

Re: O.T. Step Potential ...

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- *From:* "Arfa Daily" <arfa.daily@xxxxxxxxxxxxx>
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"Michael A. Terrell" <mike.terrell@xxxxxxxxxxxxx> wrote in message
news:Wt2dne14LYi1aJ7VnZ2dnUVZ_t6onZ2d@xxxxxxxxxxxxx

Arfa Daily wrote:

Sorry all. O.T. as a repair issue. Just something I read about today
that
I'm not sure I understand.

Anybody come across the term "step potential" or its effect in regard to
a
downed live power line in contact with the ground ?

It is the voltage drop across the surface of the soil or concrete,
and if it is high enough simply taking a step will electrocute you.
There was a story about this on an Orlando TV station a few years ago
about a police horse being electrocuted in the downtown area. An old
outdoor sign had been removed, and the wires abandoned. Apparently,
someone turned the breaker back on, and it didn't trip. The officer was
on patrol when his horse crossed the path, and was killed. The shorter
the path to a good ground, the higher the available voltage is, per
step.

Ok Michael. This is kind of the way this article describes it, except it
states thus :-

"When a power line comes in contact with the ground, electrical energy
spreads out through the surrounding earth – like the ripples in a pond from
a tossed stone. Each expanding concentric circle has a different electrical
potential. Under these circumstances, taking a step could place your feet in
areas of different voltages, allowing electricity to course through your

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body, entering one foot, and exiting through the other. The consequences can be fatal."

There is a drawing of a power line, and someone trying to leave the car that brought it down, and standing on two of these neatly drawn circles.

Now, I can see what the article (and you) are saying, but what I didn't understand was the mechanism that caused these "expanding concentric circles" of potential difference, which would be close enough together – what's the length of a step, 45cm (18") perhaps? – to allow you to step on two of them together. At what speed are they expanding ? Presumably, slowly enough to allow you to step on two for long enough to fry you ? Or has the person writing the article, or the artist, got it basically wrong, or are attempting to over-simplify or create a non-realistic model that might better allow a semi-layman to understand the concept ? I can see, maybe, how you might get a travelling wave radiating out from a high voltage point, but with a wavelength equivalent of several hundred kilometers at 50 or 60Hz, and I might be able to see how you could possibly get an interference pattern between multiple downed phases, but I'm struggling with the basic electrical physics of this. Any other thoughts, Michael ? Anyone ?

The article was a H&S publication from 2003 by National Grid, who apparently own a number of large utility companies your side of the pond.

Arfa

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