement uncertainty of +/- 22 MWt is applicable to the rated core thermal power of 4590 MWt (approximately 0.48% uncertainty) for the maximum core power assumed in the accident analyses. The core power is determined using a secondary-side heat balance. The relatively low heat balance uncertainty is achieved by using an ultrasonic flow meter for the feedwater flow rate. The maximum power level assumed in the accident analyses are described in Table 15.0.4, ”Nuclear Steam Supply System Power Levels Assumed in the Accident Analyses” and Table 15.0.5, ”Plant Parameters Used in Accident Analyses” lists the nominal plant parameters for the accident analyses. Uncertainties in initial plant conditions are applied in accordance with the applicable approved methodologies.

However, EPR FSAR Revision 1 does not provide sufficient information of the instrumentation and/or methodology for the main feedwater flow measurement, nor provide a basis for the statement that the main feedwater flow measurement supports a 0.48% power uncertainty.

Please provide the following:

1) Describe the mechanism, such as the EPR FSAR and ITAAC and/or a COL Action Item, by which the information will be provided to support claimed 0.48% power measurement uncertainty and how it will be verified and confirmed.
2) The following information should be provided to support the claimed 0.48% power measurement uncertainty:
   A. A description of the instrumentation and methodology used for the main feedwater flow measurement and calorimetric power measurement.
   B. All of the following:
      a. A reference to the NRC approval of the main feedwater and power measurement methodology, instrumentation, and associated uncertainties. Or
      b. The instrument string, including applicable sensors or transducers, process rack, analog/digital converter, process computer, and readout devices, etc., for each parameter measured;

c. The accuracy of allowance associated with each instrument component, such as sensor reference, calibration, and measurement accuracies, respectively; rack calibration and measurement accuracies; sensor pressure and temperature effects; rack pressure and temperature effects; drift; process measurement accuracy; instrument range, span, and operation limits, etc.;
d. The methodology for combining uncertainties, allowances, or errors of the instrument components associated with each parameter to arrive at the overall uncertainty of each measured parameter; and
e. The methodology used to arrive at the total uncertainties for the main feedwater flow rate and reactor thermal power, respectively.