



Contribution ID: 93

Type: **Poster Presentation**

The Effects of Lightning Discharges on Control & Communication Cables and Antenna Systems

Friday, 8 July 2016 14:40 (20 minutes)

In this work, lightning discharges and their effects on control & communication cables and antenna systems are investigated. The mechanism of lightning is described in detail and electric and magnetic fields created by lightning discharges are examined. An experimental test setup is designed and implemented in order to observe induced voltages on cables or antennas caused by lightning discharges. Test results are compared with each other and discussed in detail. Also, they are compared with theoretical findings. Effects of induced voltages on certain systems are studied. Moreover, some precautions to avoid the harmful effects of lightning are suggested.

Keywords: Lightning, lightning discharge, induced voltage, control cables, communication cables, antennas

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Session Classification: Poster 3-A

Track Classification: High Voltage Design, Devices, Testing, and Diagnostics