

Gallagher, Carol

From: RIGOLLET Laurence <laurence.rigollet@irsn.fr>
Sent: Monday, August 17, 2015 12:00 PM
To: Gallagher, Carol; Stroup, David
Cc: Salley, MarkHenry; Jean.BATTISTON@irsn.fr; richard.gonzalez@irsn.fr; ABDELHAMID.NAZIH@astrium.eads.net
Subject: [External_Sender] NUREG-2178

Subject : Docket ID NRC-2015-0059
Comments on Draft NUREG-2178

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RULES AND DIRECTIVE
BRANCH

Dear Carol and David,

In IRSN, we have some comments concerning the report "Refining and Characterizing Heat Release Rates from Electrical Enclosures During Fire (RACHELLE-FIRE), Volume 1: Peak Heat Release Rates and Effect of Obstructed Plume."

I saw that the comment period is closed since the June 15, 2015 but we were informed on the content of this report only at the end of July.

In paragraph 2-9, it is written that :

" 35 **The majority of the IRSN tests [9, 10, 11] [12] involved PMMA slabs burned within an**
36 **electrical enclosure mock-up shell. The objective of these tests was to assess whether**
37 **enclosure vent size correlated to the maximum heat release rate possible given a fire**
38 **within an enclosure. The fuels in these tests are not representative of real electrical**
39 **enclosures. Given the unrealistic nature of the fuels, the IRSN tests using PMMA slabs**
40 **were dismissed from the peak HRR distribution development effort."**

In your work, you do not take into account all the fire tests performed by IRSN concerning electrical cabinet fire. The CARMELA and CARMELO tests were a first analytical approach on this subject. We developed a model, based on the Keski-Rahkonen work, for the estimation of the heat release rate in a closed electrical cabinet in function of the size of openings (in the case of closed door cabinet, we showed that the HRR is function of the ventilation rate – ventilation size - and not of the fuel).

Since this analytical program, we performed another experimental program called PICSEL. The electrical cabinet used as a fire in these experiments was an electro-technical cabinet with two modules (a real electrical cabinet).

We published several results of these tests:

- Coutin M. & al, Energy balance in a confined fire compartment to assess the heat release rate of an electrical cabinet fire, Fire Safety Journal 52 (2012) 34-45
- Coutin M. & al, Characterisation of open-door electrical cabinet fires in compartments, Nuclear Engineering and Design 286 (2015) 104-115

So could you take into account these papers in your work to be complete?

Or if it is not possible because it is too late, could you correct your paragraph as follow:

" 35 **The majority analytical tests performed by of the IRSN tests [9, 10, 11] [12] involved PMMA slabs burned**
within an
36 **electrical enclosure mock-up shell. The objective of these tests was to assess whether**
37 **enclosure vent size correlated to the maximum heat release rate possible given a fire**
38 **within an enclosure. The fuels in these tests are not representative of real electrical**
39 **enclosures. But the tests, with closed-doors cabinet, highlighted that the heat release rate is tightly linked to**
the natural ventilation of the cabinet. Given the unrealistic nature of the fuels, the IRSN tests using PMMA slabs
40 **were dismissed from the peak HRR distribution development effort."**

SUNSI Review Complete
Template = ADM-013

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E-RIDS = ADM-03
Add = D. Stroup (dsw4)

Best regards

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