

ABSTRAK

Gangguan pada Saluran Transmisi yang diakibatkan oleh adanya tekanan mekanik dan tekanan panas yang menyebabkan andongan dan jarak aman andongan berkurang, hal ini membahayakan keselamatan makhluk hidup sekitar. Andongan ialah jarak lenturan suatu bentangan kawat penghantar antara dua tiang penyangga transmisi berdasarkan garis lurus (vertikal dan horizontal). Solusi terhadap masalah ini perlu diketahui jarak aman andongan.

Penelitian ini membahas tentang pengaruh temperatur dan arus terhadap andongan pada SUTET 500 kV. Model ditetapkan sebagai andongan yang menyambungkan 2 menara transmisi, dengan parameter yang ditentukan seperti arus, temperatur lingkungan, kecepatan angin, intensitas radiasi matahari, spesifikasi konduktor, dan jarak tower transmisi. Persamaan kesetimbangan panas pada kondisi non-steady-state berdasarkan standar IEEE no. 738, untuk menghitung panas saluran konduktor. Metode Catenary dan Ruling Span digunakan dalam perhitungan nilai tegangan tarik dan andongan. Safety Code Formula digunakan untuk menghitung jarak aman vertical suatu andongan.

Hasil perhitungan bahwa dengan nilai parameter arus sebesar 883 A, dengan radiasi matahari 427.42 W/m, suhu radiasi saluran 37.6 °C kecepatan angin 1.54 m/s diperoleh nilai andongan yaitu sebesar 17.66 m dan jarak aman andongan vertikalnya terhadap permukaan bumi yakni 6.22 m. Pengaruh perubahan andongan dan jarak aman andongan adalah perubahan arus saluran, kenaikan temperatur lingkungan tidak terlalu signifikan terhadap perubahan andongan dan jarak aman andongan. Hasil ini diperoleh unjuk kerja mekanik saluran masih dalam standar Peraturan Menteri dan Sumber Daya Mineral Republik Indonesia nomor 2 Tahun 2019 dan tidak berpengaruh buruk terhadap lingkungan sekitar dan saluran itu sendiri.

Kata Kunci : Temperatur Lingkungan, Arus, Jarak Aman Andongan

ABSTRACT

Disturbances in the Transmission Line caused by mechanical pressure and heat pressure which causes the carriage and the safe distance of the carriage is reduced, this endangers the safety of living things around. Andongan is the flexing distance from a stretch of connecting wire between two transmission support poles calculated on a straight line (vertical and horizontal). the two poles. The solution to this problem needs to know the safe distance of the horse.

This study discusses the effect of temperature and current on the carriage at SUTET 500 kV. The model is determined as a base connecting 2 transmission towers, with specified parameters such as currents, ambient temperature, wind speed, intensity of solar radiation, conductor specifications, and distance of the transmission tower. The heat equilibrium equation in non-state-state conditions is based on IEEE standard no. 738, to calculate the conductor channel heat. Catenary and Rulling Span methods are used to calculate the calculation of changes in the value of the tensile stress and channel support. The Safety Code Formula is used to calculate the vertical safe distance of a carriage.

The results show that the calculation of the current parameter value of 883 A, with the intensity of solar radiation 427.42 W / m, the radiation temperature of the channel 37.6 0C wind speed of 1.54 m / s obtained a holding value of 17.66 m and a safe distance of vertical support to the earth's surface of 6.22 m . The biggest influence on changes in the andongan and the distance of the safe is the increase in channel current changes, the increase in environmental temperature is not too significant to the change in the andongan and the distance of the safe andongan. This result was obtained by the mechanical performance of the channel is still within the standard of the Minister of Regulation and Mineral Resources of the Republic of Indonesia Number 2 of 2019 and does not adversely affect the surrounding environment and the channel itself.

Keywords: *Environmental Temperature, Current, Andongan Safe Distance*