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'Shocking' Research Points To Ways To Protect Technology

ScienceDaily (Mar. 17, 2004) — Toronto's CN Tower acts as a lightning laboratory, teaching scientists how to protect delicate electronic equipment against high-voltage surges, says a new study.

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Lightning data captured by measurement stations at the CN Tower point to the most effective procedures for protecting sensitive technology in tall buildings or on power lines routed through mountainous terrain. "More and more electronic equipment has very sensitive components," says study co-author Wasyl Janischewskyj, a professor emeritus at U of T's Edward S. Rogers Sr. Department of Electrical and Computer Engineering. "Even a small over-voltage can cause equipment to malfunction."

Lightning strikes the 553-metre-high CN Tower an average of 75 times per year. To direct the current into

the ground, metallic conductors run down the tower and are connected to 42 grounding rods buried deep below the surface. Janischewskyj and his colleagues found that the unusual structure of the CN Tower – with its Skypod and observation deck – obstructs the downward flow of electricity and causes the current to peak in certain areas. Identifying such patterns is critical to designing protective measures, he says.

"This study gives us a better understanding of the electromagnetic field caused by a lightning strike to a tall structure," says Janischewskyj. "This can help designers incorporate the appropriate precautions, such as enclosures for sensitive equipment or special diodes that would 'short out' rather than cause an over-voltage inside the equipment."

Adapted from materials provided by University Of Toronto.

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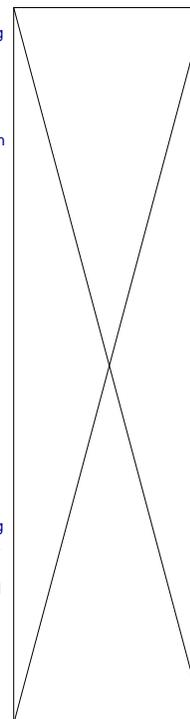
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