

Minutes February 14, 1997 Lightning Data Center

St. Anthony Hospital

Quote of the Month:

"We shuttle to the Cathedral Lake trailhead two ridges south. As we strap packs on ourselves and the llamas, thunder booms in the Ashcroft basin, rolling like a wave down the steep-walled valley of Castle Creek. I count the time between lightning and thunder: a safe four seconds. Then comes another flash. One, two -- and another blast of thunder, much louder than before. Lightning again. One second. Thunder roars. The llamas pace around anxiously: the hair on my neck bristles with static electricity. Lightning and thunder explode simultaneously....The first view of Cathedral Lake is always breathtaking, but never before had I seen it caught in a storm....Gray clouds race across Electric Pass like burgeoning boxcars loaded with water."

T.A. Barron in 'To Walk in Wilderness' by Fielder & Barron, 1993

1. Meeting started at 11:30 am and adjourned at 1:30 pm.
2. Members present: Breed, Cherington, Clark, Collier, Gustafson, Kithil, Quinn, Simmons, Toler, H. Wachtel, T. Wachtel, Yarnell.
3. This is our 5th Anniversary. Our first meeting took place in February 1992. Peggy Gustafson brought a delicious birthday cake to celebrate the occasion.
4. I distributed materials on the following subjects:
 - a. Many of the serious cardiac and neurologic complications occur in that group of lightning patients who suffer "out-of-hospital cardiac or respiratory arrest.
I brought an article that has relevance to some of our clinical cases of lightning injuries. The article is: Schindler MB et al. Outcome of out-of-hospital cardiac or respiratory arrest in children. *New Engl J Med* 1996;335: 1473-1479.
The authors state that out-of-hospital cardiac arrest among children has a very poor prognosis, especially when efforts a CPR continue for more than 20 minutes and require more than two doses of epinephrine. The most common causes of arrest in their series were: sudden infant death syndrome; trauma; and near-drowning. Predictors of survival to hospital discharge included a short interval between the arrest and arrival at the hospital, and a palpable pulse on presentation. Children with a respiratory arrest who still had a palpable pulse had a better outcome than those with a cardiac arrest. The application of advanced CPR before arrival did not improve long-term survival. They state that CPR in emergency rooms for over 20 minutes is futile in cardiac arrests in normothermic children. This rule does not apply when treating children with severe hypothermia (temperature less than 30° C or with recurrent rather than persistent arrest.
 - b. Article by Parano et al. entitled "Delayed Bilateral Median Nerve Injury due to Low-Tension Electric Current" in *Neuropediatrics* 1996;27:105-7. The authors describe the case of a 6 year old who inserted both ends of a metal clip into an electric outlet using the thumb and index fingers of both hands. He suffered low tension electrical shock. After a few weeks, he developed bilateral numbness and weakness of the hands.

They speculate that the pinching position of the fingers, the circuit of the metal clip, and the low resistance of the child's thin skin may account for volume conduction of current along the neurovascular bundle containing the median nerve.

c. Letters in the Annals of Emergency Medicine (July 1996) by Dr. Bailey and by Dr. Garcia on Low-Voltage Electrical Injury. They state that patients with low-voltage electrical shock usually have minor injuries, but they mention two exceptions: First, oral burns in children should be seen by a plastic surgeon within 24 hours after injury. Second, cardiac monitoring may be necessary in some patients: those with abnormal ECG; those with loss of consciousness; those exposed to over 240 V. Monitoring may also be required when risk factors known to potentiate current are present. These factors include: decreased skin resistance by water, tetany, and current pathway across the heart.

5. Mary Ann Cooper sent to me via Email the following information to pass on at our meeting:
 - a. Dr. James C. Lin, Professor of Bioengineering at University of Illinois in Chicago asked Mary Ann to be on the Program Committee for a meeting on lightning on November 3-5, 1997. This meeting will follow the IEEE meeting in Chicago. She would like anyone interested in attending to contact her (Email: macooper@uic.edu).
 - b. Mary Ann sent the following list of excellent articles on ferning:
 - Hocking, Andrews. Med J Australia 1989;150:409
 - tenDuis et al. Burns 1987;13:141
 - Niemeyer et al. Phys Rev Lett 1984;52:1033
 - Barthlome et al. Arch Derm 1975;111:1466
6. Michael Boyson and Julie Kimberling were unable to attend today's meeting but they told me that the data collection on outpatient lightning cases is on schedule. Michael sent a fax listing the hospital data he has received to date. He believes the full report should be available by the next meeting.
7. Rich Collier summarized his projects with the NASA Space Shuttle Operations. He continues to pursue his studies (wave forms, frequencies, threats) on the lightning hazards at the launch site in Florida. He said that lightning protection to the shuttle is limited because the additional weight that would be needed to provide shielding.
8. Rich Kithil distributed the following:
 - a. Remarkable posters of lightning over Perth, Australia.
 - b. The Newsletter from NLSI. (Attached to these minutes)
 - c. A photograph and letter from a photographer in Madison, Ohio (Attached to these minutes) Rich asked the members for explanations of what is represented in the attached photograph. Phil Yarnell commented that the patient's symptoms include: he is "always hot and can't cool down." This is reminiscent of a videotape we saw a year or two ago where a patient from Chicago or Ohio could be outside in the middle of winter without sweaters or coats.
 - d. A report from EPRI (Electric Power Research Institute) January 1997 which concludes that blood melatonin levels are not altered after exposure to 60 Hz magnetic fields of 200 mG.

