ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Thursday, June 17, 2010 7:41 AM
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Subject: Draft - U.S. EPR Design Certification Application RAI No. 424 (4789), FSAR Ch. 12, NEW PHASE 4 RAI
Attachments: Draft RAI_424_CHPB_4789.doc

Attached please find draft RAI No. 424 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,
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Hearing Identifier: AREVA_EPR_DC_RAIs
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Request for Additional Information No. 424(4789), Revision 1

6/17/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 12.03-12.04 - Radiation Protection Design Features
Application Section: Section 12.3 Radiation Protection Design Features

QUESTIONS for Health Physics Branch (CHPB)

12.03-12.04-22

OPEN ITEM (New Phase 4 RAI)

In response to RAI 254 Question 12.03-12.04-14, the applicant stated that gates would be added to those stairs within the reactor building annulus that provide access to the spent fuel transfer tube. These gates would prevent workers from accessing the tube during spent fuel transfer when dose rates in the area are high enough to be lethal (radiation levels during fuel movement can reach anywhere between 10,000 and 50,000 rad per hour). This response is acceptable to the staff.

However, there appears to be another potential for worker overexposures associated with the seismic gaps in the concrete shielding around the spent fuel transfer tube. FSAR Tier 2, Figure 12.3-9, "Containment Building Section Looking Plant-East at the Reactor Cavity, Core Internals Storage, Transfer Pit, and Spreading Area," shows the length of the transfer tube as it extends between the reactor building and the fuel building. Figure 12.3-9 shows that while the reactor building annulus has a seismic gap with a labyrinth design to prevent streaming from the spent fuel transfer tube, the concrete shielding above and below the transfer tube *inside* containment (and adjacent to the containment wall) appears to have non-shielded seismic gaps that are a potential streaming path during fuel transfer. In addition, Figure 12.3-9 shows the rooms above and below the transfer tube and adjacent to the containment wall as being locations that will be accessed by workers, thereby creating a situation where radiation from moving or stuck spent fuel will be streaming through seismic gaps directly into potentially occupied rooms. However, the staff also recognizes that these gaps may be necessary to facilitate containment liner inspections as stated in FSAR tier 2, Section 3.8:

> *"Gaps are provided between the liner and RB internal structures concrete structural elements, which provide space necessary to inspect the liner at wall and floor locations inside containment."*

GDC 61 states, in part, that the fuel storage and handling system shall be designed to assure adequate safety under normal and postulated accident conditions, including but not limited to, adequate shielding. Therefore to demonstrate compliance with GDC 61,

provide additional design detail on the seismic gaps around the spent fuel transfer tube inside containment, including any design features which would prevent radiation streaming during spent fuel transfer. If there is no shielding associated with these gaps due to containment liner inspections or other considerations, provide information on the dimensions of the gap and on the transient dose rates that would be present in the rooms below and above the transfer tube during fuel transfer. If the seismic gaps result in radiation streaming, revise the FSAR to include this information, including calling out the impacted rooms and associated dose rates.