

Pongpipat Asuvapongpatana 2014: Reliability Evaluation of DMS Controlled Power Distribution Systems. Master of Engineering (Electrical Engineering), Major Field: Electrical Engineering, Department of Electrical Engineering. Thesis Advisor: Assistant Professor Dulpichet Rerkpreedapong, Ph.D. 88 pages.

This thesis presents a method of reliability evaluation of power distribution systems controlled by Distribution Management System (DMS). Occasionally, DMS can fail to respond to the command. As a result, the event tree technique is applied to determine the probability of successful operation of DMS in order to enhance the reliability evaluation of power distribution systems. Moreover, Multi-Objective Genetic Algorithms (MOGA) is used to find the optimal placement of LBS on a distribution feeder considering investment costs of LBS as well as reliability worth. Feeder PTN411 of Metropolitan Electricity Authority (MEA) and Feeder KWA06 of Provincial Electricity Authority (PEA) are selected as test systems to illustrate the proposed method. From the results, the optimal placement of LBS resulted from the case study regarding the probability of successful operation of DMS is different from that resulted from the case study overlooking the above probability. To achieve more accurate decision making on system improvement, thus, the probability of successful operation of DMS should be taken into account in the reliability evaluation of power distribution systems.

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