9. Peggy Gustafson and Rich Kithil will work on the following LDC projects:
 - a. Explore the possibility of placing LDC materials, including our minutes, on the internet.
 - b. Plan upcoming Seminars, patterned on the highly successful Seminar on Lightning Safety that they organized last year. Rich commented that if he could use only one word to define lightning safety, that word would be: "Preparedness."Peggy reported on funding and marketing for LDC programs. At this time direct marketing to targeted audiences seems to be the best approach.
10. Tom Wachtel informed us of an upcoming international meeting: 4th World Conference on Injury Prevention and Control in Amsterdam on May 17-20, 1998. The abstract deadline is June 15, 1997. Any interested members can contact Tom Wachtel. You can learn his new Email address by calling Cheryl at the LDC office (303-629-4258).
11. Dan Breed will continue to participate in the NCAR cloud seeding experiments in Mexico. The aim of this project is to enhance rainfall. The cloud seeding utilizes hygroscopic particles to broaden roster droplets. Dan mentioned that for clouds to produce lightning they must consist of: ice, water, and crystals.
12. Warren Simmons reported that the Golf Expo is being held at the Merchandise Mart this week at I-25 and 58th Avenue. He also reported that the US Golf Association has allocated funds this year for lightning detection equipment. Warren told us that the lightning safety measures in place at the Castle Pines Golf Course includes a modern warning system (e.g. beepers on the carts). During tournaments many school buses are brought in for shelters.
13. Howard Wachtel reported that the evidence is nearly certain that EMFs associated power lines are not related to diseases such as cancer. However, there may be some matters not yet fully studied (e.g. high traffic flow near power stations) that could have some health implications. He told us that there is some evidence that decreased melatonin levels may be associated with decrease in oncostasis and an increase in cancer risks.
14. Rich Quinn suggested that the LDC might want to look into the 'insurance aspects lightning.' We agreed. Rich Quinn and Rich Kithil will prepare a discussion on this subject for the next LDC meeting.
15. Phil Yarnell brought an issue of 'CNS Spectrum' which was devoted to the subject of repetitive magnetic stimulation of the brains. Repetitive stimulation at different frequencies and strengths can either trigger or quench seizures. Phil pointed out that patients who suffer post cardiac arrest intractable seizures have poor prognoses.
16. Next meeting: Friday, March 14, 1997 in the Main Auditorium at St. Anthony Central Hospital.

Respectfully submitted,

M. C.

Michael Cherington, MD
Chair, LDC

NEWS FROM NLSI, JANUARY 1997

1. NLSI's two day intensive *Certified Lightning Safety Professional (CLSP)* seminar was held January 14 & 15 in Albuquerque, NM with 18 attendees. Included were responsible managers from New Jersey Public Service Co, New Mexico Public Service Co, American Electric Power, Sandia Labs, LLNL, LANL, Kirtland AFB, US West, Wis. Electr. Power Co., Tesla Inc., Lakewood CO Park & Rec., and WindFarm Partners. All class graduates were awarded NLSI's CLSP designation with diploma. NLSI's Richard Kithil and Richard Hasbrouck were co-instructors.

The next CLSP class is scheduled for Houston, February 26 & 27. Contact NLSI for full details, or see the WWW at: <http://www.lightningsafety.com/train.html>

2. NLSI has been asked to provide comprehensive training for all supervisory and outdoors personnel for both the City of Lakewood CO and the City of Colorado Springs CO later on this spring and summer. In all, some 600 people will be given lightning safety training at these times.

3. NLSI presented a tutorial on lightning safety for the Department of Energy's *National Renewable Energy Laboratory (NREL)*, Golden CO on 10 January. Some 20 attendees gathered from the commercial wind turbine industry to address lightning safety issues.

NLSI has been selected to address the annual American Wind Energy Association annual meeting in June in Austin TX. See NLSI's WWW page for details on this problem at: <http://www.lightningsafety.com/wind.html>

NLSI also will present a paper on lightning safety at wind farms to the 8th US National Conference on Wind Engineering, held in Baltimore on June 5-7, 1997.

4. NLSI prepared a comprehensive lightning safety analysis called *Corona Point Discharge Devices (CPDD) Where Employed as Air Terminals* for a prominent USA aerospace and defense contractor. Experts who contributed to the study included Richard Hasbrouck, Richard Setchell, Michael Stringfellow, Roger Block, Mark Kinsler, Stan Grzybowski, Bill Jafferis and C.B. Moore.

