Kamol Pathep 2010: A Study to Solve the Problem of Contaminated Insulators in Aerial Transmission Line Rated 69 kV. and 115 kV. for Metropolitan Electricity Authority. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor:
Mr. Winai Plueksawan, Dr.Ing. 210 pages.

This research is to study problem and cause of Metropolitan Electricity Authority(MEA) power failures resulted from a flash over on surface of contaminated insulators for 69 kV. and 115 kV. transmission lines on Petchkasem and Kanjanabhisek Rd. The study is to compare between the amount of pollution and temperature occurring on the surface of insulators, and also the methods and maintenance period for the contaminated insulators. The above mentioned study is technically based on the installation and testing standards; ANSI C29.1-1988 (R2002), TIS 354-2523, and MEA Standards. In addition, the study on the appropriate method and schedule for polluted insulator maintenance is also presented.

The results show that, between the two areas in the un-energized condition, the insulator contamination rate in the Petchkasem area is 2 times higher than the Kanjanabhisek area. For the energized 69 kV. transmission line, the insulator contamination rate is 2 times higher in the un-energized condition. For the energized 115 kV. transmission line, the insulator contamination rate is 3 times higher in the un-energized condition. From the study, with the insulator contamination rate at 0.0519 mg/cm^2 in the Petchkasem area, the maintenance must be applied every 6 months on 69 kV. transmission line, and every 3-5 months on 115 kV. transmission line. With the insulator contamination rate at 0.0589 mg/cm^2 in Kanjanabhisek area, the maintenance must be applied every 8-12 months and every 7 months on 69 kV. and 115 kV. transmission line, respectively.

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