

Allen, William

From: Michael.Conroy@dot.gov
Sent: Monday, November 16, 2015 11:52 AM
To: Allen, William
Subject: [External_Sender] FW: TN-BGC 1 - US validation

I see that he included you on distribution.

So they don't need credit for the cage. I did not follow your reviewer's comment that you then need to consider a drop – based on his last statement, neither did Areva.

From: GALLAIS Gregory (AREVA) [mailto:gregory.gallais@areva.com]
Sent: Monday, November 16, 2015 11:40 AM
To: Conroy, Michael (PHMSA)
Cc: DOUAUD Olivier (AREVA); GUIBERT Nicolas (AREVA); PHAM Tan Trieu (AREVA); MATHUES Glenn (AREVA); MALHAIRE Jean-Francois (AREVA); LE BLEVENNEC Renaud (AREVA); William.Allen@nrc.gov; BOUYER Emilie (AREVA)
Subject: TN-BGC 1 - US validation

Dear Mr Conroy,

Following our last Thursday's meeting, you will find hereafter a summary of the main assumptions taken into account in the safety analyses report. These assumptions remain valid independently of the presence of the cage :

- The 15 mm equivalent thickness of damaged resin is obtained under very severe conditions (30' between 600°C and 800°C and 30' at 800°C).
In a conservative approach, the criticality calculations are carried out by removing a 15 mm layer of resin all around every package of the array
- Aluminum cages are not taken into account in criticality calculations note TN-BGC1-0601 rev.1;
- Spacing between packages for the different arrays considered is chosen to optimize moderation, meaning that the worst case of re-configuration is already considered (as you may see on Figure 11-2 and Figure 11-8 of note TN-BGC1-0601 rev.1);
- Chapter 3 of SAR show that after the regulatory drop tests show the steel structure of the package (especially the outer shell) keeps its function : overall structural resistance of the package and global confinement of resin in-between the outer and inner shells;
- Chapter 5 of SAR shows that during HAC fire test the temperature reached by structural components is acceptable and does not question the structural resistance of the package neither the confinement of the resin.

As a matter of facts, the proposition of NRC of not taking into account the presence of the cage, is already the approach adopted in our criticality analyses.

Moreover, the resin remains confined in the steel shells of the package after the drop test conditions followed by the fire test conditions. Therefore, even if the package falls after the HAC fire, there is no risk to lose the resin layer.

Eventually, I would like to emphasize that considering any additional drop after HAC fire test is not a regulatory requirement. The package is indeed not required to sustain any further mechanical loading after HAC fire test.

Best regards,
Grégory GALLAIS
Design Manager – Special Material Engineering Unit