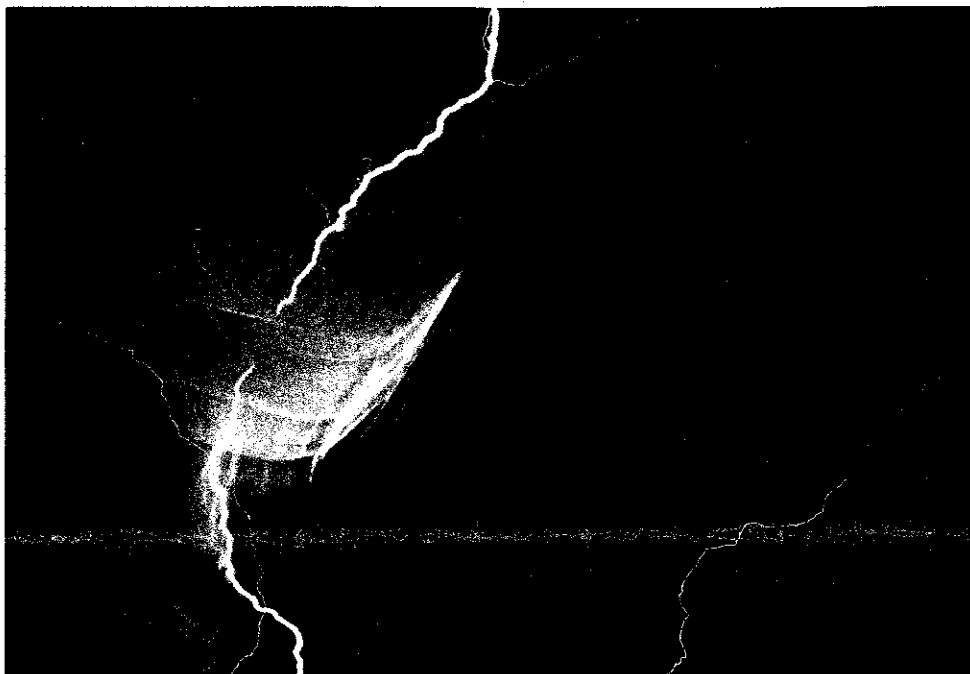
5. NLSI's Richard Kithil testified at a trial in Alabama where lightning was denied as a cause for claim against an insurance company. NLSI-contributed information for the plaintiff included 1-GAI strike information, 2-accident forensics investigation and 3-evidence of metallic objects having been magnetized near the inferred strike-points. Papers discussing discrete arcs (Sandia/Ft. McClelland-RTL) and rebar attachment with cause and effect (SAAR-027, Hanford/DOE) were introduced as substantiating documentation.

6. NLSI will address the 28 April - 1 May DOE Fire Safety Meeting in San Francisco as well as the 81st Range Commanders Council - Meteorology Group, Patrick AFB FL on 3-6 March. The Patrick AFB meeting will be devoted to lightning safety, since a lightning death occurred last year on the flight line at Hurlburt AFB.

7. NLSI assisted the US Army at Ft. McClelland, Alabama to redesign a large outdoor shelter with upgraded lightning safety measures.

More information, contact the **National Lightning Safety Institute**, Tel. 303-666-8817, or see our WWW page at: <http://www.lightningsafety.com>

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It was a summer night . I had a Canon A-1 on a tripod about 100 yds. from my house at the edge of a road and field. I watched the squall line on radar before going out. I was timing the bolts as they would be closer together in time. I think about 15 seconds apart. Then, the hair came up on my body, I wanted to fall and roll into a ball, but I couldn't move, I then heard a sizzle like a steak on a grill. the air felt very strange as though I were in a vacuum. The next thing I remember was I was lying on the ground behind my camera. I have no recollection of how long I was there, whether I was knocked out, I couldn't say. I got up ran to the house and realized what had happened . My camera had been fried if you will. The top of the camera was a blob of melted plastic. I sent the camera to canon to have the film pulled out and developed. I sent the last photo the camera took to you. I would have saved this and ddocumented this had I thought about it more. I just chalked it up as a close call until I read a story about LS&ESVI. I cōntacted them and they investigated it. They said something definately did happen, They were not sure of what it was. Many people have seen this photo and looked at it in awe. I've been a helicopter since the days when you pulled off ticker type tape and read it, so I have some knowledge of weather, but this, I hope you folks can possibly tell me. I would like to add one thing to this. the moment before I tried to fall to the ground, A sudden calm came over my body as though I had been ddrugged. I had no fear of anything, as though the world had been lifted off my shoulders. I 've never had such a feeling in my lifetime, but it was one that I will never forget. currently I am 46 yrs, old. My health has not changed over this except of this: I have lost most of my childhood memory of ages 6 until about 17. I am always hot and can't cool down most of the time, as though a person with a thiroid problem would have. Most of my close friends are doctors, or surgeons. I've had all sorts of tests and all are O.K. Hopefully this will help you somewhat in your discussion. I appreciated you taking the time to discuss what this photo may be, or what possibly happened out there that night to me. You can e-mail me, or write to : Steven Melvin P>O>Box 623 Madison, Ohio 44057, or call 216 428 6503 usually after 5:30 EST Thank you again Steven Melvin