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Peculiarities of impact of environment and weather conditions on lightning proof of overhead transmission lines for instance of the 330 and 500 kV power transmission lines of main power networks in the South.

The results of operating experience analysis in terms of lightning outages of two extra high voltage power transmission lines: 500 kV «Rostovskaya NPP – Budennovsk» with the partial lightning protection by ground wires followed by 300 kV «Budennovsk – Kizlyar – Chir-Yurt» overhead line without ground wires have shown changing of proportion factor between ground lightning strike density and thunderstorm duration in hours in the direction from North-West to South-East that is due to decreased share of lightning strikes on ground. It has been shown the purposeless to design the regional map of mean annual thunderstorm rates in hours and to draw as a top priority the map of lightning ground strike density for main power networks in the South.

Key words: thunderstorm rate in hours, number of days with thunderstorm, lightning ground strike density, cloud-to-cloud strikes, selection of lightning strikes, OHL lightning proof, operating experience of extra high voltage OHL without ground wires.

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