

ABSTRACT

Distribution system is the most important thing in the distribution of electricity. Because the power distribution system is a system that deals directly with customers. Baros feeder is one of the repeats that often experience disturbance that is as much as 13 times in 2017. The disturbances that often occur caused by nature of trees and animals. This final project will discuss about 20 kV Medium Voltage Network Reliability at Baros feeder Using FMEA (Failure Mode and Effect Analysys) and RIA (Realiability Index Assessment) method which will calculate SAIDI and SAIFI reliability index based on failure rate and average repair time average and number of consumers at each load point.

Based on the results of the analysis, on FMEA method SAIFI value = 0.036836 times / year SAIDI = 0.977415 hours / year, and CAIDI = = 26.5342 hours / year. While on RIA method at perfect switching condition SAIFI value = 4,756699 times / year, SAIDI = 5.093118 hours / year and CAIDI = = 1.070725 hours / year. In imperfect state switching SAIFI value = 4.945251 times / year, SAIDI = 6.806564 hours / year and CAIDI = 1.3766383 hours / year. In the RIA method results, the SAIFI value does not meet PLN standards or is not reliable in the distribution of electricity.

Keywords: FMEA, RIA, Realiability, SAIDI, SAIFI

INTISARI

Jaringan Distribusi merupakan hal terpenting dalam penyaluran tenaga listrik. Dikarenakan sistem ini yang berhubungan langsung dengan pelanggan. Penyulang Baros merupakan salah satu penyulang yang sering mengalami gangguan yaitu sebanyak 13 kali di tahun 2017. Adapun gangguan-gangguan yang sering terjadi diakibatkan oleh alam yaitu pohon dan hewan. Proyek akhir ini akan membahas mengenai Keandalan Jaringan Tegangan Menengah 20 kV pada Penyulang Baros Menggunakan Metode FMEA (*Failure Mode and Effect Analysis*) dan RIA (*Reliability Index Assessment*) dimana metode ini akan menghitung indeks keandalan SAIDI dan SAIFI berdasarkan laju kegagalan dan waktu perbaikan rata-rata serta jumlah konsumen pada setiap titik beban (*load point*). Berdasarkan hasil analisa, pada metode FMEA nilai SAIFI = 0,036836 kali//tahun SAIDI = 0,977415 jam//tahun, dan CAIDI = 26,5342 jam/tahun. Sedangkan pada metode RIA pada kondisi *perfect switching* nilai SAIFI = 4,756699 kali/tahun, SAIDI = 5,093118 jam/tahun dan CAIDI = 1,070725 jam/tahun. Pada kondisi *imperfect switching* nilai SAIFI = 4,945251 kali/tahun, SAIDI = 6,806564 jam/tahun dan CAIDI = 1,3766383 jam/tahun. Pada hasil metode RIA, nilai SAIFI belum memenuhi standar PLN atau dapat dikatakan belum handal dalam penyaluran tenaga listrik.

Kata Kunci : FMEA, Keandalan, RIA, SAIDI, SAIFI