

Dilok Tanaparipat 2009: Analysis of Designing 115 kV Transmission Line System Protection by using Distance Relay with Communication System for PEA's 115 kV Closed Loop Transmission Network. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Associate Professor Keatyut Kaveyan, Ph.D. 184 pages.

The existing 115 kV transmission network system of PEA in Northern region 1 has been dispatched by Chaigmai 3 substation. Additional 3 substations with transmission network comprising Chaigmai 4, Mae Rim and San Kam Paeng were then constructed. The 115 kV system is an open loop transmission network which is low power system reliability. This paper studies an improvement of 115 kV closed loop transmission network aiming to increase power system reliability. The results are obtained as following; 1) Advantage of power flow analysis associated closed loop transmission network, is that bus voltage is higher than open loop as well as power losses is also reduced and power flow through transmission line does not exceed rated of equipment, 2) Fault current analysis is shown that closed loop produces higher fault current than open loop but not exceed rated of fault current protection equipment, and 3) Simulation is found that closed loop is able to use the existing setting of protection system, distance relay, with or without communication system of closed loop is still utilized

---

Student's signature

---

Thesis Advisor's signature

/ /