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**OVERVOLTAGES ON DISTRIBUTION NETWORKS CAUSED BY DIRECT LIGHTNING HITS ON  
THE PRIMARY UNE**

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**Abstract** - In this paper the characteristics of the overvoltages that appear on medium and low voltage Unes due to the incidence of direct discharges on the primary are discussed. The study intends to obtain information in order to achieve a performance improvement of distribution networks and, as a consequence, the reduction of damages to consumers to a minimum. In the simulations, conducted through ATP ("Alternative Transients Program"), a typical distribution Une configuration is considered and models of proven validity are used to represent the low and medium voltage insulators and the distribution transformer. The paper discusses the influence, on the overvoltages, of the flashovers that occur on the MV and LV insulators, of the transformer model, and of parameters such as grounding resistance and grounding spacing.