

A Failure of large power transformer protection not only reduces the reliability of power system but also has significant effects on power quality since one of the important components of any system quality is the reliability of that system. This paper presents a reliability assessment of a typical protection system of large power transformer. In conjunction with published field failure data of transformer, this assessment is based on an integrated predictive analysis using three methods: (1) a Fault Tree Analysis (FTA) that allows to identify and then quantify the initiating failure cause weighting factors, (2) an Event Tree Analysis (ETA) that allows to predict the protection system probability outcomes following an external disturbance and, (3) a Failure Mode Effect and Criticality Analysis (FMECA) that will help to set the stage for developing a preventive maintenance plan. The latter is vigorous to keep up the transformer protection system reliability at the required level with special attention given to aggressive environmental factors