NRCREP Resource

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Sent: Sunday, October 03, 2010 10:16 PM
To: NRCREP Resource
Subject: Response from "Comment on NRC Documents"

Below is the result of your feedback form. It was submitted by

MoonHa Jee (jmhak@kepri.re.kr) on Sunday, October 03, 2010 at 22:16:28

Document_Title: NUREG/CR-7010, draft (1)

Comments: 1. At pae xvi, the statement is that, Bench-scale calorimetry; ..... It was found that thermoset cables typically burn between 100 kW/m2 and 200 kW/m2, while thermoplastic cables typically burn in the range 200 kW/m2 to 300 kW/m2.

Question 1-1) I think thermoset cable may be higher in fire rating than thermoplastic. In this short sighted view, thermoplastic can be bunrt at lower heat flux at calorimetry test than that of thermoset. If the value is changed for thermoset and thermoplastic, it can make sense.

Question 1-2) If the phrase means the heat release rate of thermoset and thermoplastic, then some misunderstanding must be cleared at the explanation. In normal, bench-scale calorimetry test is to find at what heat fulx the material will ignit or burn.

Question 1-3) At page 90, figure 7-22 shows the HRRPUA and external heat flux. At this part, my question 1-1 and 1-2 must be reviewed for readers not to misunderstand.

2. At page xvi, the statement is that, Intermediate-scale calorimetry; --------.It consists of a single horizontal ladder-back cable tray.1.2 m long, 0.45 m wide, containing varing numbers of cables that are exposed to an array of radiant panels positioned overhead. ...

Quest 2-1) Is there any reason to locate the radiant panels overhead? In normal situation of fire at NPP, the fire source can be located at bottom (pool fire) or cable tray fire exposed to neighboring cables at adjoining or overhead cables. If the fire source locates overhead of target cable, the direct radiant head flux can be exposed to the target cables, however, the convective heat energey, fire plume, or hot gas effect can be ignored due to higher position of heat source (radiant panel in this case).

3. At page 18 and at the first paragraph, "These samples were pyrolyzed in the PCFC at a rate of 1.0 C/s from 100 C to 600 C in a nitrogen atmosphere and the effluent combusted at 900 C in a mixture consisting of 20% O2 and 80% N2.

Quest 3-1) Temperature growth rate is 1.0 C/sec, then it will take about 500 seconds to increase temperatue from 100 C to 600 C. Did this rate reflect the normal fire growth rate, let say untrafast, fast, medium, or specific fire growth speed based on experiment or experience?

Quest 3-2) Is it different from "a nitrogen atmosphere" and "a mixture of 20% O2 and 80% N2"?

4. At Table 3-B of page 14, XLPE insulation cable with Neoprene jacket material is classified as TS (thermoset).

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Question 4-1) If heat energy is transferred to cable, the contact point (surface) shall be the jacket material, and the thermal decomposition will be started at jacket material portion rather than the insulation material. In this sense, Is it acceptable to deal with Neoprene as TS?

5. For the FLASH-CAT model;

Question 5-1) Where can I get the model?

Question 5-2) If the simulated cable tray for the FLASH-CAT model contains different cables, let say, diameter, insulation material, unit mass per lenght, copper fraction, is it reasonable to regard the simulation result as the typical spread rate of fire with a horizontal cable trays?

Question 5-3) How can I judge the growth rate of fire by use of this model when considering the purpose of the model?

Question 5-4) Is it possible to use this model to vertical cable trays? If possible what sort of modifiction should be done?

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