THE PERFORMANCE ANALYSIS OF DIFFERENTIAL RELAY AS TRANSFORMER PROTECTION I AND II 60 MVA USING SOFTWARE 87T BY SUMANDARI AT WIROBRAJAN MAIN STATION PT. PLN (PERSERO) UIT JBT UPT SALATIGA

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ABSTRACT

The transformer is the main component of the substation. The protection system is required to maintain the transformer to have transformer performance optimal. Differential relay is the main protection system in the transformer to protect the transformer from interference. Differential relays protect the transformer when there is a nominal difference in the current flowing on the high voltage side and the low voltage side, and work without delay. The objective of this final project is to determine the difference in the performance of differential relay settings according to theoretical calculations with differential relay settings at Wirobrajan substation. The research was conducted by taking data at the Wirobrajan substation and then calculating the theory to get the settings according to the calculations. The theoretical calculation results obtained differential relay setting of 10.19% for slope1, 20.39% for slope2 and setting current of 0.48A. Furthermore, the results of the settings according to theoretical calculations and settings according to the Wirobrajan substation are simulated with the 87T by Sumandari software using test data from the Wirobrajan substation. The simulation results show that the differential relays work to trip the transformer. Meanwhile, according to the settings according to the Wirobrajan substation, the differential relays in testing one and two in relay one do not trip the transformer because there is no test value that passes the setting current value of 0.4 pu. Referring to the data from the test results of the Wirobrajan Substation Differential Relay test, the setting according to the Wirobrajan substation is better in securing the transformer than the setting according to the calculation results.

Keywords: *protection system, transformer, differential relays*