



ONE APPROACH TO THE FIRE PSA UNCERTAINTY ANALYSIS

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ABSTRACT

Experienced practical events and findings from the number of fire probabilistic safety assessment (PSA) studies show that fire has high relative importance for nuclear power plant safety. Fire PSA is a very challenging phenomenon and a number of issues are still in the area of research and development. This has a major impact on the conservatism of fire PSA findings.

One way to reduce the level of conservatism is to conduct uncertainty analysis. At the top-level, uncertainty of the fire PSA can be separated in to three segments. The first segment is related to fire initiating events frequencies. The second uncertainty segment is connected to the uncertainty of fire damage. Finally, there is uncertainty related to the PSA model, which propagates this fire-initiated damage to the core damage or other analyzed risk.

This paper discusses all three segments of uncertainty. Some recent experience with fire PSA study uncertainty analysis, usage of fire analysis code COMPBRN IIIe, and uncertainty evaluation importance to the final result is presented.