

Novikova A. N., Shmarago O. V.

Operating voltage effect on the lightning vulnerability of conductors of OHL with and without ground wires: calculating criteria validation.

The main states of the calculation method of the OHL outages number due to direct lightning strokes to the conductors considering the operating voltage effect on the probability of overhead line shielding failures are proved based on the results of the comparison of calculating and operating UHV OHL lightning proofness rates. The method is validated by the calculation of the insulation flashovers number distribution between the conductors of the 330 and 500 kV portal-towers OHL without ground wires. It was discovered the difference from the conventional method of the strokes number distribution between the conductors of OHL without ground wires, which has principle matter for the number of surge arresters needed for protection of OHL without ground wires. The issue about revision of the regulatory documents statement concerning the lightning strokes distribution between towers and conductors of OHL without ground wires is raised.

Key words: overhead power lines, lightning proofness, ground wires protection, operating experience, probability of overhead line shielding failures, lightning insulation flashover distribution between the conductors of OHL without ground wires, calculation method.

Novikova Alexandra Nikolaevna, Head of Section Lightning Protection High Voltage Technique Department of the Scientific and Technical Center of Unified Power System (STC UPS).

E-mail: novikova_a@ niipt.ru

Shmarago Oksana Vladimirovna, Researcher of High Voltage Technique Department of the Scientific and Technical Center of Unified Power System (STC UPS).

E-mail: shmarago@yandex.ru