

**ALTERNATIVE TRANSIENTS PROGRAM MODEL OF THE
PROTECTION BASED ON INCREMENTAL SIGNALS**

BY

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Abstract. Occurrence of a fault on a transmission line generates transient voltages and currents. The protection principle based on incremental signals operate consists in supervision of the incremental signals into a time window of one cycle length of time. One incremental signal is given by the difference of an instantaneous value of a signal and the instantaneous value of the same signal taken exactly one cycle before. In the first cycle after the fault occurs, the increment values of voltages and currents are greater than a threshold, thus the tripping decision is taken. Using Alternative Transients Program (ATP) the authors have modeled a 400 kV high voltage grid and have simulated internal and external faults, taking as parameter the fault inception angle, the fault resistance and the fault distance from relay location.

Key words: line protection; incremental signals; fast fault clearance.