



# TECHNICAL COLUMNS

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## POWER AND GROUNDING

By **RON HRANAC**

I just returned from 2004 Power Council, an invitation-only conference hosted by Thomas & Betts ([www.tnb.com](http://www.tnb.com)). About 90 persons from cable, telco, power, direct broadcast satellite (DBS) and regulatory agencies made the trip to Tampa, Fla., to attend. The conference focused on power and grounding, subjects that don't always get much attention in today's world of digital and other advanced technology. Given central Florida's reputation as the country's lightning capital, Tampa seemed an ideal venue.

Presentations covered subjects including personnel, equipment and service hazards; bonding and grounding hardware corrosion; the first public peek at pending changes to the 2005 National Electrical Code®; the NEC development process and NEC Article 830; a luncheon keynote on cable network and drop inspections; headend grounding, bonding, line conditioning and backup power; home network grounding considerations; outside plant grounding and electrical protection; and SCTE activities in the standards arena. And all of that was on the first day!

The second day's presentations touched on infrared thermography; proper power cable sizing; circuit breakers and fuses; stationary battery hazards; central office grounding; and OSHA compliance. The take-aways from 2004 Power Council were safety-the people and equipment kind-and maintaining reliable service.

What not to do

Don't get the idea that this conference was a yawner. After all, the subject matter is hardly at the top of the high-tech excitement list. But as I mentioned, the presentations were excellent. Some of the speakers added a little good-natured humor to what could have been an otherwise dry, but serious subject. For instance, Kramer.Firm's Jonathan Kramer discussed system inspections of drop grounding and bonding, complete with several rather humorous real-world how-not-to-do-it pictures from some of his inspections ([www.cabletv.com/pictures](http://www.cabletv.com/pictures)). Comcast's Wayne Hall provided an informative overview of SCTE Working Group 7's NEC program, then wrapped up his presentation with a slide-show explanation of where his accent comes from. Hall had attendees rolling on the floor laughing-you had to be there.

I was honored to be among the speakers at 2004 Power Council, with a presentation titled "Headend Power's Influence on Signal Integrity and Safety." The content covered facility exterior and interior grounding and bonding, line conditioning and backup power, all of which are especially critical in today's headends.

Why worry?

The why behind the material in my presentation is straightforward: lightning; dirty power-voltage sags, transients, surges, harmonics and brief interruptions; and loss of commercial power. The negative consequences of these include personnel injury or death; latent equipment damage or outright failure; and degraded service availability.

When you think about it, the why and the negative consequences apply to every part of a cable system: headend, distribution network and subscriber drops. Avoiding the negative consequences boils down to



education, good practices, education, and follow-up quality control to make sure things are being done right. Oh, did I mention education? Look at Jonathan Kramer's previously mentioned Web site if you need to be convinced that education is important. Grounding and bonding are something we tend to take for granted, and unfortunately they're also topics that often get low priority. Cable's not alone in this area. Comments from other conference attendees suggested that power, telco and DBS installation companies face these issues too.

Education is what 2004 Power Council was all about. Lots of it squeezed into two days! OK, so where does one learn more? See the sidebar at right for a list of references I put together. What's not included are applicable state or local codes, something with which you should be intimately familiar.

#### Bookshelf bests

If I had to pick my favorites, they would include the latest NEC, NESC, and if you can track down a copy, Motorola's R56 manual. While not cable-specific, the 600+ page document includes a wealth of information and guidelines on telecommunications facility installation and protection. Polyphaser's *The 'Grounds' for Lightning and EMP Protection, Second Edition* is quite good too.

This year's 2004 Power Council wasn't the first of its kind. Thomas & Betts sponsored a Power & Grounding Council in 1996-also in Florida-and plan to host another one in two or three years. If you happen to be among the invitees, I encourage you to consider attending. You'll be glad you did.

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