



D31 Electrocutation Precipitated by a Flying Duck

Helmut G. Brosz, BSc, PEng, Brosz Forensic Services, 64 Bullock Drive, Markham, ON L3P 3P2, CANADA*

After attending this presentation, attendees will better understand the importance of considering all unusual evidence in the vicinity of an electrocution and why laboratory high-voltage tests should be applied when appropriate before an opinion or hypothesis is rendered in cases involving a downed power line.

The presentation will impact the forensic science community as well as the, legal, judiciary, insurance, electric utility industry by highlighting the importance of considering all evidence including birds or animals in the vicinity of an electrocution.

The forensic engineering case and facts: A male resident in a bungalow was watching television with his family when suddenly the power went out. After hearing two explosions outside, he went outside in his socks and observed a wire lying across his white pickup truck. While standing on the concrete sidewalk, he touched this small uninsulated solid copper #6 American Wire Gauge (AWG) wire and was immediately electrocuted. Exit burn marks from both feet in socks were found on the concrete sidewalk next to his truck. Entrance burn marks were found on his hand. The small downed copper wire was unprotected by a fuse but connected to a large conductor utility main feeder. The wire also draped over a four-foot dry wood fence on the decedent's property and across his truck; it then lay on an asphalt road, across a concrete gutter and curb, where arcing to ground severed the wire. Other severed wire parts were found draped over another wood fence.

A deceased mallard duck was found farther downstream along the circuit. The duck presented a severe abdominal injury and perforation consistent with electrical burns, which exposed its entrails. There were no electrical burn marks found on its wings or anywhere else on its body. The initial investigators and experts dismissed any relationship between the duck and this incident. Although the actual remains of the duck were no longer available, photographs of the duck were available.

Questions arose regarding how a duck could suffer a fatal injury to its abdomen similar to those evident in the photographs and what did that have to do with a downed power line. To address these questions, experiments were conducted in a high-voltage laboratory with a deceased mallard duck at 12,400 volts. This presentation will explain the complex mechanisms regarding how the duck precipitated this accident in addition to the other ancillary factors (e.g., inadequate electric utility fuse protection of laterals, incorrect circuit drawings, and incorrect conductor sizes).

Electrocution, Downed Power Line, Duck Bird