

Eakkasit Jiamsakoon 2011: Failure Rate Calculation Method for Reliability Assessment of PEA Power Distribution Systems. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Dulpichet Rerkpreedapong, Ph.D. 125 pages.

This thesis presents a method to determine the failure rates and their adjustment to the suitable values for reliability analysis of power distribution systems of the Provincial Electricity Authority of Thailand. First, the exponential and weibull probability distributions are considered in finding the failure rates based on power interruption events recorded during years 2005 to 2009. The obtained results are the failure rates of feeder sections downstream of each type of protective devices installed on the power distribution feeder, which include breaker, feeder breaker, recloser and fuse. Next, the procedure of failure rate adjustment begins with finding the exponential trend of historical SAIFI indices from years 2005 to 2009. The trend is then used to locate the SAIFI index of the latest year. This index is used for adjustment of the above failure rates achieved by using linear programming. Finally, the adjusted failure rates can be used for reliability analysis of improvement planning for power distribution systems of the Provincial Electricity Authority of Thailand.

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