

ABSTRACT

Electricity is very important for human survival. BDN06 feeders often experience disruption in 2018. Interference with BDN06 feeders hampers the distribution of electricity, to determine the reliability quality BDN06 feeders are searched for reliability indexes in BDN06 feeders and are compared with applicable standards.

The method chosen in determining the reliability index is the FMEA (Failure Mode and Effect Analysis) and RIA (Reliability Index Assessment) methods. The 20kV distribution system reliability standard refers to the 59: 1985 SPLN with SAIDI = 12.8 hours / year, SAIFI = 2.4 fault / year, and CAIDI 5.33 hours / fault.

The results of the calculation of the reliability index of BDN06 Feeder in 2018 if using the FMEA method (Failure Mode Effect Analysis) SAIDI value = 0.51282 hours / year, SAIFI = 0.01917 failure / year, and CAIDI = 26.75117 hours / disturbance. the RIA (Reliability Index Assessment) perfect switching condition SAIDI value = 17,19224 hours // year, SAIFI = 3,32761 disturbances / year, CAIDI = 5,1665 hours / disturbance. If using the RIA (Reliability Index Assessment) imperfect switching condition, the SAIDI value = 20.4511 hours / year, SAIFI = 3.86325 disturbances / year, CAIDI = 5.2937 hours / disturbance.

Keywords: Reliability Index, FMEA, RIA, SAIDI, SAIFI, CAIDI.

ABSTRAK

Listrik adalah hal yang sangat penting bagi keberlangsungan kehidupan manusia. Pada Penyulang BDN06 sering mengalami gangguan pada tahun 2018. Gangguan pada Penyulang BDN06 membuat terhambatnya penyaluran tenaga listrik, untuk mengetahui mutu keandalan Penyulang BDN06 dicarilah indeks keandalan pada Penyulang BDN06 dan dibandingkan dengan standar yang berlaku.

Metode yang dipilih dalam menentukan indeks keandalan yaitu metode FMEA (*Failure Mode and Effect Analysis*) dan RIA (*Reliability Index Assesment*). Standar keandalan sistem distribusi 20kV mengacu pada SPLN 59 : 1985 dengan besar SAIDI=12,8 *hours/year* ,SAIFI=2,4 *fault/year*, dan CAIDI 5,33 *hours/fault*.

Hasil dari perhitungan indeks keandalan Penyulang BDN06 tahun 2018 jika menggunakan metode FMEA(*Failure Mode Effect Analysis*) nilai SAIDI = 0,51282 jam/tahun, SAIFI = 0,01917 gangguan/tahun, dan CAIDI = 26,75117 jam/gangguan. Jika menggunakan metode RIA (*Reliability Index Assesment*) kondisi *perfect switching* nilai SAIDI = 17,19224 jam/tahun, SAIFI = 3,32761 gangguan/tahun , CAIDI = 5,1665 jam/gangguan. Jika menggunakan metode RIA (*Reliability Index Assesment*) kondisi *imperfect switching* nilai SAIDI = 20,4511 jam/tahun, SAIFI = 3,86325 gangguan/tahun , CAIDI = 5,2937 jam/gangguan.

Kata kunci : Indeks Keandalan, FMEA, RIA, SAIDI, SAIFI, CAIDI