Eric's IEEE Eulogy
For
Stanley R Lindgren
February 1928 – December 2017
http://www.funeralalternatives.org/portfolio-item/lindgren-stanley-roland/

My father, Stanley Roland Lindgren, received his BSEE in 1950, leading to a 62-year career. Dad was a large power transformer expert. He knew transformers inside and out. In 1950, he started with Allis-Chalmers as part of their Graduate Training Course (GTC) and soon was working in the transformer fabrication shop doing hands-on work: stacking cores, brazing leads, taping joints and building terminal boards. That's a good way to learn the inside. Dad credited much of the depth of his large power transformer knowledge to his A-C mentor, L.S. Woodruff (Woodie), a delightful old-timer who designed A-C's first transformer in 1903 and conceived the first 230 kV design in 1917.

As a chemical engineer, my technical interests did not overlap well with Dad's early career in power transformers. That began to change in the second thirty years when he started with EPRI. There he worked on static electrification problems in large transformers that sometimes caused catastrophic explosions. These violent explosions would not only destroy the afflicted transformer but would often destroy adjacent transformers at a cost of many millions of dollars. My father was credited by some with developing the first detailed understanding of the events that lead to this failure so that effective monitoring and mitigation methods could be developed and implemented. The understanding of the mechanistic details of this severe problem evaded other capable investigators.

I feel my father was uniquely suited to solve the problem of static electrification failure for two reasons:

1. His extensive experience from his first 30 years lead to valuable insight in the second 30 years. Experience matters; but a lot of experience matters a lot more. Dad had a lot of experience with large power transformers. He knew all about the oil and the pumps and the paper insulated coils and the flow pattern and the velocity of the oil through and between the windings. He knew the nature of the paper insulation and the movement of moisture between the paper and the oil with changing temperatures and how this all might accumulate static electric charges. Perhaps so did others.
2. But, Dad also had an innate understanding of the spark.

Dad was born on a Kansas farm in 1928 and grew up there without indoor plumbing or electricity. When he was 15 years old a single cloud let loose a single lightning bolt to single tree he was standing by out in a field. The strike threw him forcefully backwards. He reported seeing a huge spark drift up out of the tree as he landed on his back.

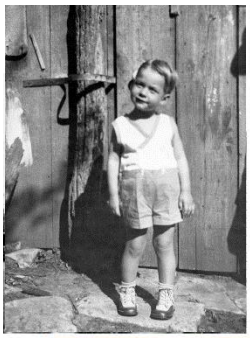
Encounters with lightning ran in Dad's family. My sheep herding great-grandfather was struck by lightning while in a wagon on the eastern Colorado planes. My then 8-year old grandfather, who was not far away at the time, said it killed his father, the horse and the best dog. More than once over his 90-year life my grandfather was thrown from his horse or knocked to the ground by nearby lightning strikes. My grandmother told a story of looking up into a tornado funnel and seeing "all sorts of lightning up there." Of my father's close encounter, he wrote, "I felt an intimacy with lightning ever since." I believe it was this intimacy with lightning that steered Dad to electrical engineering rather than civil engineering like his two older brothers.

Dad loved lightning. As kids, we would spend hours watching lightning storms with Dad. He told us about the huge voltages and currents involved. He taught us how to calculate the distance to the lightning from the time between the flash and the thunder. He also taught us to recognize the smell of the ozone gas produced by lightning. When that smell got strong, he taught the conditions were ripe for tornados, so be wary.

Dad logged millions of miles on airline flights and reported being on numerous flights that were struck by lightning. On one occasion he witnessed "...a brilliant ball of lightning about six feet in diameter strike the wing tip". On another occasion while on approach for a landing, Dad said to a business associate and close family friend that "The conditions were just right for a static discharge!" Moments later the plane was rocked by a particularly violent lightning bolt. The plane landed safely but had suffered enough structural damage that it could not make the last hop to Manitowoc. I believe it was this innate sense for understanding the conditions that lead to static electric discharges that enabled Dad to chart the course for solving the static electrification failure problem in large power transformers.

My technical interests best meshed with Dad's when he made his last career move to Serveron Corp to help develop and market their transformer oil dissolved gas analyzer that was based on an automated gas chromatograph (GC) platform. I had automated similar GCs as well as mass spectrometers for customized research of sulfur gas reactions in combustion systems and the extensive reaction of nitrogen gas with hot zirconium metal during experimentally simulated spent nuclear fuel pool fires.

I really enjoyed the long discussions we had where Dad explained to me the static electrification problem and how monitoring the transient dissolved gas concentrations in the oil could predict static electrification problems before failure occurred. I explained that the static discharges would produce free radicals that formed the gases in the oil. I could tell he already knew that.
I explained that the gases were easy to separate and concentrate for the GC analysis. I could tell he already knew that. I explained that a small part of the oil would also be changed by the static electric discharge. I could tell he already knew that. I likened the transformer oil to the premortal stew present on the early earth and said, "You know static electric discharge gave us life!", to which he said, "I know static electric discharge gave me another life!" And for that, I can tell you, he was very grateful.







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