

A Preliminary Analysis on DDT Possibility Estimation in a Nuclear Power Plant

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Abstract

The possibility of DDT due to hydrogen combustion during SBO and LBLOCA accident sequences with/without igniters of an advanced light water reactor is estimated using the qualitative evaluation methodology. For the SBO sequence without igniters, hydrogen concentration in IRWST compartments of the advanced light water reactor reaches up to 70% in maximum and maintains over 13% for about 50 min, which is known to a minimum value of DDT. The DDT possibility exists for about 20 min. For the SBO sequence with igniters, the hydrogen concentration is still well over 13% but it maintains only for about 2.5 min. DDT possibility exists intermittently twice for 1.5 min because of the oxygen starvation. There is no DDT possibility for the LBLOCA sequence with/without igniters.