## ArevaEPRDCDocsPEm Resource

**From:** Wunder, George
**Sent:** Friday, June 06, 2014 2:09 PM
**To:** HOTTLE Nathan (AREVA)
**Cc:** ArevaEPRDCDocsPEm Resource
**Subject:** DISCUSSION TOPICS FOR PUBLIC TELEPHONE CALL
**Attachments:** RAI 155 Q03 08 01-13 6-3-14.docx

Nathan,

Attached please find some discussion questions for our call on June 16, 2014. Are we still on target for the Chapter 5 RAI response today??

Thanks,

George

**Hearing Identifier:** AREVA_EPR_DC_Docs_Public
**Email Number:** 158

**Mail Envelope Properties** (DAC719623E968245BD52D03696111100021D26D1D0E5)

**Subject:** DISCUSSION TOPICS FOR PUBLIC TELEPHONE CALL
**Sent Date:** 6/6/2014 2:09:19 PM
**Received Date:** 6/6/2014 2:09:21 PM
**From:** Wunder, George

**Created By:** George.Wunder@nrc.gov

**Recipients:**
"ArevaEPRDCDocsPEm Resource" <ArevaEPRDCDocsPEm.Resource@nrc.gov>
Tracking Status: None
"HOTTLE Nathan (AREVA)" <Nathan.Hottle@areva.com>
Tracking Status: None

**Post Office:** HQCLSTR02.nrc.gov

| **Files** | **Size** | **Date & Time** |
|---|---|---|
| MESSAGE | 207 | 6/6/2014 2:09:21 PM |
| RAI 155 Q03 08 01-13 6-3-14.docx | 26192 | |

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

**Ata Istar**
**NRO/DE/SEB2**

**Response to RAI 155, Question 03.08.01-13**

The RAI 155, Question 03.08.01-13 response provides a reasonable summary of the time history (TH) dynamic analyses and models using ANSYS for the Reactor Containment Building (RCB), Reactor Building Internal Structure (RBIS) and Balance of Nuclear Island (BONI), which were performed as an alternate method to obtain element forces and moments. However, the following issues may be resolved in a teleconference:

**1.** The RAI response indicates that: "Additional seismic loads not fully captured in the dynamic analysis (hydrodynamic, spent fuel rack, vent stack reactions, and dynamic soil pressures) are applied separately as static loads. Some of these loads are also represented by masses in the dynamic analysis (water masses and spent fuel rack masses for dead load). To reduce the double counted loads this causes, some of these static pressures are reduced by the equivalent pressures thbbat exist in the dynamic analysis (i.e. $Static_{Reduced}$ = $Static_{Full}$ – $Dynamic_{Full}$, where $Static_{Full}$ is the pressure over a given area from the NI Static Model and $Dynamic_{Full}$ is the pressure calculated by determining the sum of the nodal mass times acceleration over the same area for each time step of the dynamic analysis, then the largest pressure from all the time steps is used; noting that if $Dynamic_{Full}$ is greater than $Static_{Full}$, then $Static_{Reduced}$ = 0)."

The use of the $Dynamic_{Full}$ equal to the pressure calculated by determining the sum of the nodal mass times acceleration over the same area for each time step of the dynamic analysis should be explained in terms of how it represents the actual dynamic forces arising from the TH analyses performed.

**2.** The RAI response indicates that: "To combine the TH seismic results with the statically applied loads (i.e. dead, live, etc.) for load combinations, the maximum (largest positive value) and minimum (largest negative value) forces and moments are found for each element. These maximums and minimums are then combined to create four seismic cases for load combinations using a similar approach implemented for the square root of the sum of the squares (SRSS) methodology."

The approach used to develop the element forces and moments for the different load combinations consisting of four seismic cases should be explained.