



TD2010-000380

## EVALUATION AT FIELD OF AGED 345kV CLASS ZnO SURGE ARRESTERS

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**Abstract--** This research aimed at developing a technique for field evaluation of aged 345kV ZnO surge arresters, for identifying suspect equipment with in service failure risk. In this way, material damages, emergency downtime periods and personal hazards could be avoided. After some in service failures in 345kV class ZnO arresters, the analysis of the failed equipment showed burning signs at the ZnO blocks surface inside the failed arrester, probably caused by internal superficial electrical discharge. The surface coating of the ZnO blocks, under high electrical gradient, seemed to have suffered some kind of burning process, in this way creating conductive paths, causing short-circuit and leading to failure. The technique developed in this research was applied successfully in the field, in substation environment, where the identification of surge arresters presenting internal partial discharges activity was possible. All the tests were performed with surge arresters under normal operation with all installation energized.

**Index Terms--** surge arresters, partial discharges, field tests, IEC 60270, insulation testing, predictive maintenance.