

## “KEEPING PACE” - #14

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### STEERING DEFECT:

As I was passing this car on a thruway near Erie, Pennsylvania, I noticed that one of its steering linkages was disconnected and dragging on the highway. I signaled to the driver to pull over. He was able to steer to the berm and brake to a stop behind me, with no problem. It is not known how far he had driven with no steering connection to his left front wheel, and with his left front wheel simply tracking his right front wheel.

In many cases, the steering linkage is broken during an ensuing accident and the driver will attempt to blame his or her steering for the cause of the accident. Metallurgical testing in at least 50 accidents has verified that it is almost never true.

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### VOLTAGE SURGES FROM SERVICE CABLES:

Service cables are the electrical cables which bring power into our homes from the utility transformers. When one of these service cables arcs (short circuits), the transformer can deliver very high currents to the arc. In addition, the nature of arcing is that the arc repeatedly extinguishes and then re-ignites, creating discontinuities in the current waveform. These surging electrical currents, combined with the inductance of the transformer windings, create high surge voltages which enter the house. Those voltage surges can break down (pierce) the electrical insulation in the branch circuits inside the house and create one or more short circuit arcing fires inside the house.

The utility power lines which feed power to the transformer input generally have a voltage of 7200 volts, A.C., to ground. Moreover, these “primary” power lines generally have no electrical insulation; they are bare. So when one of these bare primary lines snaps and falls onto a service cable, this is another way for high surge voltages and surge currents to enter a house to cause a fire.

The third way for surge voltages to cause a fire is when lightning strikes the primary lines or the service lines feeding the house.

The fourth way for surge currents to occur is when a tree branch falls onto the service cable, creating great forces on the conduit to which the service cable is connected. These forces can bend the conduit, and that bending can short a hot conductor to a neutral conductor or a grounding conductor inside the conduit. This also can create surge voltages which cause one or more arcing fires in the branch circuits inside the house.

Sincerely,



Frederick F. Franklin, P.E.  
Forensic Engineer



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