

LETTER TO THE EDITOR

COMMENTS ON “A DESCRIPTION OF THE PROBABILISTIC AND DETERMINISTIC MODELLING USED IN FIRECAM™” BY D. YUNG, G.V. HADJISOPHOCLEOUS AND G. PROULX

On the frequency of fires in office buildings.

In the first issue of *International Journal on Engineering Performance-Based Fire Codes* is a paper by Yung et al. [1] on ‘probabilistic and deterministic modelling used in FIRECAM™’. The author of this letter seeks clarification of the statement on page 20 :

.. in Canada, statistics show that the probability of fire starts in office buildings is 7.68×10^{-6} per m^2 .

I am unclear about the true meaning of this, but I do wonder whether the quantity given is actually a frequency rather than a probability and whether the figure actually means that the frequency of outbreak of fire in an office building is :

$$7.68 \times 10^{-6} \times \text{floor area space (m}^2\text{) per year}$$

Let us examine this by means of an example. I am advised* that the total floor area of the main administration building of this university is $3187m^2$. On the basis of the expression immediately above the frequency of a fire would then be :

$$7.68 \times 10^{-6} \times 3187 \text{ per year} = 0.024, \text{ or once every 41 years}$$

which seems intuitively not unreasonable. The figures given subsequently by Yung et al. [1] in relation to flashover are, I believe, probabilities. Thus according to the statement that 24% reach flashover, in the building in question the frequency of a fire which also ‘flashed over’ would be :

$$0.024 \times 0.24 = 0.00576, \text{ once every 174 years}$$

This is actually the approach referred to by Yung et al. [1] who state at the bottom of page 20 that ‘the probability of a fire scenario is the product of the probabilities of its controlling parameters’.

The view of the author of this letter is that probabilities and frequencies have to be distinguished, and he would welcome a response from the authors.

REFERENCES

1. D. Yung, G.V. Hadjisophocleous and G. Proulx, “A description of the probabilistic and deterministic modelling used in FIRECAM™”, *International Journal on Engineering Performance-Based Fire Codes*, Vol. 1, No. 1, pp. 18-26 (1999).

18 August 1999

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*Thanks are due to the University of Aberdeen Estates Office for release of this information and permission to use it in this publication.