

GROUND'98

International Conference on Grounding and Earthing
Belo Horizonte - Brazil April 12-16, 1998

CURRENTS INDUCED ON GROUNDING CONDUCTORS DUE TO LIGHTNING DISCHARGES CLOSE TO OVERHEAD DISTRIBUTION LINES

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Abstract - The effectiveness of the ground wire concerning the reduction of the amplitude of lightning induced voltages on overhead lines depends on many parameters. Thus, it is important to evaluate the benefits of this alternative considering many situations. However, discrepancies on the voltages calculated according to different theories may be significant even when the analysis is performed for single conductor lines. The presence of the ground wire increases the complexity of the problem and enhances the divergences among the mathematical models. Therefore, despite the great number of theoretical and experimental studies that have been conducted on this subject, there are still some points that deserve further investigation. This paper presents some results of a research that has been carried out on the phenomenon, with emphasis on the analysis of amplitudes and waveforms of currents induced on the grounding conductors when a lightning discharge strikes a point in the vicinity of an overhead distribution line.