

username

LOGIN

[New Account »](#)  
[Forgot Password?](#)

Type your search term here


[Advanced Search »](#)

Ads by Google

[US Army - Official Site](#)

Earn \$2,000 when you refer someone to the Army. Details inside!  
[www.army.mil](http://www.army.mil)

[US Military Loans](#)

Get Fast Loans At Low Rates 24/7. Serving The US Military. Up To \$10K  
[www.PioneerMilitaryLoar](http://www.PioneerMilitaryLoar)

[#1 Wrinkle Cream Winner](#)

Over 200 wrinkle creams were tested Find out which cream took the award  
[AmericanAntiAgingAssoc](http://AmericanAntiAgingAssoc)

[Find Step Up Transformers](#)

The Top Industrial Resource. Find Step Up Transformers Quickly.  
[Industrial101.com](http://Industrial101.com)


 Physics and Astronomy ▾ Electricity and Magnetism

## Step Potential Modification by the Lightning Electromagnetic Environment

 Authors: [John M. Tobias](#); [ARMY COMMUNICATIONS-ELECTRONICS COMMAND FORT MONMOUTH NJ](#)

**Abstract:** The purpose of this report is to introduce a modified theory of propagation for lightning currents in earth. Recent experimental evidence has pointed to modified current flow distributions near earth grounding systems subjected to natural electric fields in excess of the fine weather electric field. Current distributions in earth due to lightning discharges are of interest to safety professionals due to the development of the step potential. This step potential examination considers the space charge region developed in the earth as a consequence of the charge present in a thunderstorm cloud. It is theorized that, under certain conditions, the step potential may be significantly higher than previous theoretical estimates, or empirical results obtained under fine weather electric field conditions. The objective of this report is to present the theory of the influence of the cloud charge on current distribution and, hence, step potential by citing recent qualitative observations of rocket-triggered lightning studies. Behavioral description of the step potential will be developed from electromagnetic theory. Impact of the modified step potential on personnel electrical hazards will be discussed. The presentation concludes with suggestions for further research in this area.

  Adobe PDF - \$8.95

  Printed Format - \$20.95



Please check the box for the format you wish to order.

[Shipping Terms](#)  
[About Electronic Delivery](#)
 [Email This Abstract](#)

**Limitations:**  APPROVED FOR PUBLIC RELEASE

**Description:** Technical rept.

**Pages:** 13

**Report Date:** SEP 96

**Report Number:** A274613

 Keywords relating to this report:

- ✦ [CHARGE DENSITY](#)
- ✦ [CLOUD PHYSICS](#)
- ✦ [CUMULONIMBUS CLOUDS](#)
- ✦ [CURRENT DENSITY](#)
- ✦ [EARTH SURFACE](#)
- ✦ [ELECTRIC CURRENT](#)
- ✦ [ELECTRIC FIELDS](#)
- ✦ [ELECTRICAL CONDUCTIVITY](#)
- ✦ [ELECTRICAL GROUNDING](#)
- ✦ [ELECTROMAGNETIC ENVIRONMENTS](#)
- ✦ [ELECTROMAGNETIC FIELDS](#)
- ✦ [HAZARDS](#)
- ✦ [LIGHTNING](#)
- ✦ [SPACE CHARGE](#)
- ✦ [THUNDERSTORMS](#)
- ✦ [VOLTAGE](#)

[« Back to search](#)