

Effect of passive safety systems on typical beyond-design accidents for WWER-1000/V-392 reactor plant

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Abstract

The Russian regulatory documents for nuclear power plant safety contain the requirement on the necessity of the beyond-design-basis accidents (BDBA) consideration as the events and scenarios participating in the formation of the relevant safety systems design basis. In particular, the list of such accidents have to be composed, the acceptance criteria are to be formulated and the realistic analysis of BDBAs have to be made. The designer should tend to the estimated probability of the limiting radioactivity release less than 10^{-7} per reactor-year, and the estimated probability of severe core damage derived on the PSA basis should not exceed 10^{-5} per reactor-year [1].

Such approach results in necessity to provide for the special engineered features dedicated to mitigate the BDBA consequences and to prevent the development of BDBAs to severe accidents. Effect of additional passive safety systems (SPOT, HA-2) on typical beyond-design accidents for WWER-1000/V-392 reactor plant is briefly considered in the present paper.